STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

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

Permit No.	MO-0140503
Owner:	American Foods Development Co., LLC
Address:	500 S. Washington Street, Green Bay, WI 54301
Continuing Authority:	Public Water Supply District No. 2 of St. Charles County, Missouri
Address:	100 Water Drive, O'Fallon, MO 63368
Facility Name:	New Wright City South Wastewater Treatment Facility
Facility Address:	1000 Lagoon Drive; Wright City, MO 63390
Legal Description:	Sec. 22, T47N, R01W, Warren County
UTM Coordinates:	Outfall #001: X = 673191, Y = 4298507
Receiving Stream:	Tributary to Peruque Creek
First Classified Stream and ID:	Presumed Use Stream; locally known as Peruque Creek (C) WBID# 5025
Downstream ID:	Peruque Creek (C) WBID# 0218 is on the 303(d) List
USGS Basin & Sub-watershed No.:	071100090101: Headwaters Peruque Creek

authorizes activities pursuant to the terms and conditions of this permit in accordance with the Missouri Clean Water Law and/or the National Pollutant Discharge Elimination System; it does not apply to other regulated activities.

FACILITY DESCRIPTION

40 CFR 432 Subpart B for Complex Slaughterhouses; cooling condensate, and domestic wastewater; no stormwater exposure; SIC # 2011, 2077; NAICS # 311611, 311613. This facility does not require a certified wastewater operator per 10 CSR 20-9.030 as this facility is privately owned. *De minimis* fire protection testing wastewater discharge.

Treatment methods: 4-Stage Bardenpho Activated Sludge with Side Stream Biological TP Removal, Filtration & Chemical Metal Salt Addition (as needed).

Design Flow: 3.5 MGD; 5.425 CFS; Average Flow: unknown because this is new facility which has not been constructed

July 1, 2024
Effective Date

December 1, 2024
Modification Date

June 30, 2029
Expiration Date

John Hoke, Director, Water Protection Program

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL #001 *wastewater*	**TABLE A-1** **FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The facility is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **July 1, 2024,** and remain in effect until expiration of the permit. Discharges shall be controlled, limited, and monitored by the facility as specified below:

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM	MONTHLY AVERAGE	MINIMUM MEASUREMENT FREQUENCY	SAMPLE TYPE
LIMIT SET: M					
PHYSICAL					
Flow	MGD	*	3.5	continuous ⁂	24 hr. total
Head Count Processed ⸸⸸	#	2400	*	daily total	count
BACTERIA					
E. coli ǂ (all year)	#/100mL	1030	206	one/week ⁑	grab
Fecal Coliform (all year)	#/100mL	400	*	one/month	grab
CONVENTIONAL					
Biochemical Oxygen Demand – 5 day	mg/L	9.0	6.0	one/month	composite ♠
Chlorine, Total Residual (TRC) ‡	µg/L	18.1	9.0	one/month	grab
Oil & Grease	mg/L	15	10	one/month	grab
Oxygen, Dissolved ⁝ (minimum)	mg/L	7.0 ⁝	7.0	one/month	grab
pH †	SU	6.5 to 9.0	-	one/month	grab
Total Suspended Solids (TSS)	mg/L	15	10	one/month	composite ♠
METALS					
Iron, Total Recoverable	µg/L	1643	819	one/month	composite ♠
NUTRIENTS					
Ammonia as N	mg/L	2.2	0.7	one/week ⁑	composite ♠
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	one/week ⁑	composite ♠
Nitrate plus Nitrite as N	mg/L	*	10.0	one/week ⁑	composite ♠
Nitrogen, Total N (TN) ⸸	mg/L	*	11.0	one/week ⁑	composite ♠
Phosphorus, Total P (TP) – concentration	mg/L	*	1.0	one/week ⁑	composite ♠
Phosphorus, Total P (TP) – loading ♣	lbs/month	* (total)	*	one/week ⁑ ♣	calculated ♣
OTHER					
Chloride	mg/L	378	188	one/month	composite ♠
LIMIT SET INF: INFLUENT MONITORING					
Ammonia as N	mg/L	*	*	one/month	composite ♠
Kjeldahl Nitrogen, Total (TKN)	mg/L	*	*	one/month	composite ♠
Nitrate plus Nitrite as N	mg/L	*	*	one/month	composite ♠
Nitrogen, Total N (TN) ⸸	mg/L	*	*	one/month	composite ♠
Phosphorus, Total P (TP)	mg/L	*	*	one/month	composite ♠
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE AUGUST 28, 2024.					
Limit Set: A					
OTHER		ANNUAL MAXIMUM			
Phosphorus, Total P (TP), Total ♦	lbs/year	8,523.48		♦	calculated
WET, Chronic ⁝ *Ceriodaphnia dubia*	TU_c	1.1		once/year	composite ♠
WET, Chronic ⁝ *Pimephales promeleas*	TU_c	1.1		once/year	composite ♠
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2025.					

OUTFALL #001	TABLE A-2 PHOSPHORUS ANNUAL REDUCTION TARGET				
ENFORCEABLE EFFLUENT LIMITATIONS ARE SPECIFIED ABOVE IN TABLE A-1, BUT PHOSPHORUS SPECIFIC GOALS ARE SPECIFIED BELOW. MONTHLY REPORTING NOT REQUIRED FOR THIS TABLE AS TOTAL PHOSPHORUS MONITORING AND LIMITS ARE ESTABLISHED IN TABLE A-1.					
PARAMETER	**UNITS**	**GOAL ANNUAL AVERAGE**	-	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
Phosphorus, Total (TP) – concentration	mg/L	0.5 ♦♦	-	♦♦	calculated

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS NOTES

* Monitoring and reporting requirement only

⁑ Weekly monitoring is monitoring any one day between Monday and Sunday. For weeks spanning two months, only 1 sample is required. Only samples collected in the month may be averaged for the month. All data obtained must be uploaded as a DMR attachment per Standard Conditions.

⁂ Continuous monitoring. The facility must report the maximum flow that occurred on any one day and the average of all days and reported values in the month. All data obtained must be uploaded as a DMR attachment per Standard Conditions.

‡ Chlorine, Total Residual. This permit contains a Total Residual Chlorine (TRC) limit (or monitoring). The effluent limit is below the minimum quantification level of the most sensitive EPA approved CLTRC methods. The department has determined the current acceptable minimum level (ML) for total residual chlorine is 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The facility will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured and detection values greater than or equal to the minimum quantification level of 130 µg/L will be considered violations of the permit and non-detect values less than the minimum quantification level of 130 µg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit. The facility shall report less than "<" the value obtained on the meter for non-detections. The less than symbol shall not be used for detections. The facility shall not log the ML as the quantified value unless the quantified value is the ML. Do not chemically dechlorinate unless it is necessary to meet permit limits.

ǂ The monthly average limit for *E. coli* is expressed as a geometric mean. *E. coli* will be measured all year.

† pH: the facility will report the minimum and maximum values; pH is not to be averaged. The sentry monitoring system data shall be submitted to the department.

⸸ Nitrogen, Total: this permit establishes reporting for total nitrogen, (TN), which is a calculation using TKN + Nitrate + Nitrite.

⁝ Oxygen, Dissolved: is a minimum value. The facility will report the minimum value for the daily report.

⁞ WET tests: see special condition #2.

♠ Composite Sampling: a 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30-minute intervals by an automatic sampling device. In the event that the automatic sampling device malfunctions, 12 aliquots, at least 30 minutes apart may be used instead. If the facility uses the 12-aliquot method, the facility shall contact the Regional Office to disclose the automatic sampler is out of service, and the timetable for use, until the device is repaired or replaced. The 12 aliquot method is allowed pursuant to 40 CFR 403 Appendix E, I. A. The composite sampling device may be used for any pollutants except pH, dissolved oxygen, residual chlorine, oil and grease, fecal coliform, and *E. coli*); these must be collected as grab samples pursuant to 40 CFR 122.21(g)(7)(i).

♣ Phosphorus, total per month. The facility will calculate the pounds of phosphorus discharged as a total for the month. The weekly sample will be used to calculate the weekly total, and the weekly totals will be added for the month. A singular weekly TP sample may be used to calculate the load for the week, but only the days that occur in the month shall be totaled for the month.

♦ PACT: Phosphorus Annual Combined Total is the total pounds of total phosphorus discharged by the facility within the reporting year (January 1 through December 31). The facility will report the annual total based on the samples collected in the calendar year. All samples for the year must be added together. This value is based on a concentration of 0.8 mg/L at design flow.

♦♦ PART: Phosphorus Annual Reduction Target is the average of all phosphorus measurements for the calendar year. Reporting into the eDMR system is not required under this permit. This information must be submitted to the department with the application for renewal.

‡‡ The number of animals processed is a count of animals, it is not an estimate.

B. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Part I standard conditions dated August 1, 2014, and hereby incorporated as though fully set forth herein.

C. SPECIAL CONDITIONS

1. The authorization to discharge from outfall #001 is contingent on responsible persons completing all of the following to the department's satisfaction:
   (a) A responsible person must submit a complete Application For Construction Permit – Wastewater Treatment Facility for the portion of the facility being designed to treat primarily domestic wastewater.
   (b) The appropriate fee for an Application For Construction Permit – Wastewater Treatment Facility.
   (c) A public notice comment period is completed for the construction permit for the portion of the facility designed for primarily domestic wastewater.
   (d) A Statement of Work Complete sealed by an Engineer registered in the state of Missouri for the portion of the facility designed to treat primarily domestic wastewater.
   (e) A written approval to begin discharging from outfall #001 from the department must be received prior to any discharges from outfall #001.
   (f) A report of "do-discharge" will be made to the eDMR system until authorization is granted.

2. Chronic Whole Effluent Toxicity (WET) tests shall be conducted as follows:
   (a) Freshwater Species and Test Methods: Species and short-term test methods for estimating the chronic toxicity of NPDES effluents are found in the most recent edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/821/R-02/013; Table IA, 40 CFR Part 136).* The facility shall concurrently conduct 7-day, static renewal toxicity tests with the following species:
      - The fathead minnow, *Pimephales promelas* (Survival and Growth Test Method 1000.0).
      - The daphnid, *Ceriodaphnia dubia* (Survival and Reproduction Test Method 1002.0).
   (b) Chemical and physical analysis of the upstream control sample and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing required to stabilize the sample during shipping.
   (c) Test conditions must meet all test acceptability criteria required by the EPA Method used in the analysis.
   (d) The laboratory shall not chemically dechlorinate the sample.
   (e) The Allowable Effluent Concentration (AEC) is 100%, the dilution series is: 100%, 50%, 25%, 12.5%, and 6.25%.
   (f) All chemical and physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% effluent concentration.
   (g) The facility must submit a full laboratory report for all toxicity testing. The report must include a quantification of chronic toxic units (TUc = 100/IC25) for each species and reported according to the Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms chapter on report preparation and test review. The 25% Inhibition Effect Concentration (IC25), or No Effect Concentration (NOEC25) is the effluent concentration causing 25% reduction in mean young per female or in growth for the test population.
   (h) Accelerated Testing Trigger: If the regularly scheduled WET test exceeds the TUc limit, the facility shall conduct accelerated follow-up WET testing as prescribed here. Results of the follow-up accelerated WET testing shall be reported in TUc. This permit requires the following additional toxicity testing if any one test result exceeds a TUc limit.
   (i) A multiple dilution test shall be performed for both test species within 60 calendar days of becoming aware the regularly scheduled WET test exceeded a TU limit, and once every two weeks until one of the following conditions are met:
      i. Three consecutive multiple-dilution tests are below the TU_c limit. No further tests need to be performed until the next regularly scheduled test period.
      ii. A total of three multiple-dilution tests exceeds the TU_c limit (do not need to be sequential)
   (2) Follow-up tests do not negate an initial test result.
   (3) The facility shall submit a summary of all accelerated WET test results for the test series along with complete copies of the laboratory reports as received from the laboratory within 14 calendar days of the availability of the third test exceeding a TU_c limit.
   (4) The facility may begin a TIE or TRE during the follow-up testing phase.
   (j) TIE/TRE Trigger: The following shall apply upon the exceedance of the TU_c limit in three accelerated follow-up WET tests. The facility must contact the department within 14 calendar days from availability of the test results to ascertain as to whether

C. SPECIAL CONDITIONS (CONTINUED)

a TIE or TRE is appropriate. If the facility does not contact the department upon the third follow up test exceeding a TU_c limit, a toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The facility shall submit a plan for conducting a TIE or TRE within 60 calendar days of the date of the automatic trigger or the department's direction to perform either a TIE or TRE. The plan shall be based on EPA Methods and include a schedule for completion. This plan shall be approved by the department before the TIE or TRE is begun.

3. Spills, Overflows, and Other Unauthorized Discharges.
   (a) Any spill, overflow, or other discharge(s) not specifically authorized are unauthorized discharges.
   (b) If an unauthorized discharge cause or permit any contaminants to discharge or enter waters of the state, the unauthorized discharge must be reported to the regional office as soon as practicable but no more than 24 hours after the discovery of the discharge. If the spill or overflow needs to be reported after normal business hours or on the weekend, the facility must call the department's 24-hour spill line at 573-634-2436.

4. Electronic Discharge Monitoring Report (eDMR) Submission System. The NPDES Electronic Reporting Rule, 40 CFR Part 127, reporting of effluent monitoring data and any report required by the permit (unless specifically directed otherwise by the permit), shall be submitted via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data for the NPDES program. The eDMR system is currently the only department-approved reporting method for this permit unless specified elsewhere in this permit, or a waiver is granted by the department. The facility must register in the department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due. All reports uploaded into the system shall be reasonably named so they are easily identifiable, such as "WET Test Chronic Outfall 002 Jan 2023", or "Outfall004-DailyData-Mar2025".

5. The facility's SIC code is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2). This facility has provided that the stormwater is not industrially exposed; therefore, there is no SWPPP inspection requirement. Annually, for the calendar year beginning 2025, the facility must self-certify that there continues to be no industrial stormwater exposure; the self-certification must be kept with permitting records and is not sent to the department unless specifically requested.

6. Site-wide minimum Best Management Practices (BMPs). At a minimum, the facility shall adhere to the following:
   (a) Provide good housekeeping practices on the site to keep trash from entry into waters of the state. Dumpsters must remain closed when not in use.
   (b) Prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, warehouse activities, and other areas, to prevent the contamination of stormwater from these substances.
   (c) Provide collection facilities and arrange for proper disposal of waste products including but not limited to petroleum waste products, and solvents.
   (d) Store all paint, solvents, petroleum products, petroleum waste products, and storage containers (such as drums, cans, or cartons) so these materials are not exposed to stormwater or provide other prescribed BMPs such as plastic lids and/or portable spill pans to prevent the commingling of stormwater with container contents. Commingled water may not be discharged under this permit. Provide spill prevention control, and/or management sufficient to prevent any spills of these pollutants from entering waters of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater. Spill records shall be retained on-site or readily accessible electronically.
   (e) The facility shall not discharge substances resulting from an on-site spill.
   (f) Provide sediment and erosion control sufficient to prevent or minimize sediment loss off of the property, and to protect embankments from erosion.
   (g) Wash water for building(s), or pavement must be handled in a no-discharge manner (infiltration, hauled off-site, etc.). Describe the no-discharge method used and include all pertinent information (quantity/frequency, soap use, effluent destination, BMPs, etc.) in the application for renewal. If wash water is not produced, note this instead.
   (h) Outdoor fire protection test water must be handled in a no-discharge manner via infiltration to protect receiving stream. This facility uses non-potable water in the testing process once per year and is considered a *de minimis* authorization.
   (i) The facility shall not apply salt and sand (traction control) in excess of what is required to maintain safe roadways and walkways. In the spring, after potential for additional snow or ice accumulation, if there is evidence of significant excess traction control materials, the facility shall remove excess sand or salt as soon as possible to minimize and control the discharge of salt and solids. At all times the facility shall use salt judiciously to minimize freshwater salinization.
   (j) Salt and sand shall be stored in a manner minimizing mobilization in stormwater (for example: under roof, in covered container, under tarp, etc.).

C. SPECIAL CONDITIONS (CONTINUED)

7. Reporting Non-Detects
   (a) Compliance analysis conducted by the facility, or any contracted laboratory shall be conducted in such a way the precision and accuracy of the analyzed result can be enumerated. See sufficiently sensitive test method requirements in Standard Conditions Part I, §A, No. 4 regarding proper testing and detection limits used for sample analysis. For the purposes of this permit, the definitions in 40 CFR 136 apply; method detection limit (MDL) and laboratory-established reporting limit (RL) are used interchangeably in this permit. The reporting limits established by the laboratory must be below the lowest effluent limits established for the specified parameter (including any parameter's future limit after an SOC) in the permit unless the permit provides for an ML.
   (b) The facility shall not report a sample result as "non-detect" without also reporting the MDL. Reporting "non-detect" without also including the MDL will be considered failure to report, which is a violation of this permit.
   (c) For the daily maximum, the facility shall report the highest value; if the highest value was a non-detect, use the less than "<" symbol and the laboratory's highest method detection limit (MDL) or the highest reporting limit (RL); whichever is higher (e.g. <6).
   (d) When calculating monthly averages, zero shall be used in place of any value(s) not detected. Where all data used in the average are below the MDL or RL, the highest MDL or RL shall be reported as "<#" for the average as indicated in item (c).

8. All outfalls must be clearly marked in the field.

9. Report no discharge when a discharge does not occur during the report period. It is a violation of this permit to report no-discharge when a discharge has occurred.

10. This permit does not cover land disturbance activities.

11. This permit does not authorize land application.

12. Nutrient Removal: The permittee must operate the treatment system in compliance with effluent limitations established in Table A-1. Additionally, the permittee should strive to operate the treatment system to maximize the level of nutrient removal to achieve the following target goals:

Total Phosphorus	0.5 mg/L as an annual average goal

The target goal for concentration (mg/L) in Table A-2 is not to be considered enforceable effluent limits for this permit. However, the Total Phosphorus mass loading limits (lbs/year) and concentrations established in Table A-1 are enforceable.

13. This permit does not allow stream channel or wetland alterations unless separately approved by Clean Water Act §404 permitting authorities.

14. This permit does not authorize in-stream treatment, the placement of fill materials in flood plains, placement of solid materials into any waterway, the obstruction of stream flow, or changing the channel of a defined drainage course.

15. All records required by this permit may be retained electronically. These records should be saved in a searchable format.

16. Changes in Discharges of Toxic Pollutant.
    In addition to the reporting requirements under 40 CFR 122.41, all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director per 40 CFR 122.42(a)(1) and (2) as soon as recognizing:
    (a) An activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:
        (1) One hundred micrograms per liter (100 µg/L);
        (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile;
        (3) Five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol;
        (4) One milligram per liter (1 mg/L) for antimony;
        (5) Five (5) times the maximum concentration value reported for the pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
        (6) The notification level established by the department in accordance with 40 CFR 122.44(f).
    (b) Any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
        (1) Five hundred micrograms per liter (500 µg/L);

C. SPECIAL CONDITIONS (CONTINUED)

(2) One milligram per liter (1 mg/L) for antimony;
(3) Ten (10) times the maximum concentration value reported for the pollutant in the permit application in accordance with 40 CFR 122.21(g)(7).
(4) The level established by the Director in accordance with 40 CFR 122.44(f).

(c) Authorization of new or expanded pollutant discharges may be required under a permit modification or renewal and may require an antidegradation review.

17. This permit does not authorize the facility to accept, treat, or discharge wastewater from other sources unless explicitly authorized herein. If the facility would like to accept, treat, or discharge wastewater from another activity or facility, the permit must be modified to include external wastewater pollutant sources in the permit.

18. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with Sections 301, 302, 306, 307, and 403 of the federal Clean Water Act, except for standards imposed under Section 307 for toxic pollutants injurious to human health, and with equivalent provisions of the Missouri Clean Water Law, in accordance with Section 644.051.16 RSMo and CWA §402(k). This permit may be reopened and modified, or alternatively revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under CWA §§301(b)(2)(C) and (D), §304(b)(2), and §307(a)(2), if the effluent standard or limitation so issued or approved contains different conditions or is otherwise more stringent than any effluent limitation in the permit, or controls any pollutant not already limited in the permit. This permit may be modified, revoked and reissued, or terminated for cause, including determination new pollutants found in the discharge not identified in the application for the new or revised permit. The filing of a request by the facility for a permit modification, termination, notice of planned changes, or anticipated non-compliance does not stay any permit condition.

19. Any discharges (or qualified activities such as land application) not expressly authorized in this permit, and not clearly disclosed in the permit application, cannot become authorized or shielded from liability under CWA section 402(k) or Section 644.051.16, RSMo, by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including any other permit applications, funding applications, the SWPPP, discharge monitoring reporting, or during an inspection. Submit a permit modification application, and an antidegradation determination if appropriate, to request authorization of new or expanded discharges.

D. NOTICE OF RIGHT TO APPEAL

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

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

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATEMENT OF BASIS
MO-0140503
WRIGHT CITY SOUTH WWTF

This Statement of Basis (Statement) gives pertinent information regarding modification(s) to the above listed operating permit. A Statement is not an enforceable part of a Missouri State Operating Permit. Changes found here supersede previous fact sheet determinations. The permit was revised as appropriate to reflect changes enumerated in this modification.

Part I – Facility Information

Facility ownership and facility name information has changed; see page one of the permit.

Part II – Modification Rationale

This operating permit is hereby modified to reflect a change in Continuing Authority from American Foods Development Co., LLC to Public Water Supply District No. 2 of St. Charles County, Missouri. The facility name changed to New Wright City South WWTF.

This permit was not modified to include 40 CFR 133.102 requirements. This facility treats wastewater more effectively than secondary treatment; therefore, the treatment requirements for equivalent to secondary are superseded by treatment requirements already found in this permit. 40 CFR 133.103(b)(1) and (2) allow for other limits when those limits are either more protective or when the treatment works treating domestic sewage (TWTDS) has a significant industrial contributor. Given the nature of this treatment system, the change in ownership does not prompt any other regulatory changes at this time. All ELG limits remain, and all requirements for maintaining the site as no-exposure for stormwater remain.

Only the items identified in this statement of basis were changed.

No other changes were made at this time.

PART III. ADMINISTRATIVE REQUIREMENTS

On the basis of preliminary staff review, and utilizing current applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue this permit subject to specified effluent limitations, schedules, and special conditions. The changes contained herein do not require a public notice comment period per 10 CSR 20-6.020.

DATE OF FACT SHEET: NOVEMBER 12, 2024

COMPLETED BY:
PAM HACKLER, ENVIRONMENTAL SCIENTIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - INDUSTRIAL UNIT
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MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET FOR THE PURPOSE OF A NEW PERMIT
MO-0140503
NEW WRIGHT CITY SOUTH WWTF
FORMERLY AMERICAN FOODS DEVELOPMENT CO., LLC

The Federal Water Pollution Control Act (Clean Water Act (CWA) §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 (§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 644 RSMo as amended). MSOPs may also cover underground injection, non-discharging facilities, and land application facilities. Permits are issued for a period of five (5) years unless otherwise specified for less.

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 applicable regulations, rationale for the development of limitations and conditions, and the public participation process for the Missouri State Operating Permit (MSOP or permit) listed below. A factsheet is not an enforceable part of a permit.

PART I. FACILITY INFORMATION

Facility Type: Industrial: categorical, major, non-primary
SIC Code(s): 2011 & 2077
NAICS Code(s): 311611 & 311613

FACILITY DESCRIPTION

Categorical wastewater limited pursuant to 40 CFR 432 Subpart B for Complex Slaughterhouses; cooling condensate, and domestic wastewater; no industrial stormwater exposure. A permit rating worksheet was completed; the facility scored above the minor threshold; therefore, the facility is rated as major. This facility type is not listed in 40 CFR 122 Appendix A; therefore, the application requirements for a primary facility do not apply.

Post May 2024 PN Note: the facility supplied drawings that showed an 11-million-gallon basin is being constructed on the American Foods property to slow stormwater discharge from the site. This basin, while not required, will ensure that solids discharges, from non-regulated stormwater from the site does not scour or cause undue solids discharges. The stormwater is not regulated because the facility has attested that there are no industrial materials exposed to stormwater. Industrial materials include but are not limited to: loading and unloading of unfinished products, manure, lay-down areas, and unfinished product exposed to stormwater. The department does not expect that these actions are occurring.

Items listed in the facility (or outfall) description, applicable to the operation, maintenance, control, and resultant effluent quality are required to be enumerated in the facility description. The facility description ensures the facility continues to operate the wastewater controls listed in the permit to preserve and maintain the effluent quality pursuant to 40 CFR 122.21(e). Any planned changes to the facility (which changes the facility or outfall description) are required to be reported to the department pursuant to 40 CFR 122.41(l)(1)(ii). If the facility does not or cannot use all disclosed treatment devices, this is considered bypassing pursuant to 40 CFR 122.41(m).

PERMITTED FEATURES TABLE

OUTFALL	DESIGN FLOW	TREATMENT	EFFLUENT TYPE
#001	1.5 MGD industrial 2.0 MGD* domestic	4-Stage Bardenpho Activated Sludge with Side Stream Biological TP Removal, Filtration & Chemical Metal Salt Addition (as needed).	categorical industrial wastewater and domestic wastewater

The current design flow of Wright City South (MO0023191) is 0.5 MGD; however, after reviewing the discharge monitoring reports, the design flow has been exceeded numerous times. In the past five years, Wright City South has exceeded the design over 82% of the time. This completely new treatment system is designed to effectively treat those additional flows. When the influent is completely treated, the wastewater is of better quality; therefore, is protective of in-stream and down-stream uses.

NEW FACILITY REQUIREMENTS

Per 40 CFR 122.21(l), this facility is a new source. For new source and new dischargers pursuant to 40 CFR 122.29(a)(1) and (2), and 40 CFR 122.29(b), the department has completed an antidegradation review which included a Missouri Department of Conservation Heritage Review completed on January 25, 2022. The new source determination was incorporated into the antidegradation review which was public noticed from May 15 to June 14, 2023.

In an email dated November 16, 2021, Chris Wieberg (Water Protection Program director at the time) indicated that the private entity could build the treatment plant for Wright City South without a construction permit because America's Heartland Packing has taken responsibility of this permit. Therefore, this permit was derived based on private entity ownership but also includes domestic wastewater as another source of pollutants. At this time, this facility is considered "industrial" for the purposes of permitting requirements which are found in 40 CFR 122.21(k).

Post May 2024 PN Note: The department has since determined that the facility proposed to discharge more than 50% domestic wastewater, therefore a construction permit is required. See Special Condition #1. The facility is still considered "industrial" for the purposes of applying the ELG to the discharge, and because the ownership is the meat packing owner, and not the city.

ENGINEERING CERTIFICATION

On April 11, 2024, the facility submitted an engineering certification statement attesting that the design of the treatment facility meets Chapter 8 design standards. See Appendix 4. When a project is exempted by rule from obtaining a construction permit, this statement is required per the application requirements pursuant to 10 CSR 20-6.010 (B)(7)F.

CONTINUING AUTHORITY

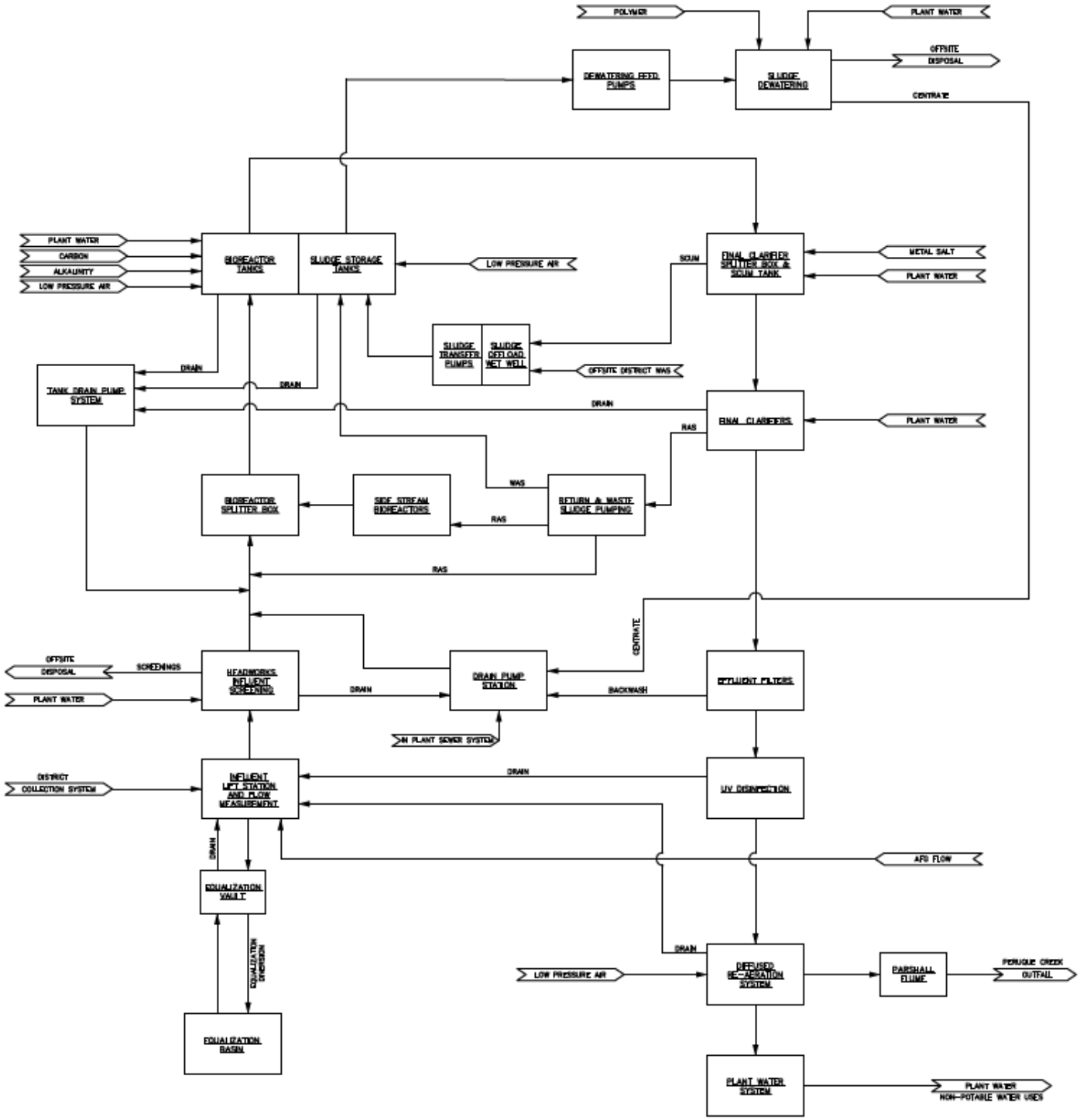
Pursuant to 10 CSR 20-6.010(2)(A) and (E), the department has received the appropriate continuing authority authorized signature from the facility. The Missouri Secretary of State continuing authority charter number for this facility is FL001693465; this number was verified to be associated with the facility and precisely matches the continuing authority reported by the facility.

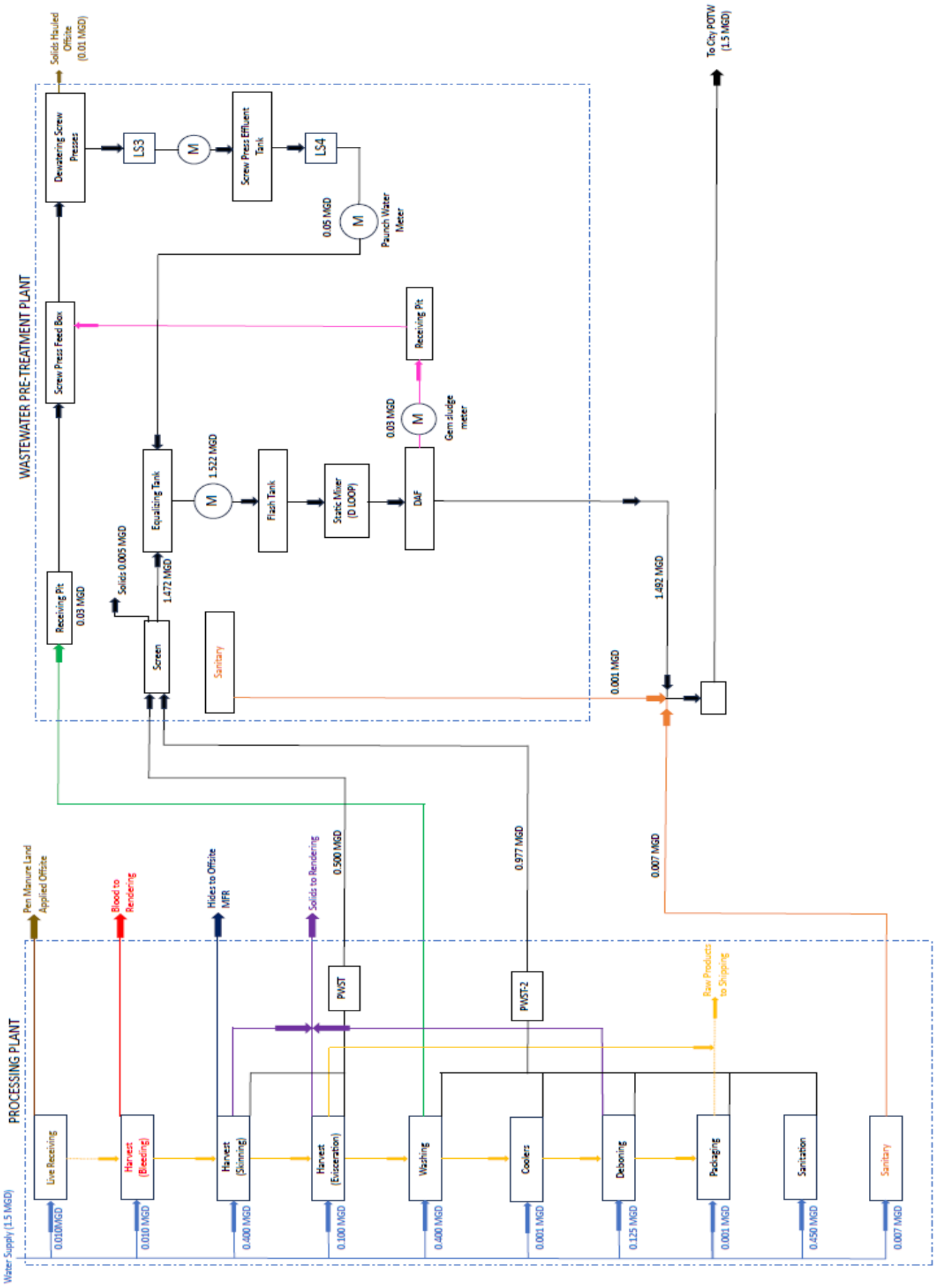
- ✓ Pursuant to 10 CSR 20-6.010(2)(B)4, this facility is a Level 4 Authority. This facility is being built in conjunction with Wright City. Currently, Wright City does not have the capacity to accept and treat the wastewater that this facility is proposing to generate.
- ✓ Pursuant to 10 CSR 20-6.010(2)(D), the department noted that this facility will be managed by Public Water Supply District #2 under 10 CSR 20-6.010(2)(C)1 after an ownership transfer. The current Wright City South WWTP does not have the capacity to accept the industrial load of this facility without this new WWTP.
    - ✓ This provision does not prohibit pretreatment or industrial user negotiation this facility may have with the local accepting wastewater treatment service. An industrial user status is not a change of continuing authority. This facility may be subject to local limits (i.e. pretreatment) applied by the accepting wastewater treatment facility.

OTHER ENVIRONMENTAL PERMITS

In accordance with 40 CFR 122.21(f)(6), the department evaluated other environmental permits; a land disturbance permit, MORA24346, was issued to PWSD #2 of St. Charles Co, for "Wright City WWFT Upgrades". MO-0023191 is Wright City South wastewater treatment facility (WWTF).

WATER BALANCE DIAGRAMS




WASTEWATER PRE-TREATMENT PLANT
PROCESSING PLANT
Solids Hauled Offsite (0.01 MGD)
To City POTW (1.5 MGD)
Dewatering Screw Presses
LS3
LS4
Screw Press Effluent Tank
0.05 MGD
Paunch Water Meter
Screw Press Feed Box
Receiving Pit
0.03 MGD
Gem sludge meter
Equalizing Tank
1.522 MGD
Flash Tank
Static Mixer (D LOOP)
DAF
Solids 0.005 MGD
1.472 MGD
Screen
Sanitary
1.492 MGD
0.001 MGD
0.007 MGD
0.977 MGD
0.500 MGD
Pen Manure Land Applied Offsite
Blood to Rendering
Hides to Offsite MFR
Solids to Rendering
PWST
PWST-2
Raw Products to Shipping
Water Supply (1.5 MGD)
Live Receiving
Harvest (Bleeding)
Harvest (Skinning)
Harvest (Evisceration)
Washing
Coolers
Deboning
Packaging
Sanitation
Sanitary
0.010MGD
0.010 MGD
0.400 MGD
0.100 MGD
0.400 MGD
0.001 MGD
0.125 MGD
0.001 MGD
0.450 MGD
0.007 MGD

PART II. RECEIVING WATERBODY INFORMATION

RECEIVING WATERBODY TABLE:

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT
Tributary to Peruque Creek	n/a	n/a	n/a	07110009-0101 Headwaters Peruque Creek	0 mi
Presumed Use Stream	C	5025	AQL-WWH, WBC-B, SCR, HHP, IRR, LWW		0.17 mi
Peruque Creek	C	0218	AQL-WWH, WBC-B, SCR, HHP, IRR, LWW		0.76 mi
Lake St. Louis	L3	7054	AQL-WWH, WBC-A, SCR, HHP, IRR, LWW, NNC		9.4 mi

Classes are representations of hydrologic flow volume or lake basin size per 10 CSR 20-7.031(1)(E).
Designated uses are described in 10 CSR 20-7.031(1)(F).
WBID: Waterbody Identification Number per 10 CSR 20-7.031(1)(Q) and (S)
HUC: Hydrologic Unit Code https://water.usgs.gov/GIS/huc.html
Water Quality Standards Search https://apps5.mo.gov/mocwis_public/waterQualityStandardsSearch.do
NNC: numeric nutrient criteria

The monitoring requirements and numeric limits listed in this permit are designed to protect all receiving waters based on the designates uses. These uses include protecting aquatic life (WWH), and human health (WBC).

EXISTING WATER QUALITY & IMPAIRMENTS

The receiving waterbody(s) segment(s), upstream, and downstream confluence water quality was reviewed. The USGS https://waterdata.usgs.gov/nwis/sw or the department's quality data database was reviewed. https://apps5.mo.gov/mocwis_public/wqa/waterbodySearch.do and https://apps5.mo.gov/wqa/ Impaired waterbodies which may be impacted by discharges from this facility were determined. Impairments include waterbodies on the 305(b) or 303(d) list and those waterbodies or watersheds under a TMDL. https://dnr.mo.gov/water/what-were-doing/water-planning/quality-standards-impaired-waters-total-maximum-daily-loads/tmdls Section 303(d) of the federal Clean Water Act requires each state identify waters not meeting water quality standards and for which adequate water pollution controls have not been required. https://dnr.mo.gov/water/what-were-doing/water-planning/quality-standards-impaired-waters-total-maximum-daily-loads/impaired-waters Water quality standards protect beneficial uses of water provided in 10 CSR 20-7.031. The 303(d) list helps state and federal agencies keep track of impaired waters not addressed by normal water pollution control programs. A TMDL is a calculation of the maximum amount of a given pollutant a water body can absorb before its water quality is affected; hence, the purpose of a TMDL is to determine the pollutant loading a specific waterbody can assimilate without exceeding water quality standards.

- ✓ Peruque Creek (WBID 0218) is listed on the 2022 303(d) list for macroinvertebrate and low DO. See Appendix 1 and Appendix E. Effluent limits within this permit account for the impairments.
- ✓ Lake St. Louis (WBID 7054) is listed on the 2022 303(d) list for chlorophyll-a. Chlorophyll-a is an indicator pollutant, there are no direct numeric Missouri WQS for Chl-a. See Nutrients section in Part IV EFFLUENT LIMIT DETERMINATIONS.
- ✓ Peruque Creek (WBID 0215) is much further downstream, occurs after Lake St. Louis, and is directly connected to the Mississippi River. It is also listed for low DO in the 2022 303(d) list.

See also:

2005 Peruque Creek Watershed Assessment
https://dnr.mo.gov/document-search/peruque-creek-watershed-management-action-plan-may-2005

2020 Lake St. Louis Reasonable Potential
https://dnr.mo.gov/document-search/reasonable-potential-analysis-wastewater-treatment-facility-contributions-nutrient-impairment-lake-st-louis-march-30-2020

2022 Watershed Modeling Results
https://dnr.mo.gov/document-search/results-modeling-effluent-limit-recommendations-proposed-new-35-mgd-wright-city-south-facility-march-8-2022

2023 Channel Erosion Impact Analysis (also attached as Appendix 3)
https://dnr.mo.gov/document-search/woodward-curran-technical-memorandum-wright-city-wastewater-treatment-facility-upgrades-aug-16-2023

WATERBODY MIXING CONSIDERATIONS

For the wastewater outfall, mixing zone and zone of initial dilution are not allowed per 10 CSR 20-7.031(5)(A)4.B.(I)(a) and (b), as the base stream flow does not provide dilution to the effluent.

PART III. RATIONALE AND DERIVATION OF PERMIT CONDITIONS

ANTIDEGRADATION REVIEW

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

- ✓ Applicable; new discharge, please see APPENDIX 1 – ANTIDEGRADATION ANALYSIS (WQAR).
- ✓ The antidegradation review was completed with the knowledge that the packing plant wastewater treatment system (this permit) will be sold to Public Water Supply District #2. Once ownership is transferred, this permit will be officially modified (which will include a public notice period) to show the change in ownership and will then include additional requirements for the publicly-owned treatment plant. The Asset Purchase Agreement was reviewed by the department, but no portion of that document can be legally included in this permit as ownership cannot be assigned within an MSOP without proper legal documentation (the Business Registration with the Missouri Secretary of State).

The WQAR was public noticed from May 15 to June 14, 2023. The WQAR had significant public interest. Comments were received concerning the language *significant degradation*, and *socioeconomic importance*.

The Antidegradation Implementation Procedure (AIP) defines "significant degradation" as, "a reduction by 10 percent or more of the facility assimilative capacity for any pollutant as a result of any single discharge…" Assimilative capacity is the amount of contaminant load that a specific water body can naturally attenuate without exceeding the Water Quality Standards (WQS) or impairing beneficial uses. So, significant degradation does not mean that the discharge will degrade the stream. Instead, significant degradation is used to inform the designing engineer what treatment is required to provide justification for a discharge of any specific socioeconomic importance.

A thorough presentation of social and economic importance was included in the antidegradation application. The affected community is described as the Wright City and Warren County service area. A number of developments are planned for the immediate area around the Wright City South WWTF. However, the expansion projects are currently inhibited due to the lack of treatment capacity at the Wright City South WWTF. This treatment system, while currently typed "industrial" will also serve the community by collecting and treating domestic wastewater from the area.

The antidegradation review process ensures that the proposed discharge fully protects beneficial uses and achieves the highest statutory and regulatory requirements. The effluent limits established through the antidegradation review process are protective of all designated uses of Peruque Creek and Lake St. Louis. All effluents limits are at least as stringent as the water quality standards. The limits are also consistent with the department's water quality model that demonstrated the facility would not result in degradation sufficient to cause or contribute to beneficial use impairment. The effluent limits in this permit are lower than the current Wright City South WWTF permit, MO-0023191.

Appendix 2 is a consolidation of the public notice comments from the antidegradation review and the department's responses.

BEST MANAGEMENT PRACTICES (BMPS)

Minimum site-wide best management practices (BMPs) are established in this permit to ensure all facilities are managing their sites equally to protect waters of the state from certain activities which could cause negative effects in receiving water bodies. While not all sites require a SWPPP because the SIC codes are specifically exempted in 40 CFR 122.26(b)(14) or 10 CSR 20-6.200(2), these best management practices are not specifically included only for stormwater purposes. These practices are minimum requirements for all industrial sites to protect waters of the state. If the minimum best management practices are not followed, the facility may violate general criteria per 10 CSR 20-7.031(4). Statutes are applicable to all permitted facilities in the state; therefore, pollutants cannot be released unless in accordance with 644.011 and 644.016 (17) RSMo.

CLOSURE

To properly decontaminate and close a wastewater storage structure, treatment structure, lagoon, basin, or device, the facility must draft a complete closure plan, and include the Closure Request Form #2512 https://dnr.mo.gov/document-search/facility-closure-request-form-mo-780-2512 The publication, Wastewater Treatment Plant Closure - PUB2568 found at https://dnr.mo.gov/print/document-search/pub2568 may be helpful to develop the closure plan. The regional office will then approve the closure plan, and provide authorization to begin the work. The regional office contact information can be found here: https://dnr.mo.gov/about-us/division-environmental-quality/regional-office

CHANGES IN DISCHARGES OF TOXIC POLLUTANT

This special condition reiterates the federal rules found in 40 CFR 122.44(f) for technology treatments and 122.42(a)(1) for all other toxic substances. In these rules, the facility is required to report changes in amounts of toxic substances discharged. Toxic substances

are defined in 40 CFR 122.2 as any pollutant listed as toxic under section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing section 405(d) of the CWA." Section 307 of the clean water act then refers to those parameters listed in 40 CFR 401.15 and any other toxic parameter the department determines is applicable for reporting under these rules in the permit. The facility must also consider any other toxic pollutant in the discharge as reportable under this condition and must report all increases to the department as soon as discovered in the effluent. The department may open the permit to implement any required effluent limits pursuant to CWA §402(k) where sufficient data was not supplied within the application but was supplied at a later date by either the facility or other resource determined to be representative of the discharge, such as sampling by department personnel.

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.

✓ Not applicable; the facility is not currently under Water Protection Program enforcement action.

DISCHARGE MONITORING REPORTING – ELECTRONIC (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 requiring electronic data reporting. To comply with the federal rule, the department is requiring all facilities to submit discharge monitoring data and reports online. To review historical data, the department's database has a publicly facing search engine, available at https://apps5.mo.gov/mocwis_public/dmrDisclaimer.do

Registration and other information regarding MoGEM can be found at https://dnr.mo.gov/mogem. Information about the eDMR system can be found at https://dnr.mo.gov/env/wpp/edmr.htm.The first user shall register as an Organization Official and the association to the facility must be approved by the department. To access the eDMR system, use: https://apps5.mo.gov/mogems/welcome.action For assistance using the eDMR system, contact edmr@dnr.mo.gov or call 855-789-3889 or 573-526-2082. To assist the facility in entering data into the eDMR system, the permit describes limit sets designators in each table in Part A of the permit. Facility personnel will use these identifiers to ensure data entry is being completed appropriately. For example, M for monthly, Q for quarterly, A for annual, and others as identified.

EFFLUENT LIMITATIONS

Two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs) are reviewed. Permits are required to establish the most stringent or most protective limit per 10 CSR 20-7.015(9)(A) and 40 CFR 122.44(b)(1). The department has regulatory authorization to implement limits based on best professional judgment per 10 CSR 20-7.015(9)(I)1. Effluent limitations derived and established for this permit are based on current operations of the facility. Any flow through the outfall is considered a discharge and must be sampled and reported per permit requirements. Daily maximums and monthly averages are required for continuous discharges per 40 CFR 122.45(d)(1). Weekly limits are not available for non-POTWs.

EMERGENCY DISCHARGE

For non-discharging permits, some permits may allow a small amount of wastewater discharge under very specific circumstances.

✓ Not applicable; this permit does not contain conditions allowing emergency discharges.

FEDERAL EFFLUENT LIMITATION GUIDELINES

Effluent Limitation Guidelines (ELGs) are found at 40 CFR 400-499. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-N These are limitations established by the EPA based on the type of activities a facility is conducting. Most ELGs are for process wastewater and some address stormwater. Effluent guidelines are not always established for every pollutant present in a point source discharge. In many instances, EPA promulgates effluent guidelines for an indicator pollutant. Industrial facilities complying with the effluent guidelines for the indicator pollutant will also control other pollutants (e.g. pollutants with a similar chemical structure). For example, EPA may choose to regulate only one of several metals present in the effluent from an industrial category, and compliance with the effluent guidelines will ensure similar metals present in the discharge are adequately controlled. All are technology-based limitations which must be met by the applicable facility at all times. If Reasonable Potential is established for any particular parameter, and water-quality based effluent limits are more protective of the receiving water's quality, the WQBEL will be used as the limiting factor in accordance with 40 CFR 122.44(d) and 10 CSR 20-7.015(9)(A).

✓ The facility has an associated ELG at 40 CFR 432 Subpart B for Complex Slaughterhouses is applicable to the wastewater discharge at this site and is applied under 40 CFR 125.3(a).

✓ See table below.

	40 CFR 432.25(b)		Pounds	ELG multiplier	ELG Limits, pounds per day		ELG		ELG Limits; Concentration mg/L	
			LWK	Pounds	Permit	Permit	Flow		Com-pare	Com-pare
	Daily	Monthly		per 1000#	Daily Limit	Monthly Limit		Multiplier	Daily Limit	Monthly Limit
BOD (BPT)	0.42	0.21	2,400,000	0.001	1,008	504	1.5	0.1199041	80.58	40.29
O&G (BAT)	0.16	0.08	2,400,000	0.001	384	192	1.5	0.1199041	30.70	15.35
TSS (BPT)	0.5	0.25	2,400,000	0.001	1,200	600	1.5	0.1199041	95.92	47.96
Ammonia (NSPS) mg/L	8.0	4.0			0	0	1.5	0.1199041	8.0	4.0
TN (NSPS) mg/L	194	134			0	0	1.5	0.1199041	194	134

NSPS is new source performance standards.
See additional information under TECHNOLOGY BASED EFFLUENT LIMITS (TBEL) below.

Post May 2024 PN Note: When transcribing the table above, the flow value in the TSS column was 15 MGD which resulted in inaccurate TSS values of 9.59 mg/L daily max and 4.80 mg/L monthly average. The correct flow is 1.5 MGD which, when corrected is 95.92 mg/L daily maximum, and 47.96 mg/L monthly average. No permit decisions were based on these incorrect values because the development spreadsheet was correct at the time of performing permit determinations.

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

FIRE PROTECTION (HYDRANT) TESTING WATER (OUTDOOR)
Hydrant testing wastewater can be considered a water contaminant source pursuant to 644.016(25), dependent on the management strategies, which is why the department asks for additional information about these wastewaters. The Federal and State requirements necessitate a reasonable potential determination for all wastewater; hydrant testing is a type of wastewater with intermittent discharge, and is not considered an emergency. Information regarding fire protection is included under illicit discharges for MS4s, and no other regulation allows for any further exemptions, unless the department makes a finding of de minimis. Missouri Clean Water Law requires the department to perform due diligence for all wastewater discharges and all permits (general and site specific). Permit conditions now have specific requirements to manage outdoor hydrant testing logically; and relevant to the pollutants contained in the fire protection testing wastewater. If the facility follows the appropriate management strategy, the permit will cover the discharges. If the facility does not use chlorinated water in the fire protection system, then the facility may allow the wastewater to directly enter a stream or storm collection system, given that sufficient energy dissipation strategies are followed to ensure that solids from soils or other sources are not being entrained in the wastewater. For facilities with chlorinated fire protection testing water, the facility must utilize a strategy to ensure chlorinated water is not being introduced into the waterbody. This could be by allowing the water to soak in to the surrounding vegetation, or by retaining the water through a permanent or temporary berm for sufficient time to infiltrate, or other appropriate BMP. Other management strategies exist, and it is the responsibility of the facility to operate all systems to minimize pollution to waters of the state and United States.

- ✓ The facility indicated that unchlorinated water will be used in the test, and the testing will occur annually for 2-5 minutes per hydrant. This is a *de minimis* discharge; therefore, no effluent limits are necessary as long as BMPs are followed.

GENERAL CRITERIA CONSIDERATIONS
In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into permits for pollutants determined to cause, have reasonable potential to cause, or to contribute to, an excursion above any water quality standard, including narrative water quality criteria. In order to comply with this regulation, permit decisions were made by completing a reasonable potential determination on whether discharges have reasonable potential to cause or contribute to an excursion of the general criteria listed in 10 CSR 20-7.031(4). See Part III REASONABLE POTENTIAL for more information. In instances where reasonable potential exists, the permit includes limitations to address the reasonable potential. In discharges where reasonable potential does not exist, the permit may include monitoring to later determine the discharge's potential to impact the narrative criteria. Additionally, 644.076.1 RSMo, and Part I §D – Administrative Requirements of Standard Conditions included in this permit state it shall be unlawful for any person to cause or allow any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of §§644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule, or regulation promulgated by the commission. See Part IV for specific determinations.

GOOD HOUSEKEEPING PRACTICES
Good housekeeping is a practical, cost-effective way to maintain a clean and orderly facility to prevent potential pollution sources from coming into contact with stormwater. It includes establishing protocols to reduce the possibility of mishandling materials or equipment and employee training. Common areas where good housekeeping practices should be followed include trash containers and adjacent areas, material storage areas, vehicle and equipment maintenance areas, and loading docks. Good housekeeping practices

must include a schedule for regular pickup and disposal of garbage and waste materials and routine inspections of drums, tanks, and containers for leaks and structural conditions. Practices also include containing and covering garbage, waste materials, and debris. Involving employees in routine monitoring of housekeeping practices is an effective means of ensuring the continued implementation of these measures.

Specific good housekeeping may include:

- ◆ Spill and overflow protection under chemical or fuel connectors to contain spillage at liquid storage tanks
- ◆ Load covers on residue hauling vehicles and ensure gates on trucks are sealed and the truck body is in good condition
- ◆ Containment curbs around loading/unloading areas or tanks
- ◆ Techniques to reduce solids residue which may be tracked on to access roads traveled by residue trucks or residue handling vehicles.
- ◆ Techniques to reduce solid residue on exit roads leading into and out of residue handling areas

Where feasible, minimizing exposure of potential pollutant sources to precipitation is an important control option. Minimizing exposure prevents pollutants, including debris, from coming into contact with precipitation and can reduce the need for BMPs to treat contaminated stormwater runoff. It can also prevent debris from being picked up by stormwater and carried into drains and surface waters. Examples of BMPs for exposure minimization include covering materials or activities with temporary structures (e.g., tarps) when wet weather is expected or moving materials or activities to existing or new permanent structures (e.g., buildings, silos, sheds). Even the simple practice of keeping a dumpster lid closed can be a very effective pollution prevention measure. For erosion and sediment control, BMPs must be selected and implemented to limit erosion on areas of your site that, due to topography, activities, soils, cover, materials, or other factors, are likely to experience erosion. Erosion control BMPs such as seeding, mulching, and sodding prevent soil from becoming dislodged and should be considered first. Sediment control BMPs such as silt fences, sediment ponds, and stabilized entrances trap sediment after it has eroded. Sediment control BMPs should be used to back-up erosion control BMPs.

GROUNDWATER MONITORING

Groundwater is a water of the state according to 644.016(27) RSMo, is subject to regulations at 10 CSR 20-7.015(7) and 10 CSR 20-7.031(6) and must be protected accordingly.

✓ This facility is not required to monitor groundwater for the water protection program as there are no sub-surface discharges.

ICE-MELT PRODUCT REMOVAL

The department is authorized to require BMPs for facilities per 40 CFR 122.44(k)(2). The facility must apply traction control materials judiciously. The facility should, to the extent practicable, remove large pieces of salt as soon as possible. After winter weather has ceased for the year, the facility should inspect all low-lying areas for extra salt and sand and remove these as soon as possible. Salt applied to large areas has the potential to cause freshwater salinization which could result in a fish kill of sensitive species. To reduce potential for solids entering a stream, sand or other traction control materials will need to be evaluated against the probability that these materials could cause general criteria violations of solids and bottom deposits per 10 CSR 20-7.031(4).

LAND APPLICATION

Land application, which is surficial dispersion of wastewater or surficial spreading of sludge can be performed by facilities as an alternative to discharging. Authority to regulate these activities is pursuant to 644.026 RSMo. The department implements requirements for these types of operations pursuant to 10 CSR 20-6.015(4)(A)1 which instructs the department to develop permit conditions containing limitations, monitoring, reporting, and other requirements to protect soils, crops, surface waters, groundwater, public health, and the environment. Sub-surface dispersion or application of wastewater is typically considered a Class V UIC system; See UNDERGROUND INJECTION CONTROL section below.

✓ Not applicable; this permit does not authorize operation of a surficial land application system to disperse wastewater or sludge.

LAND DISTURBANCE

Land disturbance, sometimes called construction activities, are actions which cause disturbance of the root layer or soil; these include clearing, grading, and excavating of the land. 40 CFR 122.26(b)(14) and 10 CSR 20-6.200(3) requires permit coverage for these activities. Coverage is not required for facilities when only providing maintenance of original line and grade, hydraulic capacity, or to continue the original purpose of the facility.

✓ Not applicable; this permit does not provide coverage for land disturbance activities. The facility has a separate land disturbance permit (MORA).

METALS

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in the *Technical Support Document For Water Quality-based Toxic Controls* (EPA/505/2-90-001) and *The Metals Translator: Guidance For Calculating a Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007). "Aquatic Life Protection" in 10 CSR 20-7.031 Tables A1 and A2, and general criteria protections in 10 CSR 20-7.031(4) apply to this discharge. The hardness value used for hardness-dependent metals calculations is typically based on the ecoregion's 50th percentile (also known as the median) per 10 CSR 20-7.015(1)(CC), and is reported in the calculations below, unless site specific data was provided. Per a memorandum dated August 6,

2019, the Director has determined limit derivation must use the median of the Level III Ecoregion to calculate permit limits, or site specific data if applicable. Additional use criterion (HHP, DWS, GRW, IRR, or LWW) may also be used, as applicable, to determine the most protective effluent limit for the receiving waterbody's class and uses. HHP, DWS, GRW, IRR, or LWW do not take hardness into account.

MODIFICATION REQUESTS

Facilities have the option to request a permit modification from the department at any time under RSMo 644.051.9. Requests must be submitted to the Water Protection Program with the appropriate forms and fees paid per 10 CSR 20-6.011. It is recommended facilities contact the program early so the correct forms and fees are submitted, and the modification request can be completed in a timely fashion. Minor modifications, found in 40 CFR 122.63, are processed without the need for a public comment period. Major modifications, those requests not explicitly fitting under 40 CFR 122.63, do require a public notice period. Modifications to permits must be completed when: a new pollutant is found in the discharge; operational or functional changes occur which affect the technology, function, or outcome of treatment; the facility desires alternate numeric benchmarks; or other changes are needed to the permit.

Modifications are not required when utilizing or changing additives in accordance with the publication https://dnr.mo.gov/document-search/additive-usage-wastewater-treatment-facilities-pub2653/pub2653 nor are required when a temporary change or provisional discharge has been authorized by the regional office. While provisional discharges may be authorized by the regional office, they will not be granted for more than the time necessary for the facility to obtain an official modification from the Water Protection Program. Temporary provisional discharges due to weather events or other unforeseen circumstances may or may not necessitate a permit modification. The facility may ask for a Compliance Assistance Visit (CAV) from the regional office to assist in the decision-making process; CAVs are provided free to the permitted entity.

OPERATOR CERTIFICATION REQUIREMENTS

Operators or supervisors of operations at regulated domestic wastewater treatment facilities shall be certified in accordance with 10 CSR 20-9 and any other applicable state law or regulation.

- ✓ Not applicable; this facility is not owned or operated by a municipality, public sewer district, county, public water supply district, or private sewer company regulated by the Public Service Commission or operated by a state or federal agency.
- ✓ After the permit is transferred to the district, a certified operator will be required.

REASONABLE POTENTIAL (RP)

Regulations per 10 CSR 20-7.015(9)(A)2 and 40 CFR 122.44(d)(1)(i) require effluent limitations for all pollutants which are (or may be) discharged at a level causing or have the reasonable potential to cause (or contribute to) an in-stream excursion above narrative or numeric water quality standards. Per 10 CSR 20-7.031(4), general criteria shall be applicable to all waters of the state at all times; however, acute toxicity criteria may be exceeded by permit allowance in zones of initial dilution, and chronic toxicity criteria may be exceeded by permit allowance in mixing zones. A reasonable potential analysis (RPA) is a numeric RP decision calculated using effluent data provided by the facility for parameters that have a numeric Water Quality Standard (WQS). If any given pollutant has the reasonable potential to cause or contribute to an in-stream excursion above the WQS or derived WQBEL, the permit must contain a WQBEL for the pollutant per 40 CFR Part 122.44(d)(1)(iii) and the most stringent limits per 10 CSR 20-7.031(9)(A). The RPA is performed using the *Technical Support Document for Water Quality Based Toxics Control (TSD)* methods (EPA/505/2-90-001) for continuous discharges. See additional considerations under Part II WATERBODY MIXING CONSIDERATIONS and Part III WASTELOAD ALLOCATIONS. Wasteload allocations are determined utilizing the same equations and statistical methodology. Absent sufficient effluent data, WQBELs are derived without consideration of effluent variability and is assumed to be present unless found to be absent to meet the requirements of antidegradation review found in 10 CSR 20-7.031(3) and reporting of toxic substances pursuant to 40 CFR 122.44(f). The department's permit writer's manual (https://dnr.mo.gov/water/business-industry-other-entities/technical-assistance-guidance/wastewater-permit-writers-manual), the EPA's permit writer's manual (https://www.epa.gov/npdes/npdes-permit-writers-manual), program policies, and best professional judgment guide each decision. Each parameter in each outfall is carefully considered; and all applicable information regarding: technology based effluent limitations, effluent limitation guidelines, water quality standards, inspection reports, stream water quality information, stream flows, uses assigned to each waterbody, and all applicable site specific information and data gathered by the facility through discharge monitoring reports and renewal (or new) application sampling.

Reasonable potential determinations (RPD) are based on physical conditions of the site as provided in Sections 3.1.2, 3.1.3, and 3.2 of the TSD using best professional judgement. An RPD consists of evaluating visual observations for compliance with narrative criteria, non-numeric information, or small amounts of numerical data (such as 1 data point supplied in the application). Narrative criteria with RP typically translate to a numeric WQBEL, so a parameter's establishment being based on narrative criteria does not necessarily make the decision an RPD vs RP—how the data is collected does, however. For example, a facility with orange discharge can have RP for narrative criteria like color, but a numeric iron limit is established to account for the violation of narrative criteria based on effluent data submitted by the facility. When insufficient data is received to make a determination on RP based on numeric effluent data, the RPD decisions are based on best professional judgment considering the type of effluent discharged, the current operational controls in place, and historical overall management of the site. In the case of iron causing excursions of narrative criteria for color, if

a facility has not had iron monitoring in a previous permit, adding iron monitoring would be an RPD, since numeric data isn't being used in the determination, but observable, site-specific conditions are.

When the facility is performing surficial or subsurface land application, the volume of water, frequency of application, type of vegetation, soil type, land slopes, and general overall operating conditions are considered. 10 CSR 20-8 are regulations for the minimum operating conditions for land application; these regulations cannot be excused even if there is no RP. RP is reserved for discharging outfalls given that these outfalls are the only ones which water quality standards apply to, but the process is similar as the site conditions are compared to regulations, soil sampling, pollutant profile, and other site-specific conditions. In the case of non-discharging outfalls, an RPD is instead used to determine monitoring requirements.

RPDs are also performed for WET testing in wastewater. While no WET regulations specific to industrial wastewater exist, 40 CFR 122.21(j)(5) implies the following can be considered: 1) the variability of the pollutants; 2) the ratio of wastewater flow to receiving stream flow; and 3) current technology employed to remove toxic pollutants. Generally, sufficient data does not exist to mathematically determine RPA for WET, but instead compares the data for other toxic parameters in the wastewater with the necessity to implement WET testing with either monitoring or limits. When toxic parameters exhibit RP, WET testing is generally included in the permit as an RPD. However, if all toxic parameters are controlled via limitations or have exhibited no toxicity in the past, then WET testing may be waived. Only in instances where the wastewater is well characterized can WET testing be waived.

TSD methods encountered may be § 3.3.2, § 5.7.3 for metals, and § 5.4.1 for chloride. Part IV EFFLUENT LIMIT DETERMINATIONS provides specific decisions related to this permit. In general, removal of a WQBEL if there is no RP is not considered backsliding, see ANTIBACKSLIDING for additional information.

✓ No statistical RPAs were performed for this permit. The WQAR and application determined pollutants of concern.

REGIONAL OFFICES (ROS)

Regional Offices will provide a compliance assistance visit at a facility's request; a regional map with links to phone numbers can be found here: https://dnr.mo.gov/about-us/division-environmental-quality/regional-office. Or use https://dnr.mo.gov/compliance-assistance-enforcement to request assistance from the Region online.

SAMPLING FREQUENCY JUSTIFICATION

40 CFR 122.45(d)(1) indicates all continuous discharges, such as wastewater discharges, shall be permitted with daily maximum and monthly average limits. Minimum sampling frequency for all parameters is annually per 40 CFR 122.44(i)(2). This facility is a new facility; monthly sampling is required to determine if the facility will be in compliance with the operating permit in accordance with Appendix U of Missouri's Water Pollution Control Permit Manual. While the WQAR did not assign a sampling frequency, the WQAR did assign some parameters with weekly averages in place of daily maximums. Daily maximums must be implemented in industrial permits; weekly averages are only allowed for publicly owned treatment works.

SAMPLING TYPE JUSTIFICATION

The sampling types are representative of the discharges and are protective of water quality. Composite sampling is required for mechanical plants per 10 CST 20-7.015(8)(B)2.B. However, certain parameters must have grab sampling: pH, ammonia, *E. coli*, total residual chlorine, free available chlorine, dissolved oxygen, total phosphorus, volatile organic compounds, and others. See Table A-1.

SCHEDULE OF COMPLIANCE (SOC)

A schedule of compliance is time allowed to meet future more stringent limitations. The SOC can also be remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, effluent limits, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and the terms and conditions of an operating permit. SOCs are allowed under 40 CFR 122.47 and 10 CSR 20-7.031(11) providing certain conditions are met.

✓ Not applicable; this permit does not contain an SOC; SOCs are not allowed for new permits as the design and construction of all new facilities must be consistent with all terms and conditions of state and federal regulations per 40 CFR 122.47(a)(2). Pursuant to 644.029 RSMo, all new permit applicants are required to meet the new requirements at the time the permit is issued to them.

SPILLS, OVERFLOWS, AND OTHER UNAUTHORIZED DISCHARGE REPORTING

Per 260.505 RSMo, any emergency involving a hazardous substance must be reported to the department's 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest possible moment after discovery. The department may require the submittal of a written report detailing measures taken to clean up a spill. These reporting requirements apply whether or not the spill results in chemicals or materials leaving the permitted property or reaching waters of the state. This requirement is in addition to the noncompliance reporting requirement found in Standard Conditions Part I.
https://revisor.mo.gov/main/OneSection.aspx?section=260.500&bid=13989&hl=

Any other spills, overflows, or unauthorized discharges reaching waters of the state must be reported to the regional office during normal business hours, or after normal business hours, to the department's 24-hour Environmental Emergency Response spill line at 573-634-2436.

Certain industrial facilities are subject to the self-implementing regulations for Oil Pollution Prevention in 40 CFR 112, and are required to initiate and follow Spill Prevention, Control, and Countermeasure (SPCC) Plans. This permit, as issued, is not intended to be a replacement for any SPCC plan, nor can this permit's conditions be automatically relaxed based on the SPCC plan if the permit is more stringent than the plan.

NPDES permits cannot, by their nature, permit spills or treatment failures because spills and treatment failures are not planned. It is the responsibility of the facility to ensure that all treatment technologies are operated so that they meet the terms and conditions of this permit at all times.

SLUDGE – INDUSTRIAL

Industrial sludge is solid, semi-solid, or liquid residue generated during the treatment of industrial process or non-process wastewater in a treatment works; including but not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment process; scum and solids filtered from water supplies and backwashed; and any material derived from industrial sludge. Industrial sludge could also be derived from holding structure dredging or other similar maintenance activities. Certain oil sludge, like those from oil water separators, are subject to self-implementing federal regulations under 40 CFR 279 for used oils.

- ✓ Applicable; DAF sludge is removed by contract hauler. Sludge is not permitted for discharge or land application under this permit.

STANDARD CONDITIONS

The standard conditions Part I attached to this permit incorporate all sections of 10 CSR 20-6.010(8) and 40 CFR 122.41(a) through (n) by reference as required by law. These conditions, in addition to the conditions enumerated within the standard conditions must be reviewed by the facility to ascertain compliance with this permit, state regulations, state statutes, federal regulations, and the Clean Water Act.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A SWPPP must be prepared by the facility if the SIC code is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2).

- ✓ Not applicable; this facility has attested that the stormwater at this site is not industrially exposed. A SWPPP requirement will be added to the Wright City South WWTF permit when transferred because the Wright City South WWTF will be a "major" facility.

SUFFICIENTLY SENSITIVE ANALYTICAL METHODS

Please review Standard Conditions Part 1, §A, No. 4. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 or 40 CFR 136 unless alternates are approved by the department and incorporated within this permit. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure the selected methods are able to quantify the presence of pollutants in any given discharge at concentrations low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. The reporting limits established by the chosen laboratory must be below the lowest effluent limits established for the specified parameter (including any parameter's future limit after an SOC) in the permit unless the permit provides for an ML or if the facility provides a written rationale to the department. It is the facility's responsibility to ensure the laboratory has adequate equipment and controls in place to quantify the pollutant. Inflated reporting limits will not be accepted by the department if the reporting limit is above the parameter value stipulated in the permit. A method is "sufficiently sensitive" when; 1) the method quantifies the pollutant below the level of the applicable water quality criterion or; 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015 and or 40 CFR 136. These methods are also required for parameters listed as monitoring only, as the data collected may be used to determine if numeric limitations need to be established. A facility is responsible for working with their contractors to ensure the analysis performed is sufficiently sensitive.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS (TBEL)

One of the major strategies of the Clean Water Act (CWA) in making "reasonable further progress toward the national goal of eliminating the discharge of all pollutants" is to require effluent limitations based on the capabilities of the technologies available to control those discharges. Technology-based effluent limitations (TBELs) aim to prevent pollution by requiring a minimum level of effluent quality attainable using demonstrated technologies for reducing discharges of pollutants or pollution into the waters of the United States. TBELs are developed independently of the potential impact of a discharge on the receiving water, which is addressed through water quality standards and water quality-based effluent limitations (WQBELs).

POC = Pollutants of Concern
BPT = **Best Practicable Control Technology Currently Available** is defined at CWA section 304(b)(1)
BCT = **Best Conventional Pollutant Control Technology**, defined at CWA section 304(b)(4)
BAT = **Best Available Technology Economically Achievable** is defined at CWA section 304(b)(2)

Case-by-case TBELs, such as those completed under an antidegradation review, are developed pursuant to CWA section 402(a)(1), which authorizes the administrator to issue a permit meeting either, 1) all applicable requirements developed under the authority of other sections of the CWA (e.g., technology-based treatment standards, water quality standards) or, 2) before taking the necessary implementing actions related to those requirements, "such conditions as the administrator determines are necessary to carry out the provisions of this Act." The regulation at §125.3(c)(2) specifically cite this section of the CWA, stating technology-based treatment requirements may be imposed in a permit "on a case-by-case basis under section 402(a)(1) of the Act, to the extent that EPA-promulgated effluent limitations are inapplicable." Further, §125.3(c)(3) indicates "where promulgated effluent limitations guidelines only apply to certain aspects of the discharger's operation, or to certain pollutants, other aspects or activities are subject to regulation on a case-by-case basis to carry out the provisions of the act." When establishing case-by-case effluent limitations using best professional judgment, the permit writer should cite in the fact sheet or statement of basis both the approach used to develop the limitations, discussed below, and how the limitations carry out the intent and requirements of the CWA and the NPDES regulations.

✓ Each parameter was evaluated in this permit to provide the most stringent and most protective limit pursuant to 40 CFR 122.44(b)(1) and 10 CSR 20-7.015(9)(A) respectively.

UNDERGROUND INJECTION CONTROL (UIC)

Class V wells are sub-surface dispersal or injection of any industrial wastewater; and in certain circumstances, may also be considered a Class V well if it is domestic wastewater. They can also be shallow injection wells like heat pumps and groundwater remediation wells. UIC systems may be described as having "septic tanks" or "lateral lines" in addition to the traditional well type of injection. The UIC program for all classes of wells in the State of Missouri is administered by the Missouri Department of Natural Resources and approved by EPA pursuant to §§1422 and 1425 of the Safe Drinking Water Act (SDWA) and 40 CFR 147 Subpart AA. Injection wells are classified based on the liquids which are being injected. Class I wells are hazardous waste wells which are banned by 577.155 RSMo; Class II wells are established for oil and natural gas production; Class III wells are used to inject fluids to extract minerals; Class IV wells are also banned by Missouri in 577.155 RSMo. In accordance with 40 CFR 144.82, construction, operation, maintenance, conversion, plugging, or closure of injection wells shall not cause movement of fluids containing any contaminant into Underground Sources of Drinking Water (USDW) if the presence of any contaminant may cause a violation of any drinking water standards or groundwater standards under 10 CSR 20-7.031, or other health based standards, or may otherwise adversely affect human health. If the director finds the injection activity may endanger USDWs, the department may require closure of the injection wells, or other actions listed in 40 CFR 144.12(c), (d), or (e). In accordance with 40 CFR 144.26, the facility shall submit a Class V Well Inventory Form for each active or new underground injection well drilled, or when the status of a well changes, to the Missouri Department of Natural Resources, Geological Survey Program, P.O. Box 250, Rolla, Missouri 65402. The Class V Well Inventory Form can be requested from the Geological Survey Program or can be found at the following web address: https://dnr.mo.gov/document-search/class-v-well-inventory-form-mo-780-1774 Single family residential septic systems and non-residential septic systems used solely for sanitary waste and having the capacity to serve fewer than 20 persons a day are excluded from the UIC requirements (40 CFR 144.81(9)). The department implements additional requirements for these types of operations pursuant to 10 CSR 20-6.015(4)(A)1 which instructs the department to develop permit conditions containing limitations, monitoring, reporting, and other requirements to protect soils, crops, surface waters, groundwater, public health, and the environment.

✓ Not applicable; the facility has not submitted materials indicating the facility is or will be performing UIC at this site.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS

Per 10 CSR 20-2.010; definitions, the WLA is the maximum amount of pollutant each discharger is allowed to discharge into the receiving stream without endangering water quality. Only streams with available load allocations can be granted discharge allowances. Outfalls afforded mixing allocations provide higher limits because the receiving stream is able to accept more pollutant loading without causing adverse impacts to the environment or aquatic life.

✓ Applicable; wasteload allocations for toxic parameters were calculated using water quality criteria or water quality model results and by applying the dilution equation below. These equations are statistical equations (See Part III – REASONABLE POTENTIAL ANALYSIS) used to calculate the hypothetical or actual variability of the wastewater and the spreadsheet output obtains an effluent limit. Most toxic parameter's WLAs are calculated using the *Technical Support Document For Water Quality-Based Toxics Control* or "TSD" EPA/505/2-90-001; 3/1991, §4.5.5.

$$C = \frac{(Cs \times Qs) + (Ce \times Qe)}{(Qe + Qs)}$$

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

✓ Criteria maximum concentration (CMC) are the acute in-stream standards for a specific pollutant.
✓ Criteria continuous concentration (CCC) are the chronic in-stream standards for a specific pollutant.

- ✓ Acute wasteload allocations (WLAa) are designated as daily maximum limits (maximum daily limit: MDL)., were determined using applicable water quality criteria.
- ✓ Chronic wasteload allocations (WLAc) are designated as monthly average limits (average monthly limit: AML) and are typically the most stringent limits applied. Facilities subject to average monthly limits are welcome to take additional samples in the month to meet any lower limit by averaging the results. When only one sample is taken in the month, the sample result is applied to both the daily maximum and monthly average.
- ✓ Mixing: when a stream's flow 7Q10 is above 0.1 cfs, (or lake width is sufficient) the discharge may be afforded mixing allowances. The mixing criteria for toxics are found at 10 CSR 20-7.031(5)(A)4 and a full explanation of mixing is found in Part II – WATERBODY MIXING CONSIDERATIONS.
- ✓ Number of Samples "n": effluent quality is determined by the underlying distribution of daily values, 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 assumption which is, at a minimum, targeted to comply with the values dictated by the WLA. Therefore, it is recommended the actual planned frequency of monitoring 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 uses an assumed number of samples "n = 4". See additional information under Part III – REASONABLE POTENTIAL ANALYSIS

WHOLE EFFLUENT TOXICITY (WET) TEST

A WET test is a quantifiable method to conclusively determine if discharges from the facility cause toxicity to aquatic life by itself, in combination with, or through synergistic responses, typically when mixed with receiving stream water. Under the CWA §101(a)(3), requiring WET testing is reasonably appropriate for Missouri State Operating Permits to quantify toxicity. WET testing is also required by 40 CFR 122.44(d)(1) when RP is found. WET testing ensures the provisions in 10 CSR 20-6 and Missouri's Water Quality Standards in 10 CSR 20-7 are being met; the acute WQS for WET is 0.3 TUa. Under 10 CSR 20-6.010(8)(A)4, the department may require other terms and conditions it deems necessary to ensure compliance with the CWA and related regulations of the Missouri Clean Water Commission. Missouri Clean Water Law (MCWL) RSMo 644.051.3 requires the department to set permit conditions complying with the MCWL and CWA. 644.051.4 RSMo specifically references toxicity as an item the department must consider in permits (along with water quality-based effluent limits); and RSMo 644.051.5 is the basic authority to require testing conditions. Requirements found in the federal application requirements for POTWs (40 CFR 122.21(j)(5)) do not apply to industrial facilities, therefore WET testing can be implemented on a case-by-case basis following the factors outlined below. Annual testing is the minimum testing frequency if reasonable potential is found; monitoring requirements promulgated in 40 CFR 122.44(i)(2) state "requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge, but in no case less than once per year." To determine reasonable potential, factors considered are: 1) history of toxicity; 2) quantity and quality of substances (either limited or not) in the permit with aquatic life protections assigned; and 3) operational controls on toxic pollutants. See Part III under REASONABLE POTENTIAL for additional information. A facility does not have to be designated as a major facility to receive WET testing; and being a major facility does not automatically require WET testing. Additionally, per 40 CFR 122.44(d)(1)(v), limits on whole effluent toxicity are not necessary where the permitting authority demonstrates in the fact sheet, using the procedures in 40 CFR 122.44(d)(1)(ii) of this section, that chemical-specific limits or specified operational controls are sufficient to attain and maintain applicable numeric and narrative water quality standards.

If WET limits are applied to this facility, follow up testing applies. When a facility exceeds the TU established in the permit, three additional follow-up tests are triggered. The follow up test results do not negate the initial testing result. If the facility is within the prescribed TU limit for all three follow up tests, then no further testing is required until the next regularly scheduled tests. If one or more additional tests exceed the TU limit, the facility may consider beginning the Toxicity Identification Evaluation (TIE) and Toxicity Identification Reduction (TRE) processes instead of waiting for three consecutive TU exceedances. The TIE and TRE process can take up to two years, especially when toxicity is variable or transient. We urge facilities to work closely with their WET testing laboratory to follow nationwide guidance for determining causes of toxicity and curative activities to remove toxicity. Additional wastewater controls may be necessary; and while, generally, no Construction Permit (CP) is required for adding treatment at industrial facilities, the facility may check with the Engineering Section to determine a plan of action.

If WET testing failures are from a known toxic parameter, and the facility is working with the department to alleviate that pollutant's toxicity in the discharge, please contact the department prior to conducting follow-up WET testing. Under certain conditions, follow-up testing may be waived when the facility is already working to reduce and eliminate toxicity in the effluent. For the purposes of reporting, the laboratory may supply either the TU value, the LC_{50}, or the NOEC. If the laboratory only supplied the LC_{50} or the NOEC value, the toxic unit is calculated by $100/LC_{50}$ for acute tests, or 100/NOEC for chronic tests. The TU value is entered in the eDMR system. Reports showing no toxicity are usually entered as <1.

- ✓ Applicable; WET testing is found in this permit. See additional information regarding the decision points for WET testing in Part IV of the fact sheet. Ammonia, chloride, and iron are considered aquatic life toxic parameters.

PART IV. EFFLUENT LIMIT DETERMINATIONS

OUTFALL #001 – MAIN FACILITY OUTFALL

EFFLUENT LIMITATIONS TABLE:

PARAMETERS	UNIT	DAILY MAX	MONTHLY AVG.	MINIMUM SAMPLING FREQUENCY	REPORTING FREQUENCY	SAMPLE TYPE
PHYSICAL						
FLOW	MGD	*	3.5	CONTINUOUS ⁂	MONTHLY	24 HR. TOT
HEAD COUNT PROCESSED	#	2400	-	DAILY	MONTHLY	TOTAL
BACTERIA						
E. COLI ǂ (ALL YEAR)	#/100mL	1030	206	ONE/WEEK ‡	MONTHLY	GRAB
FECAL COLIFORM (ALL YEAR, ELG)	#/100mL	400	*	ONE/MONTH	MONTHLY	GRAB
CONVENTIONAL						
BIOCHEMICAL OXYGEN DEMAND – 5 DAY	mg/L	9.0	6.0	ONE/MONTH	MONTHLY	COMP.
CHLORINE, TOTAL RESIDUAL (TRC) ‡	µg/L	18.1	9.0	ONE/MONTH	MONTHLY	GRAB
OIL & GREASE	mg/L	15	10	ONE/MONTH	MONTHLY	GRAB
OXYGEN, DISSOLVED ⁝ (MINIMUM)	mg/L	7.0 ⁝	*	ONE/MONTH	MONTHLY	GRAB
PH †	SU	6.5 TO 9.0	-	ONE/MONTH	MONTHLY	GRAB
TOTAL SUSPENDED SOLIDS (TSS)	mg/L	15	10	ONE/MONTH	MONTHLY	COMP.
METALS						
IRON, TR	µg/L	1643	819	ONE/MONTH	MONTHLY	COMP.
NUTRIENTS						
AMMONIA AS N	mg/L	2.2	0.7	ONE/WEEK ‡	MONTHLY	COMP.
KJELDAHL NITROGEN, TOTAL (TKN)	mg/L	*	*	ONE/WEEK ‡	MONTHLY	COMP.
NITRATE PLUS NITRITE AS N	mg/L	*	10.0	ONE/WEEK ‡	MONTHLY	COMP.
NITROGEN, TOTAL N (TN)	mg/L	*	11.0	ONE/WEEK ‡	MONTHLY	COMP.
PHOSPHORUS, TOTAL P (TP) – CONC	mg/L	*	1.0	ONE/WEEK ‡	MONTHLY	COMP.
PHOSPHORUS, TOTAL P (TP) – MASS ♣	lbs/mo	*	*	ONE/WEEK ‡♣	MONTHLY	COMP.
PHOSPHORUS, TOTAL P (TP) – ANNUAL ♦	lbs tot		-	ANNUAL	ANNUAL	COMP.
OTHER						
CHLORIDE	mg/L	378	188	ONE/MONTH	MONTHLY	COMP.
WET TEST – CHRONIC CERIODAPHNIA	TUc	1.1	-	ONE/YEAR	ANNUALLY	COMP.
WET TEST – CHRONIC PIMEPHALES	TUc	1.1	-	ONE/YEAR	ANNUALLY	COMP.
INFLUENT MONITORING						
AMMONIA AS N	mg/L	*	*	ONE/MONTH	MONTHLY	COMP.
KJELDAHL NITROGEN, TOTAL (TKN)	mg/L	*	*	ONE/MONTH	MONTHLY	COMP.
NITRATE PLUS NITRITE AS N	mg/L	*	*	ONE/MONTH	MONTHLY	COMP.
NITROGEN, TOTAL N (TN)	mg/L	*	*	ONE/MONTH	MONTHLY	COMP.
PHOSPHORUS, TOTAL P (TP)	mg/L	*	*	ONE/MONTH	MONTHLY	COMP.

See permit for notes.

DERIVATION AND DISCUSSION OF LIMITS:
The majority of these limits were derived in the antidegradation review; see Appendix 1; the limits derived in the water quality and antidegradation review (WQAR) are therefore site-specific limits that cannot be exceeded. However, this permit also reviews other sources of potential effluent limits, such as effluent limitation guidelines (ELG), Missouri Effluent Regulations per 10 CSR 20-7.015 and Missouri WQS found in 10 CSR 20-7.031. Additional sources of limits were derived from modeling. Additional information is found in the WQAR as Appendix 1.

PHYSICAL:

Flow

Per 40 CFR Part 122.44(i)(1)(ii) the volume of effluent discharged from each outfall is needed to ensure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the department, which may require the submittal of an operating permit modification. The facility will report the total maximum daily flow and average in millions of gallons per day (MGD), weekday monitoring is required to effectively determine average flows at this site. The design flow was established at 3.5 MGD; if the facility wishes to discharge more, then a new antidegradation review will need to be completed. The application describes that the average flow will be 3.5 MGD and a maximum flow was 8.5 MGD, however, this facility does not have permission to discharge more than 3.5 MGD on average for the month because the TMDL Qual2K models were run at 3.5 MGD and BOD_5, TN, and TP loading was determined based on the 3.5 value.

In response to public comment, limiting the flow will prevent dilution. Wright City South (MO-0023191) is currently not limited for flow however this limit will be carried over to the new Wright City South treatment plant permit when the ownership is transferred.

Count of Animals Processed

The facility will provide the head count of animals slaughtered each day. A limit is required to ensure that the treatment plant is not overtasked with removing pollutants from the slaughtering process. The design flow is based on the number of cattle slaughtered as well.

BACTERIA:

Escherichia coli (E. coli)

Daily maximum of 1,030 #/100 mL and 206 #/100 mL as a geometric monthly average mean per the WQAR. Weekly sampling for facilities with a design flow over 100,000 gpd 10 CSR 20-7.015(9)(D)7.A. See permit ǂ. An effluent limit for both daily maximum and monthly geometric mean is required by 40 CFR 122.45(d). The geometric mean is calculated by multiplying all of the data points and then taking the n^{th} root of this product, where n = # of samples collected. For example: Five *E. coli* samples were collected with results of 1, 4, 5, 6, and 10 (#/100 mL). Geometric mean = 5^{th} root of (1)(4)(5)(6)(10) = 5^{th} root of 1,200 = 4.1 #/100 mL. This is the same limit as the Wright City South (MO-0023191) permit.

Post May 2024 PN note: commenters noted that parameters needed to be sampled more frequently. The permit writer requested additional information about the development of *E. coli* standards and why, traditionally, E. coli was not established for winter months. The answer was that because dechlorination can produce some disinfection byproducts, the water quality standards unit weighed the pollutants and determined that chlorination was only necessary for the recreational season. However, for this permit, the operator has stated they will be disinfecting (via UV) all year. This means that *E. coli* limits should be established all year.

Fecal Coliform

400 #/100 mL daily maximum per the WQAR. This limit is applicable all year. Because this is an ELG limit, the parameter may be removed at ownership transfer. However, because the WQAR identified this pollutant as required, this limit will remain unless the pollutant no longer has RP per 10 CSR 20-7.031(3) and 10 CSR 20-7.015(9)(A)5.

Post May 2024 PN note: the citation in the WQAR references simple slaughterhouses. However, this is a complex slaughterhouse. The regulatory requirements for Fecal Coliform in all parts in 40 CFR 432 is 400 #/100 mL. 40 CFR 432.15(b)(1) for new source performance standards (NSPS) references 40 CFR 432.12(a)(1) which is within Subpart A for simple slaughterhouses.

CONVENTIONAL:

Biochemical Oxygen Demand, 5-Day (BOD_5)

Effluent limits per the WQAR at 9.0 mg/L daily maximum, and 6.0 mg/L monthly average.

The Wright City South (MO-0023191) permit's limits are 45 mg/L weekly average, and 30 mg/L weekly average. The new limits from this permit will be carried over to the new Wright City South permit therefore this new permit is more stringent than the current permit in place.

Chlorine, Total Residual (TRC)

This pollutant has reasonable potential because of the standard operating procedures for washdown of processing equipment. There are no technology limits established for this parameter therefore water quality limits are the most protective. The effluent limits are calculated as follows; however, the department has established an ML for this parameter; the ML is 130 µg/L, see note ‡ in the permit. This parameter must be measured within the 15-minute holding time. This pollutant was not identified in the

WQAR, however, after review of normal operations for meat processors, TRC is a pollutant of concern for the industry. See antimicrobial treatment in https://www.bifsco.org/Media/BIFSCO/Docs/bp_for_beef_harvet_final_2020_03-25-2021-79.pdf *Best Practices for Beef Harvest*, February 2016. In an antidegradation public notice comment, a commenter described cleaning products as cause of concern. In an email dated June 27, 2024, the applicant noted that the treatment part of the facility is not using chlorine as a disinfectant, but is using UV as a final disinfection step.
Acute AQL: 19 µg/L
Chronic AQL: 11 µg/L
LTAa: WLAa * LTAa multiplier = 19 * 0.321 = 6.101 [CV: 0.6, 99th %ile]
LTAc: WLAc * LTAc multiplier = 11 * 0.527 = 5.802 [CV: 0.6, 99th %ile]
use most protective LTA: 5.802
Daily Maximum: MDL = LTA * MDL multiplier = 5.802 * 3.114 = 18.069 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 5.802 * 1.552 = 9.007 µg/L [CV: 0.6, 95th %ile, n=4]

Oil & Grease
15 mg/L daily maximum; 10 mg/L monthly average per the WQAR. This is the same as MO-0023191.

Oxygen, Dissolved
7.0 mg/L minimum daily value per the WQAR and based on Qual2K stream modeling for Peruque Creek.

The current Wright City South (MO-0023191) permit is not limited for DO; this DO limit will be kept for the new Wright City South permit.

pH
6.5 to 9.0 SU – instantaneous grab sample. Water quality limits per 10 CSR 20-7.031(5)(E) are appropriate as WQBEL is more protective than the TBEL. This parameter must be measured within the 15-minute holding time. pH is a fundamental water quality indicator. Additionally, metals leachability and ammonia availability in wastewater is dependent on pH. Limitations in this permit will protect against aquatic organism toxicity, downstream water quality issues, human health hazard contact, and negative physical changes in accordance with the general criteria at 10 CSR 20-7.031(4) and the Clean Water Act's (CWA) goal of 100% fishable and swimmable rivers and streams. The effluent limitations in the previous permit have been revaluated and found to be protective of the receiving stream, is appropriate based on the activities at the site and is established pursuant to 10 CSR 20-7.015(9)(I)1 utilizing best professional judgment and the WQAR. This is the same as MO-0023191.

Total Suspended Solids (TSS)
15 mg/L daily maximum; 10 mg/L monthly average per the WQAR. There is no numeric Missouri WQS for this parameter to be assessed, therefore the WQAR values are appropriate. TSS was assessed for general criteria pursuant to 10 CSR 20-7.031(4)(A) and (H). The above technology limits are also protective of water quality for TSS.

The current Wright City South (MO-0023191) permit is limited at 45 mg/L weekly average and 30 mg/L monthly average. This permit's limits will be kept for the new Wright City South permit when ownership is transferred. This permit is more protective than the current discharge.

These solids limits will greatly reduce any siltation which would be caused by this facility's discharge.

METALS:

Iron, Total Recoverable
The facility indicated that iron compounds may be used for phosphorus treatment and removal therefore iron limits are established per 10 CSR 20-7.015(9)(I)1 utilizing best professional judgment. There are no technology requirements for this facility within the ELG therefore the WQS below are the most stringent limits applicable to this facility.
Chronic AQL: 1000 µg/L
LTAc: WLAc * LTAc multiplier = 1000 * 0.527 = 527.433 [CV: 0.6, 99th %ile]
Daily Maximum: MDL = LTA * MDL multiplier = 527.433 * 3.114 = 1642.7 µg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 527.433 * 1.552 = 818.8 µg/L [CV: 0.6, 95th %ile, n=4]

The facility does not have permission to use aluminum compounds as phosphorous treatment unless an aluminum requirement is added to the permit.

NUTRIENTS:
- Weekly sampling is required for all nutrients per the WQAR.
- Monthly monitoring is established for the nutrients in the influent. For this facility, influent is the point prior to any treatment. Influent monitoring is necessary to determine if the treatment processes are effective at removing pollutants and the facility

continues to be operated appropriately per 40 CFR 122.41(e). While the WQAR only identified TKN, nitrate plus nitrite, ammonia, and phosphorus as applicable for sampling in the influent, this permit establishes reporting total nitrogen also as a parameter in the influent.

- Lake St. Louis is listed as having NNC (numeric nutrient criteria).
- TN and TP nutrient levels fluctuate in-stream diurnally and seasonally based on short term and long-term water temperatures, dissolved oxygen, and sunlight exposure; only a monthly average limit is being implemented. Numerous studies and informative publications such as USGS's Understanding the Influence of Nutrients on Stream Ecosystems in Agricultural Landscapes (https://pubs.usgs.gov/circ/1437/cir1437.pdf) continue to describe natural fluctuations and considerations of processes and pathways that lead to eutrophication therefore only a monthly average for TN and TP is being implemented in this permit. Chlorophyll-a is an indicator pollutant, there are no direct numeric Missouri WQS for Chl-a. See Lake St. Louis Reasonable Potential Analysis https://dnr.mo.gov/document-search/reasonable-potential-analysis-wastewater-treatment-facility-contributions-nutrient-impairment-lake-st-louis-march-30-2020
- The limits in this permit are also presented as response to public concern raised during the antidegradation review public comment period.

Ammonia, Total as Nitrogen

The WQAR established effluent limits at 2.2 mg/L daily maximum and 0.7 mg/L monthly average all year. The effluent limitations are appropriate based on the activities at the site and are established pursuant to 10 CSR 20-7.015(9)(I)1 utilizing best professional judgment and in compliance with the antidegradation requirements within.

The following table shows ammonia limits if they were derived using current procedures; these are less stringent than the WQAR therefore will not be used.

	Temp (°C)	pH	Acute AQL (Daily Max)	Chronic AQL (Monthly Average)
Jan	2.80	7.80	12.1	3.1
Feb	4.40	7.80	12.1	3.1
Mar	9.40	7.90	10.1	2.7
Apr	16.10	8.00	8.4	2.1
May	21.00	7.80	12.1	2.1
Jun	26.00	7.90	10.1	1.3
Jul	29.40	8.00	8.4	0.9
Aug	29.30	8.00	8.4	0.9
Sep	25.60	8.00	8.4	1.2
Oct	19.00	8.00	8.4	1.8
Nov	12.00	8.00	8.4	2.4
Dec	6.90	7.90	10.1	2.7

The current Wright City South (MO-0023191) permit has summer ammonia limits of 8.7 mg/L daily maximum and 4.3 mg/L monthly average; and winter, 10.7 mg/L daily maximum, and 4.5 mg/L monthly average. The limits established in this permit will be kept when this permit is transferred to Wright City South therefore this permit is more protective than the current city permit.

Kjeldahl Nitrogen, Total (TKN)

Monitoring is established pursuant to 10 CSR 20-7.015(9)(I)1 and the WQAR.

Nitrate plus Nitrite

10.0 mg/L monthly average limit is established pursuant to the WQAR; no daily maximum was established. This limit will be kept when transferring to Wright City South. This parameter is not limited in the Wright City South (MO-0023191) permit therefore this permit is more protective than the current city permit.

Nitrogen, Total (TN)

11.0 mg/L monthly average limit is established per the WQAR; no daily maximum was established. This limit will be kept when transferring to Wright City South. This parameter is not limited in the Wright City South (MO-0023191) permit therefore this permit is more protective than the current city permit.

Phosphorus, Total P (TP)

1.0 mg/L monthly average limit is established per the WQAR; no daily maximum was established. This limit will be kept when transferring to Wright City South. This parameter is not limited in the Wright City South (MO-0023191) permit therefore this permit is more protective than the current city permit.

Phosphorus (TP) Annual Total

8523.48 lbs/year annual total is established based on a concentration of 0.8 mg/L to limit the overall load of TP entering the watershed. The facility is limited to a monthly concentration of 1.0 mg/L of TP in the effluent; however, the annual load of TP discharging from the facility is not to exceed 8523.48 lbs/year, which is equivalent to a concentration of 0.8 mg/L of TP. While this facility is principally treating domestic wastewater, the meat processing component is a potential significant source of nutrients through this system. Furthermore, this system is built specifically to treat this mixed industrial and domestic load of nutrients. Based on data used in the development of the proposed updates to the meat processing ELG, meat processing facilities have demonstrated that 0.8 mg/L is an achievable technology. As such, this permit establishes an annual load limitation based on 0.8 mg/L for the design of the facility but retains a monthly limit of 1.0 mg/L as determined to be an appropriately protective of water quality and achievable for a treatment system designed to treat principally domestic wastewater. This limit will be kept when transferring to Wright City South. This parameter is not limited in the Wright City South (MO-0023191) permit therefore this permit is more protective than the current city permit.

Annual Total (lbs/yr) was calculated using the standard loading equation:
Design Flow (MGD) * Max Allowed Effluent Conc (mg/L) * 8.34 (lbs/gallon – the weight of water) * 365 (days/year)
3.5 (MGD) * 0.8 (mg/L) * 8.34 (lbs/gallon) * 365 (days/yr) = 8523.48 (lbs/yr)

OTHER:

Chloride

The facility provided that this parameter was present in the wastewater in the updated application received January 16, 2024, and the limit is established pursuant to 10 CSR 20-7.015(9)(I)1 utilizing best professional judgment.
Acute AQL: 860 mg/L
Chronic AQL: 230 mg/L
LTAa: WLAa * LTAa multiplier = 860 * 0.321 = 276.132 [CV: 0.6, 99th %ile]
LTAc: WLAc * LTAc multiplier = 230 * 0.527 = 121.31 [CV: 0.6, 99th %ile]
use most protective LTA: 121.31
Daily Maximum: MDL = LTA * MDL multiplier = 121.31 * 3.114 = 377.8 mg/L [CV: 0.6, 99th %ile]
Monthly Average: AML = LTA * AML multiplier = 121.31 * 1.552 = 188.3 mg/L [CV: 0.6, 95th %ile, n=4]

Whole Effluent Toxicity (WET) Test, Chronic

Using RPD, there is reasonable potential to cause toxicity in the receiving stream based on the factors listed in Part III, REASONABLE POTENTIAL, and WHOLE EFFLUENT TOXICITY (WET) TEST. The effluent limitations are appropriate based on the activities at the site and is established pursuant to 10 CSR 20-7.015(9)(I)1 utilizing best professional judgment. Annual monitoring is required based on the type of facility, receiving stream, and facility flow. One test that utilizes both species must occur concurrently. The facility will enter a result for *Ceriodaphnia* and another result for *Pimephales*.
Acute AQL: 0.3 TUa
Chronic Assumption: 1 TUc
The AEC is (5.415 CFSdf / (0 CFSzid +5.415 CFSdf)) = 100%
Acute WLA: Ce = ((5.415 CFSdf + 0 CFSzid) * 0.3 – (0 CFSzid * 0 background)) / 5.415 CFSdf] * ACR of 3.8 = 1.14
Chronic WLA: Ce = ((5.415 CFSdf + 0 CFSmz) * 1 – (0 CFSmz * 0 background)) / 5.415 CFSdf = 1
LTAa,c: WLAa * LTAa multiplier = 1.14 * 0.321 = 0.366 [CV: 0.6, 99th %ile]
LTAc: WLAc * LTAc multiplier = 1 * 0.527 = 0.527 [CV: 0.6, 99th %ile]
use most protective LTA: 0.366
Daily Maximum: MDL = LTA * MDL multiplier = 0.366 * 3.114 = 1.1 TUc [CV: 0.6, 99th %ile]

The chronic WLA is converted to a long-term average concentration (LTAa,c) using: WLAa,c = WLAa × ACR. An acute to chronic ratio (ACR) value of 3.8 is used based on §1.3.4 (page 18) and Appendix A of the March 1991 TSD.

The standard Allowable Effluent Concentration (AEC) for facilities without mixing considerations is 100%. The standard dilution series for facilities discharging to waterbodies with no mixing considerations is 100%, 50%, 25%, 12.5%, & 6.25% as 10 CSR 20-7.015((9)(L)4.A states the dilution series must be proportional. See the permit for the dilution series.

WET testing is not currently required in the Wright City South permit; this requirement will be kept after ownership transfer.

PART V. ADMINISTRATIVE REQUIREMENTS

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

PUBLIC NOTICE

The department shall give public notice 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 or with 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 facility must be notified of the denial in writing. https://dnr.mo.gov/water/what-were-doing/public-notices The department must issue public notice of a draft operating 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 wishing to submit comments regarding this proposed operating permit, 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. All comments must be in written form.

- ✓ The Public Notice period for this operating permit was from April 12, 2024 to May 31, 2024.
- ✓ At the May 30, 2024 public hearing, the public notice period was extended to June 6, 2024.

PUBLIC HEARING

During the public notice of the antidegradation review, the department received comments to have a public hearing regarding the antidegradation review and this permit. The antidegradation review's comment responses are found in Appendix 2 at the end of this document. Comments were also received during the public notice of the operating permit and a hearing was held as noted above. The comments and responses are provided in Appendix 5.

DATE OF PERMIT AND FACT SHEET: DECEMBER 12, 2023 THROUGH APRIL 11, 2024
ADDITIONAL REVISIONS PER COMMENTS: JUNE 7 THROUGH JUNE 27, 2024
ISSUED FOR: JULY 1, 2024

COMPLETED BY:
PAM HACKLER, ENVIRONMENTAL SCIENTIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - INDUSTRIAL UNIT
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end operating permit fact sheet

APPENDIX 1

Water Quality and Antidegradation Review

For the Protection of Water Quality
and Determination of Effluent Limits for Discharge to
Tributary to Peruque Creek
By

AMERICAN FOODS DEVELOPMENT CO., LLC

March 2023

Table of Contents

1. PURPOSE OF ANTIDEGRADATION REVIEW REPORT

This is a new facility to accommodate flows from the new American Foods Group (AFG)* beef processing facility. AFG is proposing to process 2,400 cows per day which contributes 1.5 MGD of the proposed 3.5 MGD. The long-term plan is to incorporate flows from the Wright City South Wastewater Treatment Facility and provide additional treatment capabilities for community growth while accommodating water quality goals. This Water Quality and Antidegradation Review applies to AFG and additional Domestic Wastewater flow currently permitted under the Wright City South Wastewater Treatment Facility permit MO0023191.

Woodard & Curran, Inc. prepared on behalf of AFG the Antidegradation Application for the Wright City South Wastewater Treatment Facility. The applicant elected to assume that all pollutants of concern (POC) significantly degrade the receiving stream in the absence of existing water quality. An alternatives analysis was conducted to fulfill the requirements of the Antidegradation Implementation Procedure (AIP).

The preferred alternative is presented as the Less Degrading Alternative #1, a 4-Stage Bardenpho Conventional Activated Sludge (CAS) facility with sidestream biological total phosphorus removal, and UV disinfection. The facility is being designed for a Design Flow of 3.5 million gallons per day (MGD) that accommodates 1.5 MGD for the new AFG facility and possible future connection of 0.5 MGD from the existing users in Wright City, and 1.5 MGD for future expansion in the community. The preferred alternative will include a new influent lift station , headworks, grit removal, biological treatment tanks (4-Stage Bardenpho), final clarifiers, tertiary filtration, UV disinfection, reaeration system, a new outfall, new aerobic sludge storage tanks and mechanical sludge dewatering with offsite cake disposal.

* After PN of the antidegradation review, the facility changed their name to American Foods Development Co., LLC

2. FACILITY INFORMATION

Facility Name:	American Foods Group Wastewater Treatment Facility
Address:	100 Lagoon Road, Wright City, MO 63390
Permit #:	
County:	Warren County
Facility Type:	Industrial
Owner:	AMERICAN FOODS DEVELOPMENT CO., LLC
Continuing Authority:	AMERICAN FOODS DEVELOPMENT CO., LLC – FL001693465
UTM Coordinates:	X = 673191 ; Y = 4298507
Legal Description:	Sec 22, T47N, R01W
Ecological Drainage Unit:	Central Plains/Cuivre/Salt

3. FACILITY HISTORY

This is a new facility.

A. RECEIVING WATERBODY INFORMATION

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
001	5.425	Secondary	Domestic & Meat Processing

RECEIVING STREAM(S) TABLE:

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Tributary to Peruque Creek	NA	NA	General Criteria	07110009-0101	0.17
Presumed Use Stream	C	5025	AQL-WWH, WBC-B, SCR, HHP, IRR, LWW		
Peruque Creek – 303(d)	C	218	AQL-WWH, WBC-B, SCR, HHP, IRR, LWW		0.76

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

RECEIVING STREAM(S) LOW-FLOW VALUES:

RECEIVING STREAM	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Tributary to Peruque Creek	0.0	0.0	0.0

Receiving Water Body Segment Outfall #001:		
Upper end segment* UTM coordinates:	X = 673191 ; Y = 4298507	outfall
Lower end segment* UTM coordinates:	X = 673179 ; Y = 4298254	downstream confluence

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

A Geohydrologic Evaluation was submitted with the *Antidegradation Application,* and the receiving stream is considered gaining for discharge purposes. In the event of wastewater treatment failure, shallow groundwater and surface waters of Peruque Creek and its tributaries may be adversely impacted. The mechanical treatment plant site received a slight geologic limitations rating overall. The existing lagoons received a moderate geologic limitations rating primarily due to the lagoons' placement on an alluvial plain, and received a slight collapse potential rating. (see Appendix B)

B. EXISTING WATER QUALITY

No existing water quality data was submitted in the Antidegradation Report. The facility discharges to Peruque Creek, which flows to Lake St. Louis. Peruque Creek is on the 2020 303(d) list for low dissolved oxygen (DO) and low aquatic macroinvertebrate diversity. Lake St Louis is on the 2020 303(d) list for Chlorophyll-a. The Total Maximum Daily Load (TMDL) and Modeling Unit was consulted to support effluent limit development for the proposed expansion discussed in this WQAR and *Antidegradation Application*. A complete discussion can be found in Appendix E and in Section 6.

C. MIXING CONSIDERATIONS

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

4. PERMIT LIMITS AND MONITORING INFORMATION

Table 1: Proposed Monitoring Parameters and Effluent Limits for the American Foods Group WWTF at a Design Flow of 3.5 MGD

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average
Flow	MGD	1	*		*
BOD_5	mg/L	6		9	6
TSS	mg/L	6		15	10
*Escherichia coli***	CFU/100mL	1, 3	1,030		206**
Fecal Coliform	CFU/100mL	1	400		400
Ammonia as N Winter Summer	 mg/L mg/L	 6	 7.5 3.6		 2.9 1.4
Oil & Grease	mg/L	1, 3	15		10
Total Phosphorus, Note 1	mg/L & lbs/year	6, 12	*		1.0
Total Nitrogen	mg/L	6	*		11.0
Total Kjeldahl Nitrogen	mg/L	6	*		*
Nitrite + Nitrate	mg/L	6	*		10.0
PARAMETER	Unit	Basis for Limits	Minimum		Maximum
pH	SU	3	6.5		9.0
PARAMETER	Unit	Basis for Limits	Daily Minimum		Monthly Avg.
Dissolved Oxygen (DO)	mg/L	6	7		7

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

Note 1: Total Phosphorus effluent limits are water quality based effluent limits established based on the March 8, 2022 memorandum (Appendix E), describing the Recommended Effluent Limits for the Proposed New 3.5 Million Gallons per Day Wastewater Treatment Facility. Compliance with the total phosphorus effluent limits established by the final operating permit for the facility may include monthly average concentration (mg/L), average load in pounds per month, or average load in pounds per year.

Basis for Limitations Codes:

1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Antidegradation Review
5. Antidegradation Policy
6. Water Quality Model
7. Best Professional Judgment
8. TMDL or Permit in lieu of TMDL
9. WET Test Policy
10. Multiple Discharger Variance
11. Nutrient Criteria Implementation Plan
12. Total Phosphorus Rule

Table 2: Permitted Feature INF- Influent Monitoring for the American Foods Group WWTF at a Design Flow 3.5 MGD

PARAMETER	Unit	Basis for Limit	Daily Maximum	Weekly Average	Monthly Average
BOD_5	mg/L	1			*
TSS	mg/L	1			*
Ammonia as N	mg/L	1	*		*
Total Phosphorus	mg/L	1	*		*
Total Kjeldahl Nitrogen	mg/L	1	*		*
Nitrite + Nitrate	mg/L	1	*		*

5. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements are recommended at this time.

6. ANTIDEGRADATION REVIEW INFORMATION

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

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

The following is a review of the *Antidegradation Application* dated April 8, 2022.

A. TIER DETERMINATION

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

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

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

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

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

All of the pollutants of concern are considered significantly degrading for the purpose of this review. BOD_5 and DO are considered Tier I in this review due to the receiving stream's status on the 303(d) list.

Table 3: Pollutants of Concern and Tier Determination

Pollutants of Concern	Tier	Degradation	Comment
Biological Oxygen Demand (BOD_5)/DO	1	Significant	See Appendix E
Total Suspended Solids (TSS)	**	Significant	
Ammonia as N	2*	Significant	
Escherichia coli (E. coli)	2*	Significant	Permit Limits Apply
Fecal Coliform	2*	Significant	Permit Limits Apply
Oil & Grease	2*	Significant	Permit Limits Apply
Phosphorus, Total	1	Significant	
Nitrogen, Total	1	Significant	
Total Kjeldahl Nitrogen	1	Significant	
Nitrite + Nitrate	1	Significant	
pH	***	Significant	Permit Limits Apply

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

Tier 1 Review
The facility discharges to Peruque Creek which flows into Lake St. Louis. Peruque Creek is on the 2020 303(d) list for low DO and low aquatic macroinvertebrate diversity. Lake St Louis is on the 2020 303(d) list for Chlorophyll-a. The Total Maximum Daily Load and Modeling Unit (TMDL Unit) was consulted to support effluent limit development for the proposed project discussed in this WQAR and *Antidegradation Application*. The results of the TMDL Unit's assessment are included in *Appendix E: Recommended Effluent Limits for the Proposed New 3.5 MGD Wright City South Wastewater Treatment Facility*.

The TMDL Unit estimated the influence of the expanded 3.5 MGD industrial and domestic wastewater treatment facility on water quality in Peruque Creek and Lake St Louis. This analysis was completed to recommend effluent limits that should minimize the potential for the new facility to cause or contribute to the low dissolved oxygen impairment in Peruque Creek and exceedances of Missouri's lake numeric criteria in Lake St. Louis. The recommended effluent limits are based on a combination of QUAL2K modeling to address low dissolved oxygen in Peruque Creek and BATHTUB modeling to address lake numeric nutrient criteria in Lake St. Louis. Recommended effluent limits are discussed in Section 7, Table 1, and Appendix E.

According to the AIP, the waters may receive the POCs that are causing impairments if; 1) the discharge would not cause or contribute to a violation of the WQS; 2) all other conditions of the state permitting requirements are met (i.e., no discharge options are explored and technology based requirements (including ELGs) are met); and 3) the permit is issued with the highest statutory and regulatory requirements.

B. NECESSITY OF DEGRADATION

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

A. REGIONALIZATION

The regionalization alternative was described in No Discharge Alternative #4 – Diversion of Flow to Another District WWTF. A discussion of this alternative is provided in Section 6.B.ii.

B. NO DISCHARGE EVALUATION

A total of six no discharge alternatives were included in the *Antidegradation Application*. All no discharge evaluations were described as impractical.

- Land Application with Seasonal Storage: Impractical –There are no agricultural tracks of land near the site to utilize this option.
- Subsurface Disposal with Seasonal Storage: Impractical – The subsurface disposal alternative has similar system encumbrances as land application with seasonal storage. A large amount of land would be needed for this alternative and would create a substantial burden. The subsurface alternative would also require additional land disturbance for construction and maintenance for long-term operation.
- Recycling or Reuse: Impractical – Potential end users for recycle or reuse are golf courses, truck washing, groundwater recharge, and non-potable process water. Since the proposed flow rate is 3.5 MGD, no end users would be able to reuse this quantity on non-potable water.

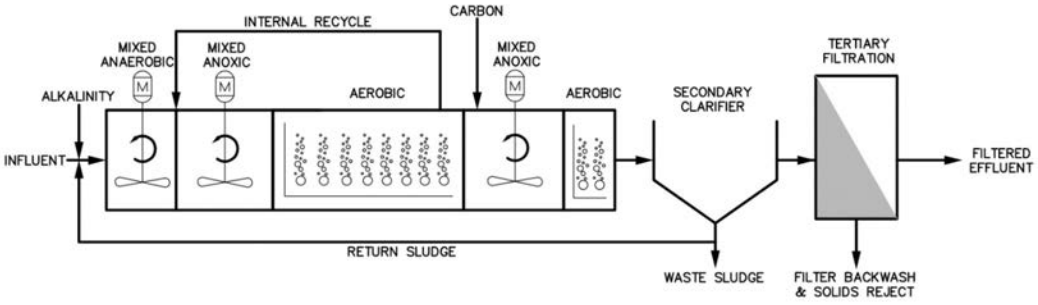
- Diversion of Flow to Another District WWTF: Impractical –Wright City South WWTF is established as a regional facility and POTW. A previous study was conducted by the district to evaluate the feasibility of transferring flow from Wright City South WWTF to the District's Hickory Trails WWTF or Providence Estates WWTF. For the Providence Estates diversion, there is insufficient land available for facility upgrades due to planned residential developments in the vicinity. For the Hickory Trails diversion, the high cost associated with facility upgrades and flow conveyance make this option impractical.
- Alternative Discharge Location: Impractical – Peruque Creek is one of the only sizable potential receiving waters in the vicinity. An effluent lift station and force main to McCoy Creek was also considered as an alternative receiving water. The length of pipe, energy requirements, and costs to pump additional effluent to McCoy Creek is cost prohibitive.
- Improved Operations & Maintenance at Wright City South WWTF: Impractical – This option is impractical since the current lagoon system is currently operating at capacity and there is a bona fide need to increase the design flow for population increases, increase nutrient reduction capabilities, and resolve potential effluent limit exceedances.

C. ALTERNATIVES TO NO DISCHARGE

A total of 3 less degrading alternatives were evaluated in the *Antidegradation Application*. All three alternatives were determined to be practical. An alternatives analysis comparison is included as Table 4.

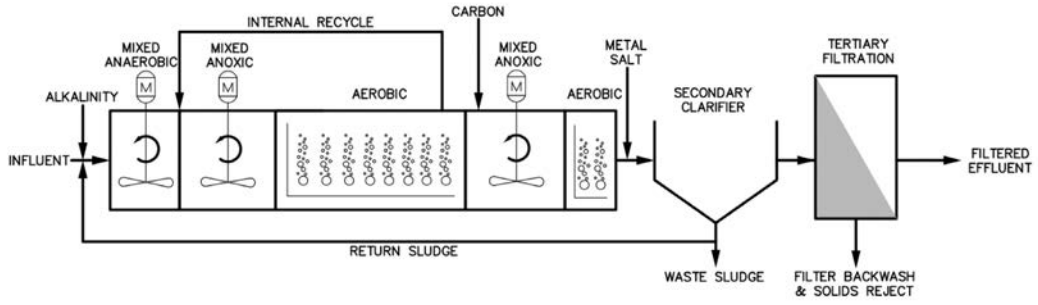
Base Project – 5 Stage Bardenpho CAS with Filtration:
This is a conventional activated sludge (CAS) system with provisions for Biological Nutrient Reduction in a 5 stage Bardenpho type configuration with suspended growth treatment processes. Tanks in series with separate zones are utilized for the treatment of BOD, ammonia, TN, and TP. The treatment capability for this alternative is presented in Table 4.

BASE PROJECT
CAS 5–STAGE BARDENPHO
WITH FILTRATION

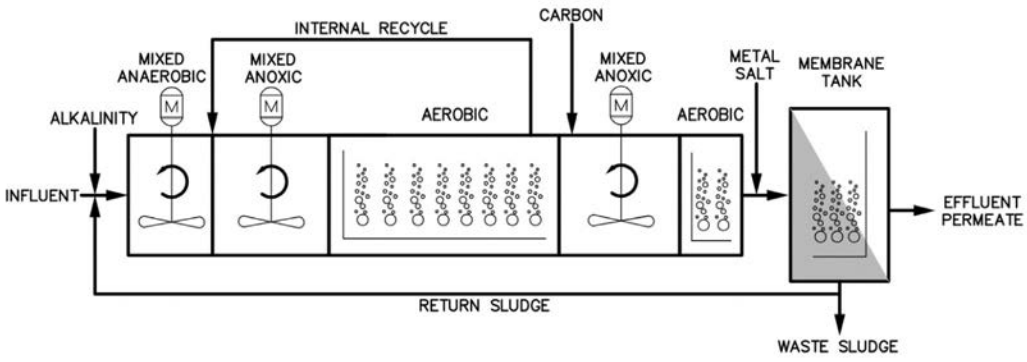


Alternative 1 – 5 Stage Bardenpho CAS with Filtration and Chemical Addition:
This alternative adds additional chemical coagulation treatment processes to the Base Project to treat for a higher quality effluent. This alternative will include additional chemical feed systems and chemical storage systems compared to the Base Project. The treatment capability for this alternative is presented in Table 4.

LESS–DEGRADING ALTERNATIVE #1
CAS 5–STAGE BARDENPHO
WITH FILTRATION & CHEMICAL ADDITION



Alternative 2 – Membrane Bioreactor (MBR):
An MBR treatment facility was evaluated as a comparison to the Base Project Bardenpho CAS options. As part of this alternative the biological reactors upstream of the membrane filters would be configured as a 5-Stage Bardenpho process to allow for TN, TP and Ammonia biological removal.



D. Preferred Alternative

The preferred alternative is identified as Alternative #1 (5-Stage Bardenpho CAS with Filtration and Chemical Addition) due to the lower up front capital cost, favorable cost of ownership, favorable facility layout, expansion capabilities, provisions for biological phosphorus removal, provisions for total nitrogen removal, flow flexibility, and constructability.

Table 4: Discharging Alternatives Analysis Comparison

Parameter	Base Project CAS 5 Stage Bardenpho with Filtration	Alternative 1 CAS 5 Stage Bardenpho with Filtration & Chemical Addition	Alternative 2 Membrane Bioreactor 5 Stage Bardenpho & Chemical Addition
BOD_5	≤ 10 mg/L	≤ 5-10 mg/L	≤ 5 mg/L
TSS	≤ 10 mg/L	≤ 5-10 mg/L	≤ 1 mg/L
DO	> 6 mg/L	> 6 mg/L	> 6 mg/L
Ammonia as N	≤ 1 mg/L	≤ 1 mg/L	≤ 1 mg/L
Oil & Grease	< 10 mg/L	< 10 mg/L	< 7 mg/L
pH	6.5-9.0	6.5-9.0	6.5-9.0
Escherichia coli (*E. coli*)	≤ 206 CFU/100mL	≤ 206 CFU/100mL	≤ 206 CFU/100mL
Phosphorus, Total	≤ 1 mg/L	≤ 1 mg/L	≤ 0.1 mg/L
Nitrogen, Total	< 5-10 mg/L	< 5-10 mg/L	< 3-5 mg/L
Practicability	Yes	Yes	Yes
Preferred	No	Yes	No
Total Initial Capital Cost	$98,500,000	$98,600,000	$127,600,000
Present Value of O&M Costs	$39,320,000	$43,373,000	$49,121,000
Total Present Worth*	$137,820,000	$141,973,000	$176,721,000
Total Annual Costs	$2,018,000	$2,226,000	$2,521,000
Base to Alternative Cost Ratio	1.0	1.03	1.3

*Life cycle cost at 20 year design life and 0.25% discount rate

E. Losing Stream Alterative 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 American Foods Group WWTF outfall will discharge to Peruque Creek, classified as gaining for discharge purposes.

F. Social and Economic Importance

A thorough presentation of social and economic importance was included in the *Antidegradation Application*. The affected community is described as the Wright City and Warren County service area. A number of developments are planned for the immediate area around the facility; however, they are currently inhibited due to the lack of treatment capacity at the Wright City South WWTF and unallocated treatment capacity of American Foods Group will be able to treat these developments. Specific social and economic factors are described as follows:

- Median Household Income: The Median Household Income is anticipated to rise as a result of the American Foods Group facility construction. The additional treatment capacity is expected to allow commercial development, additional job generation, and continued growth and development.
- Unemployment Rate: The American Foods Group facility construction is expected to bring a substantial quantity of jobs within the vicinity, directly reducing the unemployment rate. The additional unallocated treatment capacity of American Foods Group WWTF will also contribute to commercial expansion and further allow job creation in the service area.
- Poverty Level: Poverty Level is expected to decrease as a direct result of the reduced unemployment rate and increase in median household income created through the American Foods Group facility construction.
- Commercial & Industrial Development Potential: The proposed WWTF will allow commercial and industrial development to continue throughout the community. This will occur directly with the American Foods Group facility construction bringing more than 1,300 new jobs and generating $1 billion in economic impact in Missouri. Additional treatment plant capacity will provide infrastructure for future commercial growth.
- Public Services: The goal of the proposed American Food Group facility is intended to accommodate new industrial, residential, and commercial wastewater flows and improve public services associated with wastewater treatment while protecting the surrounding environment in the community and safety of the WWTF operations staff.

G. Natural Heritage Review

A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant. Two species of bats, Indiana and Northern Long-Eared, may be present in the project area. The following recommendations were made for construction activities:

- 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 and/or Northern Long-eared Bats, especially from September to April.
- Manage construction to minimize sedimentation and run-off to nearby streams.
- At stream and drainage crossings, avoid erosion, silt introduction, petroleum or chemical pollution, and disruption or realignment of stream banks and beds.

H. Assimilative Capacity Calculations

Since the *Antidegradation Application* presented all POCs as significantly degrading, assimilative capacity calculations were not completed to support a Minimally Degrading Review.

I. Demonstration of Insignificance

The AIP states that a demonstration of insignificance of the discharge requires the applicant to show a reduction, or maintenance of loading, i.e., no change in ambient water quality concentrations in the receiving waters. Since the *Antidegradation Application* dated April 8, 2022 presented a significantly degrading review, a Demonstration of Insignificance is not necessary.

7. DERIVATION AND DISCUSSION OF PARAMETERS AND LIMITS

Wasteload allocations and limits were calculated using two methods:

A. **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 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).

B. **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).

Note: Significantly-degrading effluent limits have been based on the authority included in Section I.A. of the AIP. Also under 40 CFR 133.105, permitting authorities shall require more stringent limitations than equivalent to secondary treatment limitations for 1) existing facilities if the permitting authority determines that the 30-day average and 7-day average BOD_5 and TSS effluent values could be achievable through proper operation and maintenance of the treatment works, and 2) new facilities if the permitting authority determines that the 30-day average and 7-day average BOD_5 and TSS effluent values could be achievable through proper operation and maintenance of the treatment works, considering the design capability of the treatment process.

C. **Water Quality Model-based** – 303(d) listed waters are considered Tier 1 for the POCs attributed to use impairment. Prior to allowing any new or expanded discharges of the POC, the department must conduct a Tier 1 review and demonstrate that the discharge would not violate the water quality criteria for the POC. Tier 1 protection prohibits degradation that may cause or contribute to the impairment of a beneficial use or violation of water quality criteria and prohibits further degradation of existing water quality where additional pollutants of concern would result in the water being included on the 303(d) list. Using water quality model results, effluent limits and waste load allocations are developed to protect designated uses. These limits would be included in an Antidegradation review as Total Maximum Daily Load Limits or Water Quality Model Limits.

OUTFALL #001

CONVENTIONAL PARAMETERS

Flow

Though not limited itself, the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations [40 CFR Part 122.44(i)(1)(ii)]. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the department, which may require the submittal of an operating permit modification. Influent monitoring has been and will be required for this facility in its Missouri State Operating Permit.

Biochemical Oxygen Demand (BOD_5)

This WQAR establishes new Water Quality Model Limits of 6.0 mg/L as average monthly and 9.0 mg/L as average weekly. The March 8, 2022 memorandum (Appendix E) modeling results indicate that limiting BOD_5 discharges to no greater than a monthly average of 6.0 mg/L BOD_5 will promote the attainment of water quality standards in Peruque Creek. These limits are more stringent than the effluent limits of 81 mg/L daily maximum and 40 mg/L monthly average established in 40 CFR 432 Subpart B for Complex Slaughterhouses processing 2,400 cattle at 1000 lbs each generating 1.5 MGD flow.

Carbonaceous Biochemical Oxygen Demand Limits in Lieu of BOD_5 Limits

The recommended BOD_5 concentration is based on an Ultimate CBOD concentration entered into the QUAL2K model, which is then converted through $CBOD_5$ to BOD_5. The recommended BOD_5 concentration of 6 mg/L would have a corresponding $CBOD_5$ of 4.7 mg/L. If the wastewater treatment facility requests $CBOD_5$ limits instead of BOD_5, the $CBOD_5$ limit for the expanded facility would be 4.7 mg/L as average monthly and 7.1 mg/L as average weekly.

Oil & Grease

The water quality based effluent limits of 15 mg/L as daily maximum and 10 mg/L as monthly average will be implemented as a performance level. This is are more stringent than 40 CFR 432 Subpart B for Complex Slaughterhouses new source performance standards/technology daily maximum limit of 31 mg/L and a monthly average limit of 15 mg/L for processing 2,400 cattle at 1000 lbs each generating 1.5 MGD flow.

Oxygen, Dissolved

The new recommended Dissolved Oxygen (DO) effluent limits are 7.0 mg/L as Daily Minimum and Monthly Average Minimum. These Water Quality Model Limits were identified in the *Recommended Effluent Limits for the Proposed New 3.5 MGD Wright City South WWTF Memorandum (Appendix E).* Since the facility will discharge to a DO-impaired segment of Peruque Creek, a QUAL2K model was used to estimate effluent limits that reduce the potential for wastewater discharges to cause or contribute to low DO in Peruque Creek.

Streeter Phelps (DO) Modeling was submitted by the applicant with the model inputs of 10 mg/L as monthly average BOD_5, effluent DO of 6 mg/L, summer temperature of 25.95 $^{\circ}$C, and an effluent flow rate of 3.5 MGD. The Streeter Phelps modeling

results indicated that a minimum DO sag would occur at 2 days downstream and 5.1 mg/L DO. The applicant recommended a daily minimum DO effluent limit of 6 mg/L. The Department's recommended DO effluent limit will be utilized since it is more protective and has a greater margin of safety.

pH

The preferred alternative selected for ammonia treatment serves as the base case for pH with effluent limit range of 6.5-9.0 SU. Technology based effluent limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU. No mixing zone is allowed due to the classification of the receiving stream, therefore the water quality standard must be met at the outfall.

Total Suspended Solids (TSS)

This WQAR establishes a limit of 15 mg/L as average weekly and 10 mg/L as a monthly average as Water Quality Model Limits. The March 8, 2022 memorandum (Appendix E) modeling results indicate limiting TSS discharges from the facility to no greater than a monthly average of 10 mg/L TSS will promote the attainment of water quality standards in Peruque Creek. These limits are more stringent than the effluent limits 48 mg/L daily maximum and 96 mg/L monthly average established in 40 CFR 432 Subpart B for Complex Slaughterhouses processing 2,400 cattle at 1000 lbs each generating 1.5 MGD flow.

BACTERIA PARAMETERS

Escherichia coli (E. coli)

Monthly average effluent limit of 206 CFU per 100 mL as a geometric mean and daily maximum of 1,030 CFU per 100 mL as a geometric mean during the recreation season (April 1 – October 31) for dischargers within two miles upstream of segments or lakes with Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.015(9)(B). For all dischargers other than publicly owned treatment works, an effluent limit for both average monthly and maximum daily is required by 40 CFR 122.45(d)(1).

Fecal Coliform

40 CFR 432 Subpart A for Simple Slaughterhouses establishes new source performance standards/technology based maximum limit of 400 most probable number or colony forming units per 100 mL at any time.

NUTRIENT PARAMETERS

Nutrient Limit

The NPDES regulations at 40 CFR 122.45(d) require that all permit limits be expressed, unless impracticable, as both average monthly limits and maximum daily limits for all dischargers other than publicly owned treatment works (POTWs).

The applicant has requested Mass-based, annual limits for both TP and TN. Nutrient monitoring will be conducted on at least a weekly basis, and the monthly mass load will be summarized based on the total flow during the month and reported as a monthly load.

Ammonia, As Nitrogen

This WQAR establishes new effluent limits of 0.7 mg/L as average monthly and 2.2 mg/L as maximum daily. The March 8, 2022 memorandum (Appendix E) modeling results indicate that limiting Total Ammonia as Nitrogen discharges from the facility to no greater than a monthly average of 0.7 mg/L Total Ammonia as Nitrogen will promote the attainment of water quality. These limits are more stringent than the effluent limits 8 mg/L daily maximum and 4 mg/L monthly average established in 40 CFR 432 Subpart B for Complex Slaughterhouses.

US EPA Mussel Ammonia Criteria – Ammonia

The applicant supplied *Antidegradation Application* presented Total Ammonia as Nitrogen calculations based on the 2013 US EPA water quality criteria for Ammonia. The applicant provided these limits as proposed future limits for reference & planning purposes only. The applicant did not propose the US EPA Mussel Ammonia Criteria as Preferred Alternative Effluent Limits.

Table 6: US EPA Mussel Ammonia Criteria for the American Foods Group WWTF

Season	TAN; MDL (mg/L)	TAN; AML (mg/L)
Summer	1.7	0.6
Winter	5.6	2.1

Preferred Alternative Performance Level – Ammonia

The applicant proposed effluent limits for ammonia as nitrogen were calculated using the former method for calculating ammonia effluent limits. Default values of 0.6 as CV and 7.8 SU as pH were used to generate the following preferred alternative effluent limits.

Table 7: Preferred Alternative Performance Level for Ammonia for the American Foods Group WWTF

Season	TAN; MDL (mg/L)	TAN; AML (mg/L)
Summer	3.6	1.4
Winter	7.5	2.9

Total Kjeldahl Nitrogen

Per 10 CSR 20-7.015(9)(D)8.B. Statewide Monitoring for Nutrients. Point sources that have the design capacity of greater than one hundred thousand (100,000) gpd that typically discharge nitrogen and phosphorus shall collect and analyze influent and effluent samples for total phosphorus, ammonia, total Kjeldahl nitrogen and nitrate plus nitrite utilizing methods outlined in 10 CSR 20-7.015(9)(D)2. using the following frequencies:

Monthly for facilities with design capacities greater than or equal to one million (1,000,000) gpd for a period up to five years. The department may require additional monitoring to ascertain a discharge's nutrient contribution and the efficacy of the treatment technology as it pertains to nutrient removal.

Nitrate plus Nitrite

Monthly Average effluent limits of 10.0 mg/L of Nitrite + Nitrate will be implemented as Water Quality Model Limits. The March 8, 2022 memorandum (Appendix E), describing the *Recommended Effluent Limits for the Proposed New 3.5 Million Gallons per Day Wright City South Wastewater Treatment Facility* has determined that nitrogen in effluent from the facility has reasonable potential to cause or contribute to the Chl-a impairment of Lake St. Louis and the dissolved oxygen/low aquatic macroinvertebrate diversity impairments of Peruque Creek. Modeling results indicate that limiting Nitrite + Nitrate discharges from the facility to no greater than 10.0 mg/L Nitrite + Nitrate as a monthly average will promote the attainment of water quality in Lake St. Louis and Peruque Creek.

Nitrogen, Total

Monthly Average effluent limits of 11.0 mg/L of Total Nitrogen will be implemented as a Water Quality Model Limit. The March 8, 2022 memorandum (Appendix E), describing the *Recommended Effluent Limits for the Proposed New 3.5 Million Gallons per Day Wright City South Wastewater Treatment Facility* has determined that nitrogen in effluent from the facility has reasonable potential to cause or contribute to the Chl-a impairment of Lake St. Louis and the dissolved oxygen/low aquatic macroinvertebrate diversity impairments of Peruque Creek. Modeling results indicate that limiting Total Nitrogen discharges from the facility to no greater than a monthly average of 11.0 mg/L Total Nitrogen will promote the attainment of water quality standards in Lake St. Louis and Peruque Creek. This translates to a maximum Total Nitrogen Annual Load, based on modeling results, of 117,198 lbs/year for TN. This is are more stringent than 40 CFR 432 Subpart B for Complex Slaughterhouses new source performance standards/technology daily maximum limit of 194 mg/L and a monthly average limit of 134 mg/L for processing 2,400 cattle at 1000 lbs each generating 1.5 MGD flow.

8.34*3.5 MG/day*11 mg/l*365 days/year = 117,198 TN lbs/year

Phosphorus, Total

Monthly Average effluent limits of 1.0 mg/L at 3.5 MGD design flow of Total Phosphorus will be implemented as Water Quality Model Limits. The March 8, 2022 memorandum (Appendix E), describing the *Recommended Effluent Limits for the Proposed New 3.5 Million Gallons per Day Wright City South Wastewater Treatment Facility* has determined that phosphorus in effluent discharged from the facility has reasonable potential to cause or contribute to the Chl-a impairment of Lake St. Louis and the dissolved oxygen/low aquatic macroinvertebrate diversity impairments of Peruque Creek. Modeling results indicate that limiting Total Phosphorus discharges from the facility to no greater than a monthly average of 1.0 mg/L at 3.5 MGD Total Phosphorus will promote the attainment of water quality in Lake St. Louis and Peruque Creek. This translates to a maximum Total Phosphorus Annual Load, based on modeling results, of 10,654 lbs/year for TP.

8.34*3.5 MG/day*1.0 mg/l*365 days/year = 10,654 TP lbs/year

PERMITTED FEATURE INF – INFLUENT PARAMETERS

Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia. Monthly influent monitoring for Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite + Nitrate, and Ammonia is required per 10 CSR 20-7.015(9)(D)8.B.

8. GENERAL ASSUMPTIONS OF THE WATER QUALITY AND ANTIDEGRADATION REVIEW

A. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(2) Continuing Authorities and 10 CSR 20-6.010(4)(A)5.B., consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
B. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
C. Changes to Federal and State Regulations (FSR) made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
D. Effluent limitations derived from FSR may be WQBEL or Effluent Limit Guidelines (ELG).
E. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
F. A WQAR does not allow discharges to waters of the State, and shall not be construed as a National Pollution Discharge Elimination System (NPDES) or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
G. Limitations and other requirements in a WQAR may change as Water Quality Standards (WQS), Methodology, and Implementation procedures change.
H. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.
I. 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.

9. ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION

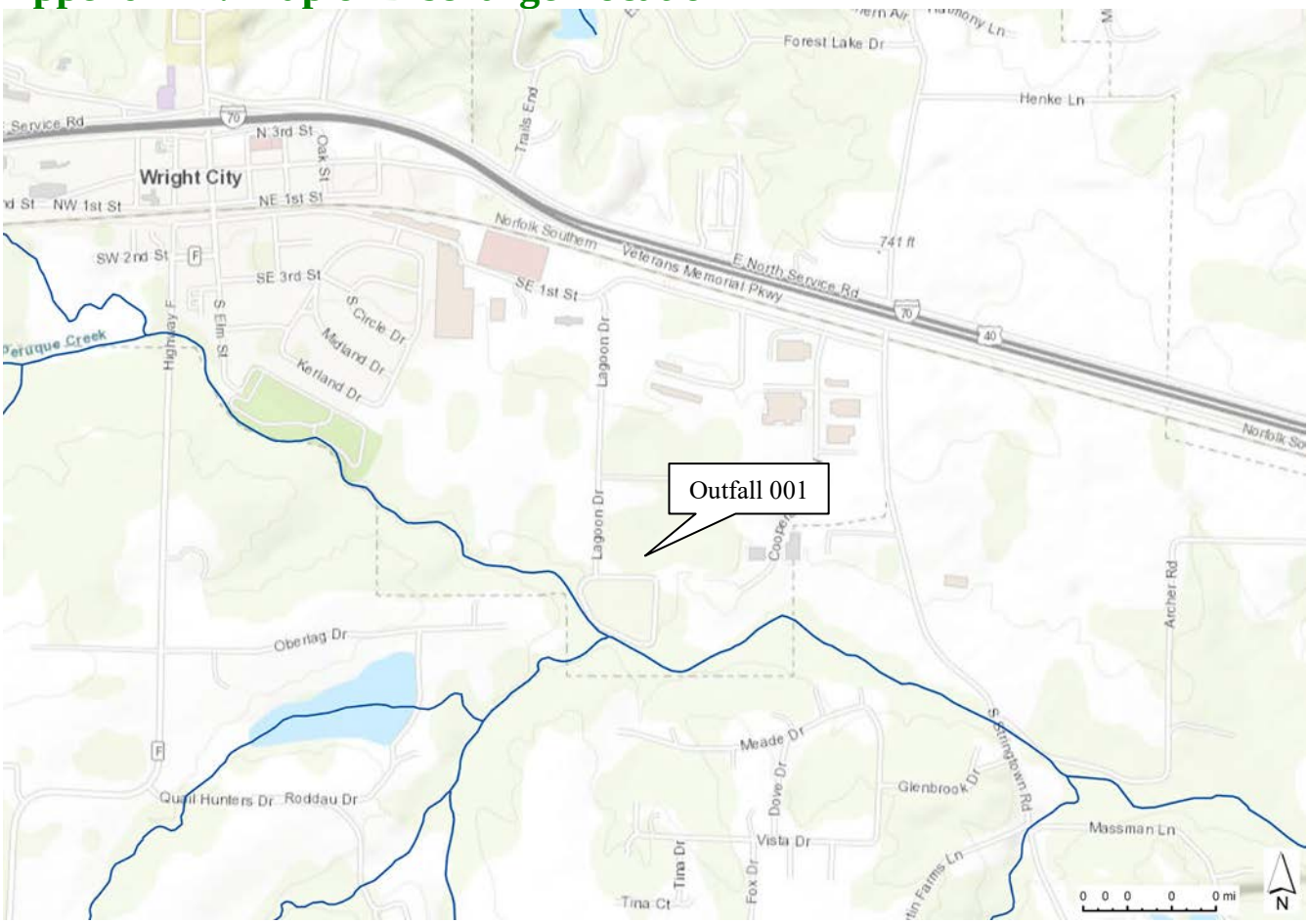
The proposed facility discharge for American Foods Group Wastewater Treatment Facility will result in significant degradation of the tributary to Peruque Creek. The Preferred Alternative #1 of 5-Stage Bardenpho CAS with Filtration & Chemical Addition was determined to be the base case technology, lowest cost alternative that meets technology and water quality based effluent limitations. The cost effectiveness of the other technologies were evaluated, and the base case alternative was found to be the preferred alternative.

It has also been determined that the other treatment option presented (Alternative 2 and the Base Project) may also be considered a reasonable alternative provided they are designed to be capable of meeting the effluent limitations developed based on the preferred alternative. If either Alternative 1 or 2 is 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.

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

Reviewer: Steve Hamm, P.E.
Date: January 2023
Section Chief: Cindy LePage, P.E. April 2023

Appendix A: Map of Discharge Location



Appendix B: Geohydrologic Evaluation

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Dru Buntin, Director

LWE22083
Warren County

March 22, 2022

Shannon Stang
41 Hutchins Dr
Portland, ME 04012

RE: Wright City South Wastewater Treatment Facility

Dear Shannon Stang:

On March 22, 2022, the Missouri Geological Survey received a request to perform a geohydrologic evaluation for the above referenced project located in Warren County. Included with this letter is a report that details the geologic and hydrologic conditions at the site and the potential for groundwater contamination in the event of wastewater treatment failure.

Thank you for the evaluation request. If you are in need of further assistance or have questions regarding the report, please contact our office at P.O Box 250, Rolla, Mo 65402-0250, by telephone at 573-368-2100 or gspeg@dnr.mo.gov.

Sincerely,

MISSOURI GEOLOGICAL SURVEY

John Corley
Geologist
Environmental Geology Section

c: Chris Horvath
WPP
St. Louis Regional Office

03/22/2022

Missouri Department Of Natural Resources
Missouri Geological Survey
Geological Survey Program
Environmental Geology Section

Project ID Number
LWE22083
County
Warren

Request Details

Project: Wright City South Wastewater Treatment Facility

Legal Description: 22 T47N R01W
Quadrangle: WRIGHT CITY
Latitude: 38 49 8.49
Longitude: -91 0 20.88

Organization Official
Name: Chris Horvath
Address: 100 Water Drive
City: O'Fallon
State: MO Zip: 63368
Phone: 636-561-3737
Email: chorvath@waterdistrict2.com

Preparer
Name: Shannon Stang
Address: 41 Hutchins Dr
City: Portland
State: ME Zip: 04012
Phone: 207-558-3744
Email: sstang@woodardcurran.com

Project Details

Report Date: 03/22/2022
Date of Field Visit: 03/02/2022
Previous Reports: Not Applicable

Facility Type
- [X] Mechanical treatment plant
- [ ] Recirculating filter bed
- [ ] Land application
- [ ] Lagoon or storage basin
- [ ] Subsurface soil absorption system
- [ ] Lagoon or storage basin W/Land App
- [ ] Lagoon or storage basin W/SSAS
- [ ] Other type of facility

Type of Waste
- [ ] Animal
- [X] Human
- [ ] Process or industrial
- [ ] Leachate
- [ ] Other waste type

Funding Source
- [X] IWT
- [ ] WWL-SRF

Additional Information
- [X] Plans were submitted
- [ ] Site was investigated by NRCS
- [ ] Soil or geotechnical data were submitted

Geologic Stream Classification: [X] Gaining [ ] Losing [ ] No discharge

Overall Geologic Limitations
- [X] Slight
- [ ] Moderate
- [ ] Severe

Collapse Potential
- [X] Not applicable
- [ ] Slight
- [ ] Moderate
- [ ] Severe

Topography
- [X] <4%
- [ ] 4% to 8%
- [ ] 8% to 15%
- [ ] >15%

Landscape Position
- [ ] Broad uplands
- [ ] Floodplain
- [ ] Ridgetop
- [X] Alluvial plain
- [ ] Hillslope
- [ ] Terrace
- [ ] Narrow ravine
- [ ] Sinkhole

Bedrock: Bedrock consists of Mississippian-age Burlington-Keokuk Limestone.

Surficial Materials: Surficial materials consist of moderate to highly permeable sandy, silty, and gravelly alluvium.

Missouri Department Of Natural Resources
Missouri Geological Survey
Geological Survey Program
Environmental Geology Section

Project ID Number
LWE22083
County
Warren

Recommended Construction Procedures for Earthen Facility	Determine Overburden Properties	Determine Hydrologic Conditions
☐ Installation of clay pad and Compaction	☐ Particle size analysis	☐ Groundwater elevation
☐ Diversion of subsurface flow	☐ Atterberg limits	☐ Direction of groundwater flow
☐ Artificial sealing	☐ 95% Max. dry density test method	☐ 25-Year flood level
☐ Rock excavation	☐ Overburden thickness	☒ 100-Year flood level
☐ Limit excavation depth	☐ Permeability coefficient-undisturbed	
	☐ Permeability coefficient-remolded	

Remarks:

On March 2, 2022, a geologist with the Geological Survey Program (GSP) performed a geohydrologic evaluation for the proposed mechanical wastewater treatment facility that will serve Wright City, Missouri. It is proposed that the existing lagoons at the Wright City South Wastewater Treatment Facility will act as flow equalization basins when the new mechanical treatment plant is operational. The purpose of the site visit was to observe the geologic and hydrologic elements, determine geologic limitations, and determine the potential for groundwater contamination in the event of wastewater treatment failure. This report (LWE22083) regards the proposed mechanical treatment plant; report LWE22071 regards the existing onsite lagoons.

The proposed treatment plant site is located on a flat-lying alluvial terrace located north of the existing lagoons. No bedrock was observed at the site of the proposed mechanical treatment plant, but previous mapping indicates that bedrock consists of Mississippian-age Burlington-Keokuk Limestone. The Burlington-Keokuk Limestone is a coarsely crystalline limestone that exhibits low primary porosity, but can exhibit secondary porosity if solution weathering has created conduits in the bedrock. Surficial materials onsite consist of loess and alluvial material, which may include lenses of silts/clays, sands, and gravels of varying permeabilities. Based on logs of nearby wells, surficial material thickness in this area is approximately 100 feet.

The facility's outfall discharges to a tributary of Peruque Creek, in which the tributary and Peruque Creek exhibited gaining characteristics and will be classified as such. In the event of wastewater treatment failure, shallow groundwater and surface waters of Peruque Creek and its tributaries may be adversely impacted. The mechanical treatment plant site receives a slight geologic limitations rating.

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Dru Buntin, Director

LWE22071
Warren County

March 22, 2022

Shannon Stang
41 Hutchins Dr
Portland, ME 04012

RE: Wright City South Wastewater Treatment Facility

Dear Shannon Stang:

On February 04, 2022, the Missouri Geological Survey received a request to perform a geohydrologic evaluation for the above referenced project located in Warren County. Included with this letter is a report that details the geologic and hydrologic conditions at the site and the potential for groundwater contamination in the event of wastewater treatment failure.

Thank you for the evaluation request. If you are in need of further assistance or have questions regarding the report, please contact our office at P.O Box 250, Rolla, Mo 65402-0250, by telephone at 573-368-2100 or gspeg@dnr.mo.gov.

Sincerely,

MISSOURI GEOLOGICAL SURVEY

John Corley
Geologist
Environmental Geology Section

c: Chris Horvath
WPP
St. Louis Regional Office

03/22/2022

Missouri Department Of Natural Resources
Missouri Geological Survey
Geological Survey Program
Environmental Geology Section

Project ID Number
LWE22071
County
Warren

Request Details

Project: Wright City South Wastewater Treatment Facility

Legal Description: 22 T47N R01W

Quadrangle: WRIGHT CITY
Latitude: 38 49 8.64
Longitude: -91 0 20.68

Organization Official

Name: Chris Horvath
Address: 100 Water Drive
City: O'Fallon
State: MO Zip: 63368
Phone: 636-561-3737
Email: chorvath@waterdistrict2.com

Preparer

Name: Shannon Stang
Address: 41 Hutchins Dr
City: Portland
State: ME Zip: 04012
Phone: 207-558-3744
Email: sstang@woodardcurran.com

Project Details

Report Date: 03/22/2022
Date of Field Visit: 03/02/2022

Previous Reports: Not Applicable

Facility Type
- [ ] Mechanical treatment plant
- [ ] Recirculating filter bed
- [ ] Land application
- [X] Lagoon or storage basin
- [ ] Subsurface soil absorption system
- [ ] Lagoon or storage basin W/Land App
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- [ ] Other type of facility

Type of Waste
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- [X] Human
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Funding Source
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Geologic Stream Classification: [X] Gaining [ ] Losing [ ] No discharge

Overall Geologic Limitations
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- [ ] Severe

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- [ ] Sinkhole

Bedrock: Bedrock consists of Mississippian-age Burlington-Keokuk Limestone.

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Missouri Department Of Natural Resources
Missouri Geological Survey
Geological Survey Program
Environmental Geology Section

Project ID Number
LWE22071
County
Warren

Recommended Construction Procedures for Earthen Facility	**Determine Overburden Properties**	**Determine Hydrologic Conditions**
	[X] Particle size analysis	[ ] Groundwater elevation
[X] Installation of clay pad and Compaction	[X] Atterberg limits	[ ] Direction of groundwater flow
[ ] Diversion of subsurface flow	[X] 95% Max. dry density test method	[ ] 25-Year flood level
[ ] Artificial sealing	[ ] Overburden thickness	[X] 100-Year flood level
[ ] Rock excavation	[ ] Permeability coefficient-undisturbed	
[ ] Limit excavation depth	[X] Permeability coefficient-remolded	

Remarks:

On March 2, 2022, a geologist with the Geological Survey Program (GSP) performed a geohydrologic evaluation for the proposed mechanical wastewater treatment plant that will serve Wright City, Missouri. It is proposed that the existing lagoons at the Wright City South Wastewater Treatment Facility will act as flow equalization basins when the new mechanical treatment plant is operational. The purpose of the site visit was to observe the geologic and hydrologic elements, determine geologic limitations and collapse potential of the proposed and existing treatment facilities on site, and determine the potential for groundwater contamination in the event of wastewater treatment failure. This report (LWE22071) regards the existing lagoons; report LWE22083 regards the proposed mechanical treatment plant.

No bedrock was observed at the site, but previous mapping indicates that bedrock consists of Mississippian-age Burlington-Keokuk Limestone. The Burlington-Keokuk Limestone is a coarsely crystalline limestone that exhibits low primary porosity, but can exhibit secondary porosity if solution weathering has created conduits in the bedrock. Surficial materials onsite consist of loess and alluvial material, which may include lenses of silts/clays, sands, and gravels of varying permeabilities. Based on logs of nearby wells, surficial material thickness in this area is approximately 100 feet.

The facility's existing outfall discharges to a tributary of Peruque Creek, in which the tributary and Peruque Creek exhibited gaining characteristics and will be classified as such. In the event of wastewater treatment failure, shallow groundwater and surface waters of Peruque Creek and its tributaries may be adversely impacted. The existing lagoons receive a moderate geologic limitations rating primarily due to the lagoons' placement on an alluvial plain, and receive a slight collapse potential rating.

Appendix C: Antidegradation Review Summary Attachments

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

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

1. FACILITY

NAME			COUNTY
Wright City South Wastewater Treatment Facility			Warren
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
100 Lagoon Road	Wright City	MO	063390
PERMIT NUMBER	PROPOSED DESIGN FLOW	SIC / NAICS CODE	
MO-0023191	3.5 MGD	4952/221320	

2. OWNER

NAME	Attention:		
American Foods Group (AFG)	Jeff Jones, Senior Director | Environmental Health & Safety		
ADDRESS	CITY	STATE	ZIP CODE
500 S Washington St.	Green Bay	WI	54301
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
jjones@americanfoodsgroup.com		920-436-6522	

3. CONTINUING AUTHORITY The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(2).

NAME	SECRETARY OF STATE CHARTER NUMBER		
Same As Owner In Part 2			
ADDRESS	CITY	STATE	ZIP CODE
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	

4. CONSULTANT

PREPARER NAME	COMPANY NAME		
Robert Polys, P.E.	Woodard & Curran, Inc.		
ADDRESS	CITY	STATE	ZIP CODE
1520 South Fifth Street, Suite 273	St. Charles	MO	63303
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
rpolys@woodardcurran.com		(207)-253-9788	

5. RECEIVING WATER BODY SEGMENT #1

NAME: Tributary to Peruque Creek

5.1 Upper end of segment – Location of discharge
UTM: X= _____, Y= _____ OR Lat 38.8182, Long -91.0051

5.2 Lower end of segment –
UTM: X= _____, Y= _____ OR Lat 38.7990, Long -90.8590

Per the Missouri Antidegradation Implementation Procedure (AIP), the definition of a segment, "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."

6. WATER BODY SEGMENT #2 (IF APPLICABLE, Use another form if a third segment is needed)

NAME:

6.1 Upper end of segment – End of Segment #1
UTM: X= _____, Y= _____ OR Lat _____, Long _____

6.2 Lower end of segment –
UTM: X= _____, Y= _____ OR Lat _____, Long _____

7. DECHLORINATION

If chlorination and dechlorination is the existing or proposed method of disinfection treatment, will the effluent discharged be equal to or less than the Water Quality Standards for Total Residual Chlorine stated in Table A1 of 10 CSR 20-7.031?

☐ Yes ☑ No – What is the proposed method of disinfection? UV Disinfection

Based on the disinfection treatment system being designed for total removal of Total Residual Chlorine, minimal degradation for Total Residual Chlorine is assumed and the facility will be required to meet the water quality based effluent limits. These compliance limits for Total Residual Chlorine are much less than the method detection limit of 0.13 mg/L.

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

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

Six no-discharge alternatives were analyzed and none were viable. (1) Land application is an impractical alternative due to the large amount of land required to be purchased, and its associated financial burden on the District. The land required would generate much less revenue than if it was left available for development or farmland. (2) Subsurface disposable is impractical due to the required land to be completely dug up and reconstructed to install the subsurface distribution and disposal system, likely steering farmers away from allowing any long-term leases or easements as they wouldn't be able to grow their crops during construction and plowing of the field would not be possible. (3) Recycling or reuse is infeasible because the typical daily discharge would never be fully used by the WWTF's in-plant not potable water system for daily operations. This would require another source of disposal/use. Many of the potential reuse options could result in further degradation to the environment. (4) Diversion of flow to another WWTF is infeasible because of insufficient land to expand neighboring WWTFs, high costs of wastewater transport to another site, and high costs of upgrades for additional capacity at these WWTFs. (5) An alternative discharge location is impractical because Peruque Creek is one of the only sizable potential receiving waters in the immediate area, and additional capacity upgrades would still need to be made at the WWTF. (6) Improved operations & maintenance is impractical because the District and WWTF staff are currently maximizing the WC WWTF hydraulic and treatment capacity to its fullest available extent.

9. ADDITIONAL REQUIREMENTS

Complete and submit the following with this submittal:

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

10. PATH / TIER REVIEW ATTACHMENTS ENCLOSED

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

11. APPLICANT PROPOSED ANTIDEGRADATION REVIEW EFFLUENT LIMITS

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

Applicable Pollutants of Concern	Concentration*		Path / Tier Review Attachment Used for POC Evaluation	Average Monthly Limit	Daily Maximum Limit or Average Weekly Limit
	mg/L	µg/L			
BODs	X		Path C	10 mg/L	
TSS	X		Path C	10 mg/L	
Ammonia (Summer)	X		Path C	1.4 mg/L	3.6 mg/L
Ammonia (Winter)	X		Path C	2.9 mg/L	7.5 mg/L
Total Phosphorus			Path C	14.6 lbs/day	
Total Nitrogen			Path C	292 lbs/day	
Dissolved Oxygen	X		-----		6 mg/L (Min Day)
pH			-----		6.5-9 S.U.
Bacteria - E. Coli (April 1st to Oct. 30th)			-----	206/100mL	1,030/100mL

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

12. PROPOSED PROJECT SUMMARY

The proposed project will decommission the existing WC WWTF and construct a new WWTF on the adjacent property to increase treatment capacity and meet more stringent effluent limits proposed in the current discharge permit. The existing lagoon system is currently at capacity and will not be able to meet the new proposed treatment limits. The new WWTF will be an activated sludge system (CAS) in a 5-Stage Bardenpho configuration. The WWTF will include a new Influent Lift Station (municipal flow), Headworks facilities, biological treatment tanks (5-Stage Bardenpho), Final Clarifiers, Tertiary Filtration, UV Disinfection, Reaeration System and a new Outfall. New Aerobic Sludge Storage Tanks and mechanical Sludge Dewatering with offsite cake disposal will also be included. The existing lagoons (or a portion of them) will be converted to offline emergency equalization tanks.
The design flow for the proposed WWTF upgrade will be 3.5 MGD. This new design flow accommodates 0.5 MGD from the existing user base in Wright City, 1.5 MGD for future growth and expansion in the community, and 1.5 MGD for the new AFG facility.

Applicants choosing to use a new wastewater technology that are considered an "unproven technology" in Missouri must comply with the requirements set forth in the *New Technology Definitions and Requirements fact sheet*.

13. CONTINUING AUTHORITY WAIVER (For New Discharges)

In accordance with 10 CSR 20-6.010(2)(C), applicants proposing use of a lower preference continuing authority, when the higher level authority is available, must submit a waiver from the existing higher authority one or other documentation for the department's review, provided it does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or by the Missouri Clean Water Commission. Is the waiver necessary? ☐ Yes ☑ No
If yes, provide a copy.

14. APPLICATION FEE

☐ CHECK NUMBER ☐ JETPAY CONFIRMATION NUMBER

15. SIGNATURE

I am authorized and hereby certify that I am familiar with the information contained in this document and to the best of my knowledge and belief such information is true, complete and accurate.

SIGNATURE	DATE
Robert T. Polys	March 4, 2022
PRINT NAME	**TITLE**
Robert T. Polys	Senior Principal

PLEASE IDENTIFY YOUR STATUS FOR THIS PROJECT: ☐ **OWNER** ☐ **CONTINUING AUTHORITY** ☑ **CONSULTANT**

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH

ANTIDEGRADATION REVIEW SUMMARY
PATH C: TIER 2 – SIGNIFICANT DEGRADATION

1. FACILITY

NAME	COUNTY
Wright City South Wastewater Treatment Facility	Warren

2. SUMMARY OF THE POLLUTANTS OF CONCERN

Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.A. and assumed or demonstrated to cause significant degradation. The tier protection levels are specified and defined in rule at 10 CSR 20-7.031(2).

What are the proposed pollutants of concern and their respective effluent limits that the selected treatment option will comply with:

Pollutants of Concern*	Concentration*		Base Case Limit	Basis (WQS, WLA, ELG, Other)**
	mg/L	µg/L		
BODs	X		10 mg/L	WQS
TSS	X		10 mg/L	WQS
Ammonia (Summer)	X		1.4 mg/L Mon. Ave.	WQS
Ammonia (Winter)	X		3.6 mg/L Mon. Ave.	WQS
Total Nitrogen			292 lbs/day Mon. Ave.	Based on 10 mg/L Effluent TN
Total Phosphorus			14.6 lbs/day Mon. Ave.	Based on 0.5 mg/L Effluent TP
Dissolved Oxygen (Daily Minimum)	X		6 mg/L	WQS
Bacteria E. Coli (April 1st to Oct. 30th)			206/100mL Mon. Ave.	WQS
pH			6.5-9 S.U.	WQS

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

** Provide the Basis for the Base Case Limit: WQS – Water Quality Standard, WLA – Wasteload Allocation, ELG – Effluent Limit Guideline, or describe other.

3. IDENTIFYING ALTERNATIVES

Supply a summary of the non-discharging alternatives considered. "For Discharges likely to cause significant degradation, an analysis of non-degrading and less-degrading alternatives must be provided," as stated in the Antidegradation Implementation Procedure Section II.B.1. These alternatives include no-discharge. Attach all supportive documentation in the Antidegradation Review report.

Feasibility of non-discharging alternatives (regionalization, land application, subsurface irrigation, and recycling or reuse):
Six no-discharge alternatives were analyzed and none were viable. (1) Land application is an impractical alternative due to the large amount of land required to be purchased, and its associated financial burden on the District. The land required would generate much less revenue than if it was left available for development or farmland. (2) Subsurface disposable is impractical due to the required land to be completely dug up and reconstructed to install the subsurface distribution and disposal system, likely steering farmers away from allowing any long-term leases or easements as they wouldn't be able to grow their crops during construction and plowing of the field would not be possible. (3) Recycling or reuse is infeasible because the typical daily discharge would never be fully used by the WWTF's in-plant not potable water system for daily operations. This would require another source of disposal/use. Many of the potential reuse options could result in further degradation to the environment. (4) Diversion of flow to another WWTF is infeasible because of insufficient land to expand neighboring WWTFs, high costs of wastewater transport to another site, and high costs of upgrades for additional capacity at these WWTFs. (5) An alternative discharge location is impractical because Peruque Creek is one of the only sizable potential receiving waters in the immediate area, and additional capacity upgrades would still need to be made at the WWTF. (6) Improved operations & maintenance is impractical because the District and WWTF staff are currently maximizing the WC WWTF hydraulic and treatment capacity to its fullest available extent.

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

Discharging Alternative #	Treatment Type	Description
1	CAS-5 Stage Bardenpho	5-Stage Bardenpho With Tertiary Filtration
2	CAS-5 Stage Bardenpho	5-Stage Bardenpho With Tertiary Filtration & Chemical Addition
3	Membrane Bioreactor (MBR)	MBR With 5-Stage BNR & Chemical Addition
4		
5		
6		

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

4. DETERMINATION OF THE REASONABLE ALTERNATIVE

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

Practicability Summary:

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

All of the No-Discharge Alternatives are not practical for this project. All three of the Discharging Alternatives are practical and proven technologies for detailed consideration given the pollutants of concern and the anticipated limits associated with the pollutants of concern.

Economic Efficiency Basis:

What is the design life cycle for the comparison? 20-Years

What interest rate was used in the present worth calculations? 0.25% - Current Federal Discount Rate

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.

Both the Base Case Alternative (CAS 5-Stage Bardenpho With Filtration) and Less Degrading Alternative #1 (CAS 5-Stage Bardenpho With Filtration & Chemical Addition) are Economically Viable Alternatives. Less Degrading Alternative #2 - Membrane Bioreactor is not Economically Viable as an alternative due to the high up-front cost and total life cycle cost which exceeds 120% of the Base Case alternative.

TABLE OF THE ALTERNATIVES EVALUATION (Attach additional page if necessary)						
PARAMETERS	**Alternatives #**					
	1	**2**	**3**	**4**	**5**	**6**
BODs – mg/L	< 10	< 5-10	< 5			
TSS – mg/L	< 10	< 5-10	< 1			
Ammonia (Summer) – mg/L	< 1	< 1	< 1			
Ammonia (Winter) – mg/L	< 1	< 1	< 1			
E. Coli – #/100 mL	< 206	< 206	< 206			
Total Nitrogen – mg/L	< 5-10	< 5-10	< 3-5			
Total Phosphorus – mg/L	< 1	< 1	< 1			
Dissolved Oxygen (Daily Min.)	> 6	> 6	> 6			
pH	6.5-9 S.U.	6.5-9 S.U.	6.5-9 S.U.			
Construction Cost – $	$98.5M	$98.6M	$127.6M			
Operating Cost – $	$39.32M	$43.37M	$49.1M			
Present Worth – $	$137.8M	$141.9M	$176.7M			
Ratio present worth to base case	1	1.03	1.3			

Affordability Summary:

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."

Both the Base Case Alternative (CAS 5-Stage Bardenpho With Filtration) and Less Degrading Alternative #1 (CAS 5-Stage Bardenpho With Filtration & Chemical Addition) are Economically Viable Alternatives. Less Degrading Alternative #2 - Membrane Bioreactor is not Economically Viable as an alternative due to the high up-front cost and total life cycle cost which exceeds 120% of the Base Case alternative.

Justification for Preferred Alternative:

As shown in the table the operation and maintenance costs for the MBR alternative are higher than the other alternatives. This is due to the higher annual electricity use along with added costs for membrane replacement, chemical use, additional unit processes and other short-lived assets. The initial capital costs for the MBR alternative are the highest due to the high cost of the membrane equipment and the additional associated supporting equipment. The MBR treatment alternative is also not well suited for certain industrial type wastes such as those planned from AFG that may at times have fats, oils, greases or secretions which would foul and permanently damage the membranes. For these reasons Alternative #3 - MBR is not recommended. Alternative #2 - CAS-5-Stage Bardenpho with Filtration & Chemical Addition is recommended for the project due to its ability to provide nutrient removal along with better capabilities for industrial loading along with better high flow treatment capability.

Reasons for Rejecting the other Evaluated Alternatives:

The initial capital costs for the MBR alternative are the highest due to the high cost of the membrane equipment and the additional associated supporting equipment and this alternative is not economically viable. The MBR treatment alternative is also not well suited for certain industrial type wastes such as those planned from AFG that may at times have fats, oils, greases or secretions which would foul and permanently damage the membranes. This alternative is also harder to operate during high flow conditions which may occur and requires additional supporting unit processes.

Comments/Discussion:

5. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED ALTERNATIVE

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

Identify the affected community:

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

The affected community is the City of Wright City. A portion of the City is already connected to the existing WC WWTF, however as that WWTF is at capacity no additional connections can occur at this time which is limiting growth and development in the community. The upgraded WC WWTF will be able to handle additional flow and load and will dramatically improve overall wastewater treatment as compared to the existing lagoon treatment system. The land directly around the WC WWTF consists of farmland along with commercial and industrial development which will not be negatively impacted by the proposed project.

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

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

The average Median Household Income (MHI) in Warren County in 2019 was $60,125. This Represents an increase of 3.76% from the MHI in 2018. The MHI for Warren County is above the average in the state of Missouri. The state average MHI in Missouri is $55,461 as of 2015. It is anticipated that the MHI for Warren County will continue to rise due to the continued growth and development of this area of the state. Upgrades to the WC WWTF and a reliable way to handle sanitary sewer flow will further encourage this growth. In September 2015, the unemployment rates in Warren County were 4.0%. The State of Missouri averaged an unemployment rate of 4.5% in September of 2015. As previously stated, the additional treatment capacity will allow for more growth and development to occur in the area. Approximately 13.4% of Warren County residents were living with income below the poverty level in 2020 according to the US Census Bureau.

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

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

As previously noted, the increased flow capacity will allow for growth to occur in the City. Growth in the City can generate the need for additional businesses and public facilities to serve the growth and development. The businesses and public facilities can create more jobs for the community as well as residents living outside the community that commute to work within the community. This will benefit the State to help bring the percentage of people living below the poverty level in Missouri down. The addition of the AFG facility to the area alone will add 1,300 new jobs.

PROPOSED PROJECT SUMMARY:

The proposed project will decommission the existing WC WWTF and construct a new WWTF on the adjacent property to increase treatment capacity and meet more stringent effluent limits proposed in the current discharge permit. The existing lagoon system is currently at capacity and will not be able to meet the new proposed treatment limits. The new WWTF will be an activated sludge system (CAS) in a 5-Stage Bardenpho configuration. The WWTF will include a new Influent Lift Station (municipal flow), Headworks facilities, biological treatment tanks (5-Stage Bardenpho), Final Clarifiers, Tertiary Filtration, UV Disinfection, Reaeration System and a new Outfall. New Aerobic Sludge Storage Tanks and mechanical Sludge Dewatering with offsite cake disposal will also be included. The existing lagoons will be converted to offline emergency equalization tanks.

The design flow for the proposed WWTF upgrade will be 3.5 MGD. This new design flow accommodates 0.5 MGD from the existing user base in Wright City, 1.5 MGD for future growth and expansion in the community, and 1.5 MGD for the new AFG facility.

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

Appendix D: Natural Heritage Review

Missouri Department of Conservation

Natural Heritage Review Report

February 1, 2022

Science Branch
P. O. Box 180
Jefferson City, MO 65102
Prepared by: Hannah Roos
NaturalHeritageReview@mdc.mo.gov
(573) 522 - 4115 ext. 3182

Shannon Stang
Woodward & Curran
sstang@woodardcurran.com

NHR ERT ID:	10301	NHR ERT Level:	2
Project type:	Wastewater		
Location/Scope:	T47N R01W S22		
County:	Warren		
Query reference:	Wright City WWTF		
Query received:	1/25/2022		

This NATURAL HERITAGE REVIEW is not a site clearance letter. Rather, it identifies public lands and records of sensitive resources located close to and/or potentially affected by the proposed project. If project plans or location change, this report may no longer be valid. On-site verification is the responsibility of the project. Natural Heritage records were identified at some time and location. This report considers records near but not necessarily at the project site. Animals move and, over time, so do plant communities. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean a protected species will not be encountered. These records serve as one reference and additional information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Look for additional information about the biological and habitat needs of records listed to avoid or minimize impacts. More information is at https://mdc.mo.gov/discover-nature/places/natural-areas and https://mdc12.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx

Level 3: Records of federal-listed (also state-listed) species or critical habitats near the project site:

Natural Heritage records identify no wildlife preserves, no designated wilderness areas or critical habitats, and no federal-listed species records within the project area, or in the public land survey section or sections adjacent.

FEDERAL LIST species/habitats are protected under the Federal Endangered Species Act. **Contact the U.S. Fish and Wildlife Service** (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; 573-234-2132) for Endangered Species Act coordination and concurrence information).

Level 2: Records of state-listed (not federal-listed) endangered species AND / OR state-ranked (not state-listed endangered) species and natural communities of conservation concern. The Department tracks these species and natural communities due to population declines and/or apparent vulnerability.

Natural Heritage records identify no state-listed endangered species within the project area.

Natural Heritage records identify no state-ranked species/natural communities within the project area.

There are no regulatory requirements associated with this status, however we encourage voluntary stewardship to minimize the risk of further decline that could lead to listing.

STATE ENDANGERED species are protected under the Wildlife Code of Missouri (3CSR10-4.111). See https://mdc.mo.gov/sites/default/files/mo_nature/downloads/2021_SOCC.pdf for a complete list of species and communities of conservation concern.

General recommendations related to this project or site, or based on information about the historic range of species (unrelated to any specific Natural Heritage records):

- **Wastewater:** Clean Water Act permits issued by other agencies (Missouri DNR or US Army Corps of Engineers) regulate both construction and operation of wastewater systems, and provide many

important protections for fish and wildlife resources throughout the project area and at some distance downstream. Fish and wildlife almost always benefit when unnatural pollutants are removed from water, and concerns are minimal if construction is managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions.

- Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with of native plant species compatible with the local landscape and for wildlife needs. Annuals like ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as Crown Vetch and *Sericea lespedeza*.
- Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers is a Conservation Department publication available at https://live-mdcd8.pantheonsite.io/sites/default/files/2020-06/Streams.pdf.

- **Karst:** Warren County has known karst geologic features (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in Natural Heritage records, and ones not noted here may be encountered at the project site or affected by the project. Cave fauna (many of which are species of conservation concern) are influenced by changes to water quality, so check your project site for any karst features and make every effort to protect groundwater in the project area. See https://live-mdcd8.pantheonsite.io/sites/default/files/2020-06/Karst.pdf for best management recommendations.

- **Indiana Bats and/or Northern Long-eared Bats** occur in Warren County and could occur in the project area. Indiana Bats *(Myotis sodalis*, federal and state-listed endangered) and Northern Long-eared Bats (*Myotis septentrionalis,* federal-listed threatened) hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in 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 and/or Northern Long-eared Bats, especially from September to April. **If any trees need to be removed by 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.**

- 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, so inspect and clean equipment thoroughly before moving between project sites.
  - 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 has 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 carwash sites), and dry in the hot sun before using again.

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Natural Heritage records largely reflect sites visited by specialists in the last 30 years. Many privately owned tracts have not been surveyed and could host remnants of species once but no longer common.

important protections for fish and wildlife resources throughout the project area and at some distance downstream. Fish and wildlife almost always benefit when unnatural pollutants are removed from water, and concerns are minimal if construction is managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions.

- Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with of native plant species compatible with the local landscape and for wildlife needs. Annuals like ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as Crown Vetch and *Sericea lespedeza*.
- Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers is a Conservation Department publication available at https://live-mdcd8.pantheonsite.io/sites/default/files/2020-06/Streams.pdf.

➢ **Karst:** Warren County has known karst geologic features (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in Natural Heritage records, and ones not noted here may be encountered at the project site or affected by the project. Cave fauna (many of which are species of conservation concern) are influenced by changes to water quality, so check your project site for any karst features and make every effort to protect groundwater in the project area. See https://live-mdcd8.pantheonsite.io/sites/default/files/2020-06/Karst.pdf for best management recommendations.

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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, so inspect and clean equipment thoroughly before moving between project sites.

- 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 has 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 carwash sites), and dry in the hot sun before using again.

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Natural Heritage records largely reflect sites visited by specialists in the last 30 years. Many privately owned tracts have not been surveyed and could host remnants of species once but no longer common.

Missouri Department of Conservation

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

Natural Heritage Review Level Two Report: State Listed Endangered Species and/or Missouri Species/Natural Communities of Conservation Concern

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

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

PROJECT INFORMATION

Project Name and ID Number: Wright City WWTF #10301
User Project Number: 0233703.01
Project Description: Wright City WWTF Upgrades, 38° 49' 05.98"N 91° 00' 18.33"W, Peruque Creek (07110009-0101), Warren County
Project Type: Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Wastewater treatment plant, Construction or expansion
Contact Person: Robert Polys
Contact Information: sstang@woodardcurran.com or 2075583744

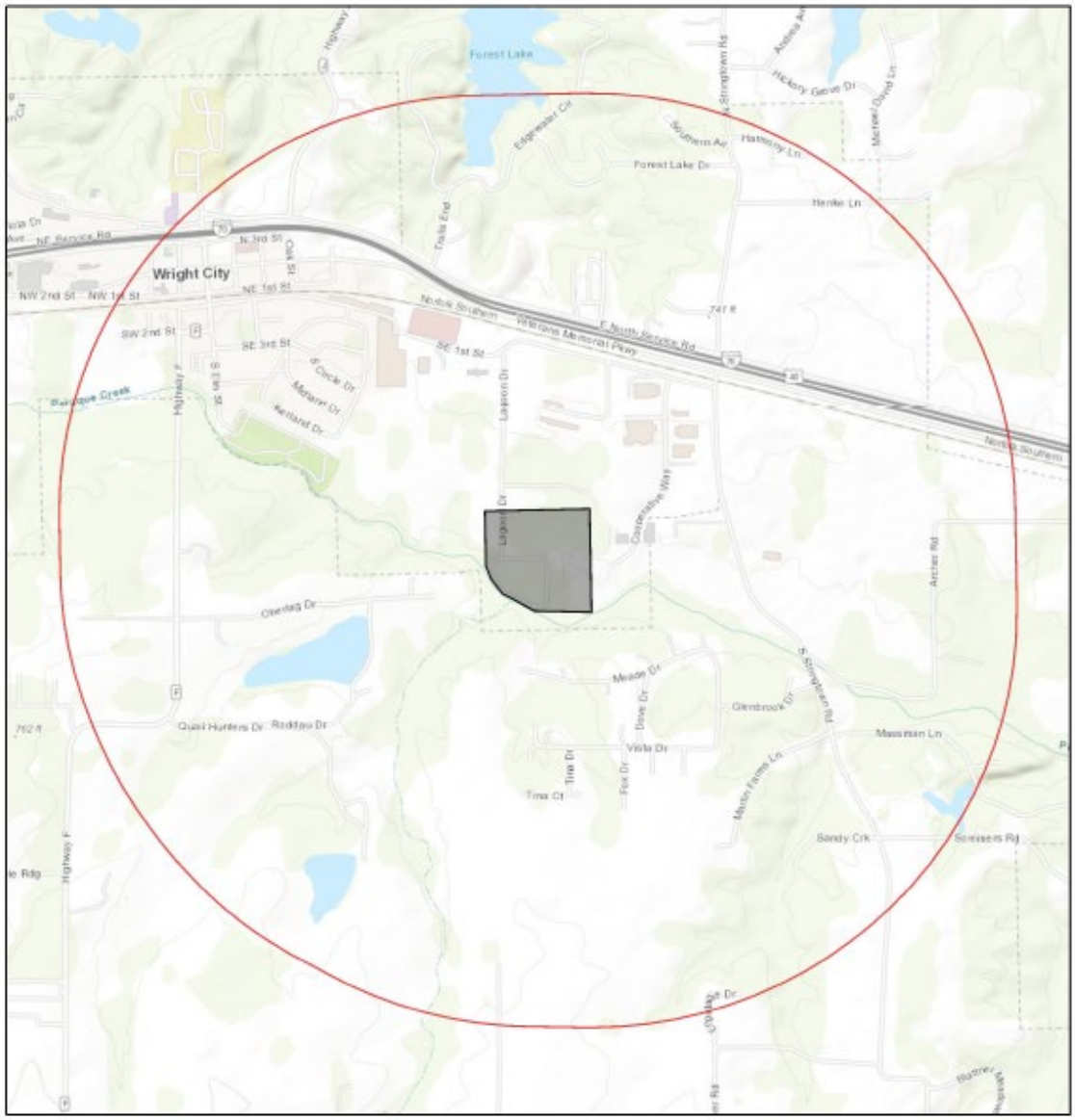
Disclaimer: The NATURAL HERITAGE REVIEW REPORT produced by this website identifies if a species tracked by the Natural Heritage Program is known to occur within or near the area submitted for your project, and shares suggested recommendations on ways to avoid or minimize project impacts to sensitive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

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

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

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

Wright City WWTF



January 25, 2022

1:21,108

0 0.175 0.35 0.7 mi

0 0.275 0.55 1.1 km

Project Boundary

Buffered Project Boundary

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

Species or Communities of Conservation Concern within the Area:

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

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

Other Special Search Results:

Your project is near a designated Natural Area . Please contact MDC Natural Areas Coordinator, 573-751-4115 for more information.

Project Type Recommendations:
Waste Transfer, Treatment and Disposal -Wastewater treatment plant: New or Maintenance; Clean Water Act permits issued by other agencies regulate both construction and operation of wastewater systems, and provide many important protections for fish and wildlife resources throughout the project area and at some distance downstream. Fish and wildlife almost always benefit when unnatural pollutants are removed from water, and concerns are minimal if construction is managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions.
Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with of native plant species compatible with the local landscape and for wildlife needs. Annuals like ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crown vetch and sericea lespedeza.
Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers is a Conservation Department publication available at http://mdc.mo.gov/sites/default/files/resources/2013/02/constprojnearstreams_2013.pdf

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - Indiana bats *(Myotis sodalis*, federal- and state-listed endangered) and **Northern long-eared bats** (*Myotis 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.**

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 https://mdc.mo.gov/community-conservation/managing-invasive-species-your-community 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 riparian 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, 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:

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

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.

See https://mdc.mo.gov/sites/default/files/mo_nature/downloads/2021_SOCC.pdf for a complete list of species and communities of conservation concern. Detailed information about the animals and some plants mentioned may be accessed at https://mdc12.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.

Appendix E: Recommended Effluent Limits (Modeling)

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Dru Buntin, Director

MEMORANDUM

DATE: 03/08/2022

TO: Cindy LePage, Chief
Engineering Section

THROUGH: Chris Wieberg, Director
Water Protection Program

THROUGH: John Hoke, Chief
Water Pollution Control Branch

THROUGH: Heather Peters, Chief
Watershed Protection Section

FROM: Mike Kruse, Chief
Total Maximum Daily Load and Modeling Unit

SUBJECT: Recommended Effluent Limits for the Proposed New 3.5 Million Gallons per Day Wright City South Wastewater Treatment Facility

The Total Maximum Daily Load (TMDL) and Modeling Unit has estimated the influence of a proposed new 3.5 million gallon per day (MGD) industrial and domestic wastewater treatment facility on water quality in Peruque Creek and Lake St. Louis in Warren and St. Charles counties. The analysis was completed to recommend effluent limits that should minimize the potential for the new facility to cause or contribute to the low dissolved oxygen impairment in Peruque Creek and exceedances of Missouri's lake numeric nutrient criteria in Lake St. Louis. The recommended effluent limits are based on a combination of QUAL2K modeling to address low dissolved oxygen in Peruque Creek and BATHTUB modeling to address lake numeric nutrient criteria in Lake St. Louis. Results of the modeling are presented in Attachment 1. Revisions to the Lake St. Louise BATHTUB model are detailed in Attachment 2. Final effluent limit recommendations are highlighted in Table 2 of Attachment 1.

If you have any questions regarding these analyses, please contact Lisa Rodgers, of my staff, by email at Lisa.Rodgers@dnr.mo.gov or by phone at 522-2552. Thank you.

MK/lrh
Attachment

c: John Rustige, Chief, Wastewater Engineering Unit
Steve Hamm, P.E., Wastewater Engineering Unit

Attachment 1: Results of Modeling and Effluent Limit Recommendations for the Proposed New 3.5 MGD Wright City South Facility

The existing Wright City South wastewater treatment facility (MO-0023191) has a design flow of 0.5 MGD and discharges to Peruque Creek (water body identification (WBID) 218), which is on Missouri's 303(d) list of Impaired Waters due to low dissolved oxygen (DO) and low aquatic macroinvertebrate diversity. The existing Wright City facility is also located approximately 16 miles upstream of Lake St. Louis (WBID 7054), which is listed as impaired due to chlorophyll-a (Chl-a) concentrations that exceed Missouri's numeric nutrient criteria for the Plains lake ecoregion. A new Wright City wastewater treatment facility is currently proposed to be constructed near the existing facility and is currently proposed to treat 3.5 MGD of industrial and domestic wastewater, including wastewater from a sizeable beef processing facility. The locations of the existing Wright City South wastewater treatment facility, the impaired segment of Peruque Creek, and Lake St. Louis are displayed on Figure 1.

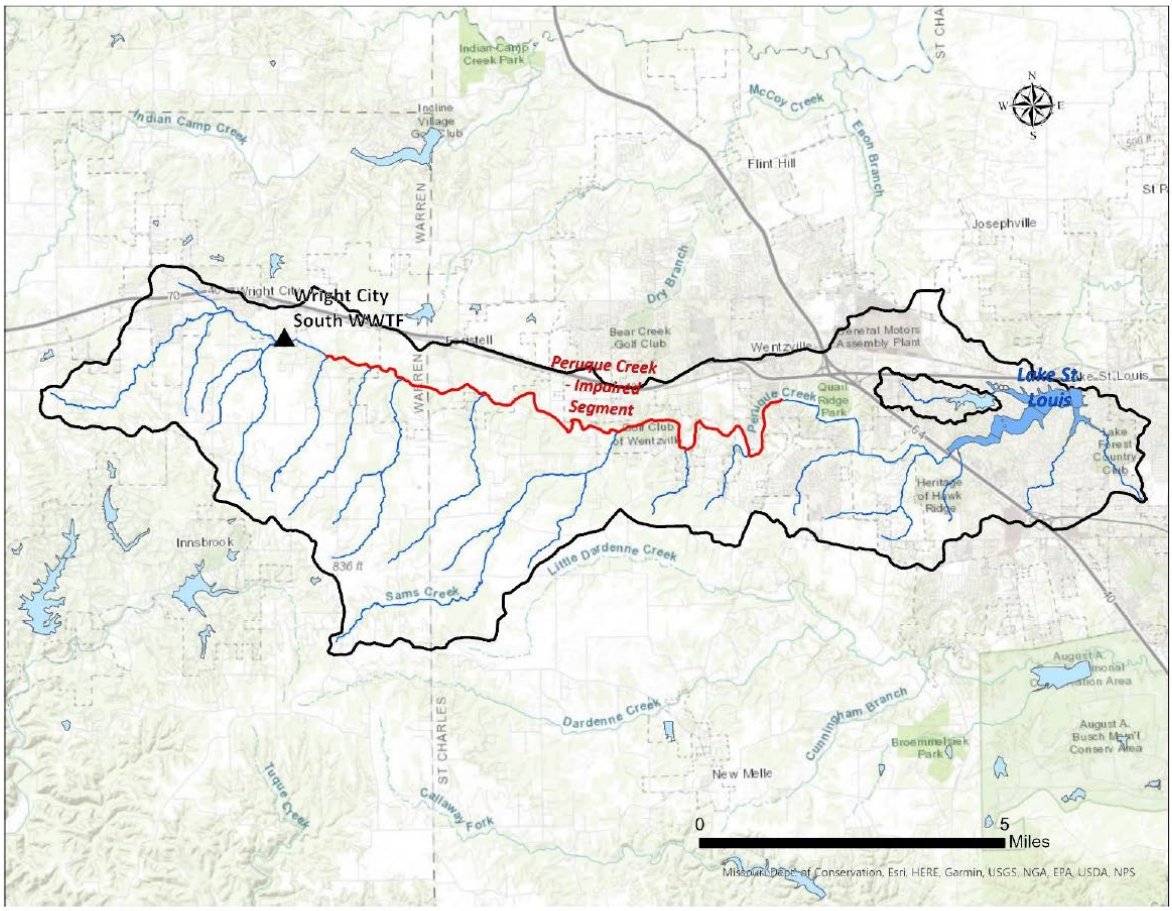


Figure 1. Geographic Scope of Modeling

The TMDL and Modeling Unit had previously conducted a reasonable potential analysis which determined that the existing Wright City South wastewater treatment facility has reasonable potential to contribute to exceedances of Missouri's lake numeric nutrient criteria in Lake St. Louis. As a result, the operating permit issued on October 1, 2020, includes a schedule of compliance for achieving effluent limits for total nitrogen (TN) and total phosphorus (TP) of 11 milligrams per liter (mg/L) and 1 mg/L (respectively) no later than October 1, 2025. Upon receiving a request from the Wastewater Engineering Unit to evaluate the potential influence of a new wastewater treatment facility in the Lake St. Louis watershed, the TMDL and Modeling Unit revised the BATHTUB modeling portion of the reasonable potential analysis for Lake St. Louis to better reflect current procedures and improved understanding of the BATHTUB modeling process.

The revised BATHTUB model was calibrated to 2018 lake data using estimated flow, TN, and TP effluent data from facility discharge monitoring reports submitted between December 2017 and September 2018, and nonpoint source loading estimates from the Spreadsheet Tool for Estimating Pollutant Loads (STEPL).[1] Percent losses of TN and TP over distance (attenuation) estimates were applied to facility discharges in accordance with the methods outlined in the original March 2020 Lake St. Louis reasonable potential analysis memo. The model outputs in Table 1 are based on maximum potential TN and TP discharges estimated from the ammonia as nitrogen and total suspended solids limits in the previously issued Wright City South operating permit (expired March 30, 2020). As shown, Chl-a concentrations increase when the design flows and permit limit-based TN and TP concentrations are entered into the BATHTUB model. These model outputs indicate that the Wright City South wastewater treatment facility has reasonable potential to contribute to exceedances of the Chl-a criterion for Lake St. Louis at the current design flow of 0.5 MGD, an expanded design flow of 1.0 MGD, and the 3.5 MGD design flow currently proposed for a new facility. The magnitude of the Chl-a, TN, and TP concentrations predicted by the model increase incrementally as Wright City South design flows are increased. Based on the results of the Lake St. Louis BATHTUB model, specific effluent limits are needed to minimize the potential for discharges from the Wright City South wastewater facility to contribute to exceedances of the Chl-a criterion, and the TN and TP screening thresholds.

Table 1. BATHTUB-Estimated Numeric Nutrient Outputs with Permit-Based Inputs

Wright City South at TP=9 mg/L, TN=24.4 mg/L	Design Flow (MGD)	Criterion	Screening Thresholds		Secchi (meters)
		Chl-a (µg/L)	TP (µg/L)	TN (µg/L)	
Plains Criteria	**NA**	**30**	**49**	**843**	**NA**
Calibration 2018	**NA**	**31**	**73**	**731**	**0.8**
All Minor *de minimis* facilities	0.132	32	75	741	0.8
Wright City South (Existing)	**0.5**	**33**	**80**	**783**	**0.8**
Wright City South (Expanded)	**1.0**	**34**	**86**	**833**	**0.7**
Wright City South (Proposed New)	**3.5**	**38**	**106**	**1023**	**0.7**

[1] TN and TP effluent concentration data were not available. Effluent TN was estimated based on permit limits for ammonia nitrogen plus a default value of 20 milligrams per liter (mg/L) for nitrate/nitrate, and TP was estimated as 30 percent of TSS up to a maximum of 11 mg/L. The STEPL model can be accessed at: https://www.epa.gov/nps/spreadsheet-tool-estimating-pollutant-loads-stepl.

Since the Wright City South wastewater treatment facility discharges to a DO-impaired segment of Peruque Creek, a QUAL2K model was used to estimate effluent limits that should reduce the potential for wastewater discharges to cause or contribute to low DO in Peruque Creek, as well as minimize the potential for the facility to contribute to Chl-a impairments in Lake St. Louis. The QUAL2K model was developed using flow data recorded on September 24, 2002, combined with stream chemistry data recorded on September 5, 2002. Due to the age of the data, the use of stream chemistry and flow data recorded on different days, and an unusual stream flow pattern at the time flows were recorded, the QUAL2K model does not necessarily represent a typical low-flow condition in Peruque Creek. The model does, however, represent a relatively shallow, low-flow stream, on a fairly flat gradient during a time when water temperatures are warm. Since the QUAL2K model is a generalized representation, minimum DO model outputs near or above 5.5 mg/L are preferred to provide a margin of safety.[2]

The TMDL and Modeling Unit had previously (August 25, 2021) provided a similar analysis based on a proposal that a new facility would treat only wastewater from beef processing operations, would have a design flow of 2 MGD, and would be located near the Warren-St. Charles county line just west of Foristell. For this current QUAL2K model, the location of the proposed new facility is near the current Wright City South wastewater treatment facility. The location of Wright City South and the quantity of wastewater discharge compared to critical condition (7Q10) flows in Peruque Creek make the facility the "headwater" and primary source of flow in the DO-impaired stream segment.[3] As displayed in Table 2, and similar to the BATHTUB modeling, the QUAL2K model scenarios include the existing facility design flow of 0.5 MGD and increases in facility design flows to 1 MGD (expanded) and 3.5 MGD (proposed new). The effluent limits recommended for the Wright City South wastewater treatment facility in Scenario 4 for flows up to 3.5 MGD are the final effluent limits required by the current operating permit and are recommended based on additional BATHTUB modeling. Discussion on the derivation of the final effluent limits using BATHTUB modeling follows Table 2.

Note from Table 2 that lower five-day biochemical oxygen demand (BOD_5) concentrations are required at lower facility flows to achieve DO concentrations close to 5.5 mg/L in Peruque Creek. This is because changes in flow and location greatly influence the model's calculations due to dilution, reaeration, and attenuation factors. When the model considers those factors, greater facility flows do not necessarily result in the need for lower effluent concentrations. That is why mass loading calculated from model outputs with different locations, flow, or effluent concentrations should not be applied to separate scenarios. Appropriate effluent concentrations can only be determined by entering each unique set of facility characteristics into the models.

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[2] Missouri's water quality standards establish a minimum DO criterion of 5.0 mg/L in streams for the protection of aquatic life in warm water habitats.

[3] Wright City South design flows of 0.5, 1.0, and 3.5 MGD equate to 0.93, 1.86, and 6.50 cubic feet per second (cfs), respectively. The USGS Streamstats 7Q10 low flow estimate for Peruque Creek near Wright City South is 0.005 cfs.

Table 2. QUAL2K Modeling Results for Wright City South on Peruque Creek

Scenario		Facility Flow MGD	Effluent Concentrations in mg/L							Peruque Creek Min. DO
			Facility DO	BOD_5	TSS	Ammonia as N	Nitrate/ Nitrite	TN	TP	
1	Existing Facility	0.5	7.0	3.0	10	0.6	15	15.7	1.0	5.43
2	Expanded Facility	1.0	7.0	5.0	10	0.6	15	15.7	1.0	5.44
3	Proposed New Facility – Puruque Creek WQ	3.5	7.0	6.0	10	0.7	14.3	15.5	1.0	5.58
4	**Proposed New Facility – Lake St. Louis WQ**	**3.5**	**7.0**	**6.0**	**10**	**0.7**	**10.0**	**11.0**	**1.0**	**5.61**

The QUAL2K-derived effluent concentrations for the proposed new 3.5 MGD wastewater discharge to Peruque Creek (Table 2, Scenario 3) were run through the BATHTUB model for Lake St. Louis. Reducing effluent TN and TP to the concentrations that result in DO model outputs greater than 5.5 mg/L in Peruque Creek reduce the potential for discharges from Wright City South to contribute to Chl-a impairments in Lake St. Louis. However, the resulting in-lake TN concentration still exceeds the calibration value and the screening threshold. Exceedances of screening thresholds can result in eutrophication factors that violate Missouri's lake numeric nutrient criteria.[4] When the Wright City South effluent limit of 11 mg/L TN was run through the BATHTUB model, TN outputs are below the screening threshold at all facility flows. Therefore, it is recommended that the final TN effluent limit of 11 mg/L in the current Wright City South permit be maintained for the proposed new facility. When the effluent limit of 1 mg/L TP is run through the BATHTUB model, TP remains 30 percent above the screening threshold, but is 2 microgram per liter (µg/L) lower than the calibration model. A recent study of Florida lakes indicates that internal phosphorus loading may account for approximately 30 percent of TP loading in eutrophic lakes.[5] Phosphorus runoff from the residential areas that surround the lake may also contribute to exceedances of the TP screening threshold.

The QUAL2K and BATHTUB models provide some assurance that enforcing effluent limits of 11 mg/L TN and 1 mg/L TP at the existing and a proposed new Wright City South wastewater treatment facility will protect water quality in Peruque Creek and Lake St. Louis. Those values are maximum concentrations and every effort should be made to achieve effluent concentrations below the maximum allowable concentrations whenever possible.

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[4] Missouri's statewide lake numeric nutrient criteria include ecoregion-based criteria for Chl-a, and screening thresholds for TN and TP. When screening thresholds are exceeded five eutrophication factors are considered when determining the impairment status of lakes. Missouri's Lake Nutrient Criteria Implementation Plan can be accessed at: https://dnr.mo.gov/document-search/nutrient-criteria-implementation-plan-july-27-2018.

[5] "Eutrophic" lakes have an abundant accumulation of nutrients that support dense growth of algae and other organisms, the decays of which depletes the water of oxygen. *Sediment Nutrient Release – It's Not Just for Eutrophic Lakes! Implications for Surface Water Restoration. Harvey Harper, Environmental Research & Design, Inc.* Presented at North American Lake Management Society 2021 Virtual Symposium, November 16, 2021.

The highlighted row in Table 2 (above) shows the estimated resulting DO concentration in Peruque Creek. Tables 3 and 4 show the results of the Lake St. Louis BATHTUB models with effluent TN concentrations of 15.5 mg/L and 11 mg/L (respectively).

Table 3. Wright City South at QUAL2K-Derived Limits

Wright City South at TP=1 mg/L, TN=15.5 mg/L	Design Flow (MGD)	Criterion	Screening Thresholds		Secchi (meters)
		Chl-a (µg/L)	TP (µg/L)	TN (µg/L)	
Plains Criteria	**NA**	**30**	**49**	**843**	**NA**
Calibration 2018	**NA**	**31**	**73**	**731**	**0.8**
All Minor *de minimis* facilities	0.132	32	75	741	0.8
Wright City South (Existing)	**0.5**	**31**	**74**	**757**	**0.8**
Wright City South (Expanded)	**1.0**	**31**	**73**	**784**	**0.8**
Wright City South (Proposed New)	**3.5**	**30**	**71**	**892**	**0.8**

Table 4. Wright City South at Final Effluent Limits by October 2025

Wright City South at TP=1 mg/L, TN=11 mg/L	Design Flow (MGD)	Chl-a (µg/L)	Screening Thresholds		Secchi (meters)
			TP (µg/L)	TN (µg/L)	
Plains Criteria	**NA**	**30**	**49**	**843**	**NA**
Calibration 2018	**NA**	**31**	**73**	**731**	**0.8**
All Minor *de minimis* facilities	0.132	32	75	741	0.8
Wright City South	**0.5**	**31**	**74**	**743**	**0.8**
Wright City South	**1.0**	**31**	**73**	**758**	**0.8**
AFG + Wright City South	**3.5**	**30**	**71**	**821**	**0.8**

Attachment 2: Revised Lake St. Louis BATHTUB Calibration Model Inputs

Based on the improved procedure for BATHTUB modeling, lake segmentation was corrected, the model was calibrated based on estimated actual facility flows and nutrient discharge, and the area of nonpoint source load contributions to the lake were reduced.[6] BATHTUB model inputs require that lakes are segmented based on changes in depth, flow direction, and incoming tributaries. It is also useful to establish lake segments based on sample points that capture water quality in areas of the lake other than the assessment point at the lake dam, when available. The revised BATHTUB model increased the number of lake segments from two to six as illustrated in Figure 2. The water quality monitoring point near the Lake St. Louise dam was input as a "monitored inflow" in the original and revised models.

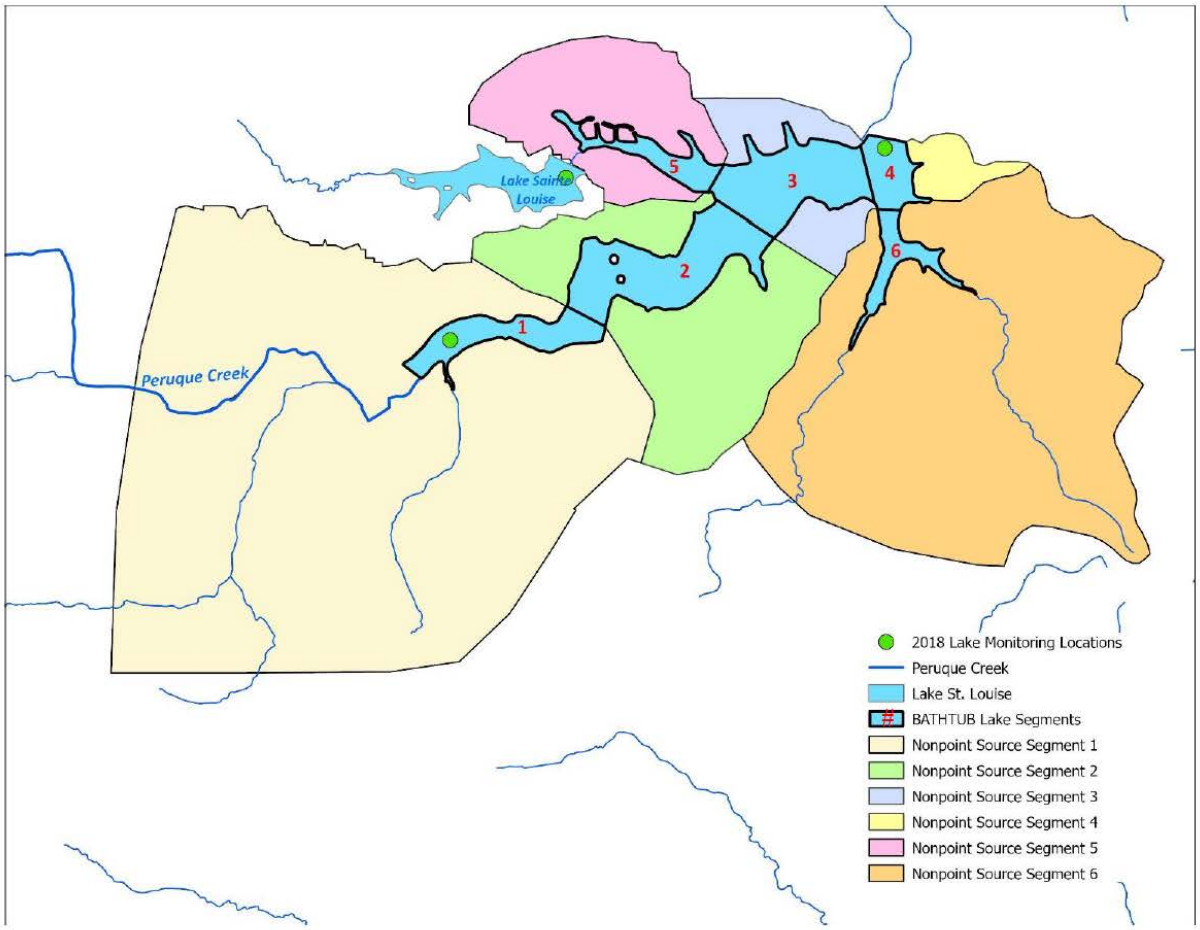


Figure 2. Revised BATHTUB Lake Segmentation and Nonpoint Source Loading Area

[6] It has recently been clarified that inclusion of too large an area of nonpoint source loading contribution to lakes result in initial BATHTUB nitrogen and phosphors outputs much greater than those recorded in the lake. Current BATHTUB modeling methods reduce the nonpoint source loading area so that the model outputs are much closer to the recorded water quality prior to refined calibration.

Characteristics of lake segments and nonpoint source areas are displayed in Tables 5 and 6.

Table 5. Characteristics of Lake Segments

Segment	Flows to Segment	WQ Sample ID	Surface Area (km^2)	Mean Depth (meters)	Length (km)	Mixed Layer Depth (meters)
1	2	7054/2.3	0.27	1.0	1.7	1.0
2	3	none	0.58	6.0	1.9	5.0
3	4	none	0.48	6.0	1.2	5.0
4	Out of Lake	7054/0.15	0.16	6.0	0.5	5.0
5	3	none	0.17	1.0	1.3	1.0
6	4	none	0.15	1.0	0.8	1.0

Table 6. Characteristics of Nonpoint Source Loading Areas

Nonpoint Source Load to Lake Segment	Land Use Categories	Land Use Area km^2
1		
	Urban	4.42
	Cropland	0.59
	Pastureland	1.24
	Forest	2.66
	sum	8.91
2		
	Urban	1.73
	Cropland	0.00
	Pastureland	0.00
	Forest	0.16
	sum	1.89
3		
	Urban	0.46
	Cropland	0.00
	Pastureland	0.00
	Forest	0.03
	sum	0.49
4		
	Urban	0.17
	Cropland	0.00
	Pastureland	0.00
	Forest	0.04
	sum	0.21
5_		

Nonpoint Source Load to Lake Segment	Land Use Categories	Land Use Area km²
	Urban	1.06
	Cropland	0.02
	Pastureland	0.04
	Forest	0.10
	sum	1.22
6_		
	Urban	4.61
	Cropland	0.07
	Pastureland	0.02
	Forest	0.68
	sum	5.38

The BATHTUB model was calibrated using estimated actual point source flows, TN, and TP contributions as displayed in Table 7.

Table 7. Estimated Actual Point Source Flows, TN, and TP in Calibration Model

Facilities	2017-2018 1-yr Avg Flow GPD	DMR TP mg/L	BATHTUB (%Loss) TP µg/L	DMR TN mg/L	BATHTUB (%Loss) TN µg/L	Distance from Lake (miles)
SCCPWSD#2, Castlegate MHP and Providence	26,605	1.750	300	20.41	5,200	6.3
Foristell Interim WWTP	9,500	1.500	210	20.27	4,360	12.4
Maple Ridge MHP	8,667	0.083	10	23.00	4,640	17.3
SCCPWSD#2, Boone Ridge Estates WWTF	7,848	0.720	140	20.00	5,560	5.8
Stewart MHP WWTF	875	3.300	420	37.78	7,630	17.0
All minor	53,495	Avg.	216	Avg.	5,478	N/A
Wright City South WWTF	400,000	3.421	450	11.30	2,330	15.7
General Motors Wentzville Assembly Cntr	977,792	Avg.	70	Avg.	800	6.6

End antidegradation review

APPENDIX 2:
ANTIDEGRADATION REVIEW COMMENTS AND DEPARTMENT RESPONSES

This permit, the fact sheet, and the below responses serve to respond to the public concerns raised during the antidegradation process. Please see the fact sheet above which addresses specific concerns. This permit prohibits raw waste and animal parts from being released into the environment via monitoring requirements and numeric limits.

This permit does not cover concentrated animal feeding operations. Animal confinement is covered under MOGS10646.

The increase in impervious surfaces, erosion potential, and stormwater flow was reviewed in Appendix 3.

Comment 1:
Dan Oberle of the Lake St. Louis Community Association commented requesting the Department hold a public hearing regarding this permit application.

Response 1:
Two public hearings will be held. One will be virtual, and the other will be in or near Wright City. Please see the cover letter of this document for information on these meetings.

Comment 2:
Comments were received regarding a negative impact to water quality and Lake St. Louis.

Response 2:
Missouri's Water Quality Standards regulation, 10 CSR 20-7.031, establishes ambient Water Quality Standards for the protection of groundwater and surface water for the purposes of aquatic life protection, human health protection-fish consumption, drinking water supply, irrigation, livestock and wildlife watering, groundwater, and whole body and secondary contact recreation. The effluent limits established through the antidegradation review process for American Foods Group are protective of all designated uses of Peruque Creek and the downstream Lake St. Louis.

The Department has estimated the influence of a proposed new 3.5 million gallon per day (MGD) industrial and domestic wastewater treatment facility on water quality in Peruque Creek and Lake St. Louis in Warren and St. Charles counties. The analysis was completed to recommend effluent limits that should minimize the potential for the new facility to cause or contribute to the low dissolved oxygen impairment in Peruque Creek and exceedances of Missouri's lake numeric nutrient criteria in Lake St. Louis. The recommended effluent limits are based on a combination of QUAL2K modeling to address low dissolved oxygen in Peruque Creek and BATHTUB modeling to address lake numeric nutrient criteria in Lake St. Louis.

Peruque Creek is on the 2022 303(d) list* for low dissolved oxygen (DO) and low aquatic macroinvertebrate diversity and Lake St Louis is on the 2022 303(d) list for Chlorophyll-a. The effluent limits determined through this Antidegradation Determination reflect the recommended effluent limits of the models. All effluents limits are at least as stringent as the water quality standards and consistent with the Water Quality Model.

*At the time of the antidegradation review, the EPA had not yet approved the 2022 303(d) list; however, the approval for the updated 303(d) list came from EPA on February 13, 2024. There was no status change of Peruque Creek or Lake St. Louis from the 2020 to the 2022 303(d) lists.

Comment 3:
Comments were received concerning the language "significant degradation" used in the Water Quality and Antidegradation Review document.

Response 3:
The Antidegradation Implementation Procedure (AIP) defines significant degradation as, "A reduction by 10 percent or more of the facility assimilative capacity for any pollutant as a result of any single discharge…" Assimilative Capacity is the amount of contaminant load that a specific water body can naturally attenuate without exceeding the Water Quality Standards (WQS) or impairing beneficial uses. So significant degradation does not mean a lowering of water quality below WQS or allowing a discharge that would impair the beneficial uses. The department's interpretation of significance, therefore, is compatible with the EPA's August 10, 2005 memo, *Tier 2 Antidegradation Reviews and Significance Thresholds*, from Ephraim King, Director of Science and Technology. https://www.epa.gov/sites/default/files/2014-10/documents/tier2.pdf

In practice, the terminology is used when the owner and engineer evaluate treatment alternatives and provide a socio-economic justification for a discharge. The antidegradation review process ensures that the proposed discharge fully protects beneficial uses and achieves the highest statutory and regulatory requirements.

The effluent limits established through the antidegradation review process for American Foods Group are protective of all designated used of Peruque Creek and the downstream Lake St. Louis. Peruque Creek is on the 2022 303(d) list for low dissolved oxygen (DO) and low aquatic macroinvertebrate diversity and Lake St Louis is on the 2022 303(d) list for Chlorophyll-a. All effluents limits are at least as stringent as the water quality standards. The limits are also consistent with the Department Water Quality Model that demonstrated they would not result in degradation sufficient to cause or contribute to beneficial use impairment.

Comment 4:
Comments were received that the demonstration of necessity and determination of social and economic importance have not been sufficiently explored.

Response 4:
A thorough presentation of social and economic importance was included in the Antidegradation Application. The affected community is described as the Wright City and Warren County service area. A number of developments are planned for the immediate area around the facility; however, they are currently inhibited due to the lack of treatment capacity at the Wright City WWTF and unallocated treatment capacity of American Foods Group WWTF will be able to treat these developments. Specific social and economic factors are described as follows:

- Median Household Income: The Median Household Income is anticipated to rise as a result of the American Foods Group facility construction. The additional treatment capacity is expected to allow commercial development, additional job generation, and continued growth and development.
- Unemployment Rate: The American Foods Group facility construction is expected to bring a substantial quantity of jobs within the vicinity, directly reducing the unemployment rate. The additional unallocated treatment capacity of American Foods Group WWTF will also contribute to commercial expansion and further allow job creation in the service area.
- Poverty Level: Poverty Level is expected to decrease as a direct result of the reduced unemployment rate and increase in median household income created through the American Foods Group facility construction.
- Commercial & Industrial Development Potential: The proposed WWTF will allow commercial and industrial development to continue throughout the community. This will occur directly with the American Foods Group facility construction bringing more than 1,300 new jobs and generating $1 billion in economic impact in Missouri. Additional treatment plant capacity will provide infrastructure for future commercial growth.
- Public Services: The goal of the proposed facility is intended to accommodate new industrial, residential, and commercial wastewater flows and improve public services associated with wastewater treatment.

This new facility, while currently owned by American Foods, will be transferred to the district to serve as the treatment system for Wright City South to replace the current facility. The current Wright City South facility is a retrofit, completed in December 2008, of the original system. The retrofit will have been in place for almost 20 years by the time the new facility is constructed, which is the typical design life for a mechanical facility. The existing Wright City South facility has a design flow of 0.5 MGD and consists of an Atlas-IS extended aeration activated sludge system and ultraviolet disinfection with sludge stored in the lagoon. The facility has routinely exceeded permitted effluent limitations for ammonia and has had occasional violations of Biochemical Oxygen Demand$_5$ (BOD_5) and BOD_5 percent removal. The facility received a letter of warning during the last inspection conducted on August 10, 2020, due to the number of instances and severity of exceedances; these exceedances met the criteria for significant non-compliance. The existing facility also has an average actual flow greater than its design flow, at 0.545 MGD, based on the last five years of eDMR data.

The new facility has been designed to meet effluent limits lower than those in the existing facility's current permit for BOD_5 and ammonia, as well as many other parameters. The new facility will also have capacity to treat current flows to the Wright City South facility and anticipated flows for future growth in the area which includes population increases.

Comment 5:
Comments were received regarding concerning scouring and silt issues at Lake St. Louis increasing due the increase in flow.

Response 5:
The Department acknowledges the concern. American Food Group contracted Woodard & Curran/Alberici JV to assess the downstream impact of the project to determine if any erosion control measures are required for the outfall channel. The report evaluated pre-development and post-development impacts to the channel considering both wastewater flow and stormwater flow. The post-development upgrades to the wastewater treatment facility will lead to an increase in effluent flow, as well as an increased runoff from a rainfall event, due to an increase in impervious areas at the facility. However, on-site stormwater detention systems are to be installed to maintain the post-development stormwater runoff from the facilities below pre-development quantities.

A HydroCAD analysis for pre-development and post-development stormwater conditions was created. A summary of pre-development and post-development flows to the channel is provided in the table below.

Summary of Outflows to the Channel

Storm Event	Pre-development Wastewater Flow (CFS)	Post-development Wastewater Flow (CFS)	Pre-development Stormwater Outflow (CFS)	Post-development Stormwater Outflow (CFS)	Pre-development Total Channel Flow (CFS)	Post-development Total Channel Flow (CFS)
2-Year	0.93	6.50	17.8	16.4	18.8	22.9
10-Year	0.93	6.50	35.8	23.5	36.7	30.0
25-Year	0.93	6.50	43.7	26.5	44.6	33.0
100-Year	0.93	6.50	57.8	31.5	58.7	38.0

Based on the geometry, a steady-state hydraulic analysis was conducted for both pre-development and post-development flows. Due to a slight increase in the flow outflows between pre-development and post-development conditions at a 2-year storm event, a slight increase in velocity was observed. As expected, the channels have higher velocities and shear within the channel instead those of the banks. As a result, erosion would be more likely on the channel slopes than on the banks. The post-development total channel flow for the 10-, 25-, and 100-year floods is lower than the pre-development channel flow due to the reduction in stormwater runoff.

The allowable velocity for a given channel is determined based on channel soil material. Based on SCI Engineering, Inc.'s Geotechnical Report, dated April 2022, the channel can be assumed to have Silty Clay soil. Additionally, the soil in the channel is observed to be covered in dense grass.

The *United States Department of Agriculture's Natural Resources Conservation Services' Part 654 Stream Restoration Design National Engineering Handbook* (dated August 2007) Table 8-4 was used to determine the allowable velocity for the existing channel. Based on these observations, the allowable velocity for the channel can be estimated to be 8 ft/s. Since both Pre- and Post-development channel conditions show less than 8 ft/s velocity, it can be concluded that no additional channel protection is needed. However, a protective riprap apron was designed at the proposed outfall location.

Comment 6:
Comments were received stating all treatment plants fail.

Response 6:
The department's responsibility is to ensure the system is designed, constructed and maintained according to state laws and regulations. Properly designed, constructed, and maintained treatment facilities are protective of water quality. Standard conditions require that all facilities be operated and maintained; federal regulations also require proper operation and maintenance pursuant to 40 CFR 122.41(e).

Comment 7:
Comments were received that dumping animal parts into lakes would endanger health and destroy the quality of the lakes.

Response 7:
The facility will be treating their wastewater prior to any discharge to a waterbody. All other waste materials will handled in a non-discharging manner like landfilling. To ensure that solids are not discharged in amounts which would cause a violation of general criteria pursuant to 10 CSR 20-7.031(4), total suspended solids (TSS) is limited in the permit at 15 mg/L daily maximum, and 10 mg/L monthly average. These values do not give permission for the facility to violate general criteria. Pursuant to 10 CSR 20-7.031(4)(C) waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor, or prevent full maintenance of designated uses and the TSS limit is designed to protect receiving waterbodies from solids discharges. 15 mg/L is 15 parts per million (PPM). So, only 15 particles out of a million are allowed for discharge on any one day; the facility must average 10 mg/L (PPM) per month. So any day that exceeds 10 mg/L must be averaged with another day of less than 10 mg/L.

Comment 8:
Comments were received that the discharge from the proposed AFG Wastewater Treatment Facility may have impacts on residential property values and the quality of life.

Response 8:
The Department acknowledges the community's concern; however, the Missouri Clean Water Law and its implementing regulations do not establish requirements specific to quality of life, property values, or property use. These issues do not fall within the scope of the Antidegradation Review nor within the scope of the operating permit. The antidegradation review, and subsequent permit determinations are based on all of the available information from the antidegradation review, Peruque Creek studies, and modeling; all

which follow Missouri Clean Water Law. Therefore, these appropriate effluent limitations protect the designated uses of Peruque Creek and downstream water bodies.

End antidegradation review comments.

APPENDIX 3: EROSION IMPACT ANALYSIS

Woodard & Curran

TECHNICAL MEMORANDUM

TO: Jon Himlan

CC: Samantha Weidenbenner

PREPARED BY: Manthan Shah

REVIEWED BY: Joe Kirby

DATE: August 16, 2023

RE: Wright City WWTF Upgrades -
Outfall Channel Erosion Impact Analysis

American Food Group (AFG, Owner) has contracted the Woodard & Curran/Alberici JV (W&C-ACI, LLC) to upgrade the pre-development WWTF facility located in Write City, Missouri. The post-development upgrades to the WWTF will lead to an increase in effluent flow from the facilities, as well as an increased runoff from a rainfall event, due to an increase in impervious areas at the facility. However, on-site stormwater detention systems are to be installed to maintain the post-development stormwater runoff from the facilities below pre-development quantities. It has been requested that as part of the due diligence process, a downstream impact assessment for the channel be conducted to determine if any erosion control measures are required for the pre-development outfall channel.

1. HYDRAULIC ANALYSIS

A HydroCAD analysis for pre-development and post-development stormwater conditions was created for the WWTF. Additionally, the pre-development and post-development average outflows for the treatment facility were provided to the W&C-ACI, LLC by the Owner. A summary of pre-development and post-development flows to the channel is provided in the table below.

Table 1: Summary of Outflows to the Channel

Storm Event	Pre-development Wastewater Flow (CFS)	Post-development Wastewater Flow (CFS)	Pre-development Stormwater Outflow (CFS)	Post-development Stormwater Outflow (CFS)	Pre-development Total Channel Flow (CFS)	Post-development Total Channel Flow (CFS)
2-Year	0.93	6.50	17.8	16.4	18.8	22.9
10-Year	0.93	6.50	35.8	23.5	36.7	30.0
25-Year	0.93	6.50	43.7	26.5	44.6	33.0
100-Year	0.93	6.50	57.8	31.5	58.7	38.0

HEC-RAS (v.6.3.1) was used to conduct a steady-state hydraulic analysis for the channel. The channel geometry was determined using the survey surface data. Additionally, field photographs from SCI Engineering, Inc.'s Wetland and Waterbody Delineation Report were used to determine the roughness coefficients for the channel and the banks (Figure 1). HEC-RAS reference manual Table 3-1 was used to approximate the value of the roughness coefficients (Manning's n) for the channel. Manning's n of "0.05" was used for "Natural stream with some weed and stones", while "0.1" was used for the banks of the channel, which are covered in deciduous trees. Due to the relative straightness of the channel, the contraction and expansion coefficients for the channel cross-sections were assumed to be 0.1 and 0.3, respectively. A normal tailwater condition was assumed for both pre-development and post-development conditions.

Figure 1: Outfall Channel – Looking Downstream from the Outfall Location

Based on the geometry, a steady-state hydraulic analysis was conducted for both Pre-development and post-development flows. Due to a slight increase in the flow outflows between pre-development and post-development conditions at a 2-year storm event, a slight increase in velocity was observed. As expected, the channels have higher velocities and shear within the channel instead those of the banks. As a result, erosion would be more likely on the channel slopes than on the banks. Tables 2A and 2B provide summaries of the pre-development and post-development condition hydraulics for the channel at selected cross-sections. The location of these selected cross-sections is provided in Figure-2. A detailed HEC-RAS report can be found in Appendix A.

Woodard & Curran

Figure 2: Outfall Channel – Select Cross-section Locations

Table 2A: Summary of Pre-development Channel Hydraulics

River	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Top Width	Froude # Chl	Shear Chan
			(cfs)	(ft)	(ft)	(ft/s)	(ft)		(lb/sq ft)
River 1	817	2yr	18.76	672.46	673.72	4.32	6.1	0.9	1.53
River 1	817	10yr	36.69	672.46	674.22	4.47	9.24	0.83	1.51
River 1	817	25yr	44.61	672.46	674.38	4.57	10.21	0.82	1.54
River 1	817	100yr	58.68	672.46	674.62	4.74	11.75	0.81	1.6
River 1	428	2yr	18.76	668.88	670.62	1.32	21.7	0.26	0.13
River 1	428	10yr	36.69	668.88	670.94	1.79	26.18	0.3	0.22
River 1	428	25yr	44.61	668.88	671.06	1.95	27.54	0.31	0.26
River 1	428	100yr	58.68	668.88	671.23	2.21	29.86	0.33	0.31
River 1	7	2yr	18.76	665.61	666.21	2.55	21.94	0.63	0.57
River 1	7	10yr	36.69	665.61	666.45	3.19	24.72	0.66	0.81
River 1	7	25yr	44.61	665.61	666.54	3.4	24.94	0.67	0.89
River 1	7	100yr	58.68	665.61	666.67	3.74	25.3	0.69	1.02

Woodard & Curran

Table 2B: Summary of Post-development Channel Hydraulics

River	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Top Width	Froude # Chl	Shear Chan
			(cfs)	(ft)	(ft)	(ft/s)	(ft)		(lb/sq ft)
River 1	817	2yr	22.88	672.46	674.05	3.41	8.15	0.66	3.6
River 1	817	10yr	29.98	672.46	674.25	3.54	9.41	0.66	3.77
River 1	817	25yr	32.99	672.46	674.33	3.59	9.87	0.65	3.83
River 1	817	100yr	38.04	672.46	674.44	3.67	10.57	0.65	3.94
River 1	428	2yr	22.88	668.88	670.7	1.44	22.89	0.27	0.16
River 1	428	10yr	29.98	668.88	670.83	1.63	24.7	0.29	0.19
River 1	428	25yr	32.99	668.88	670.88	1.7	25.39	0.29	0.2
River 1	428	100yr	38.04	668.88	670.96	1.82	26.42	0.3	0.23
River 1	7	2yr	22.88	665.61	666.28	2.73	23.11	0.64	0.64
River 1	7	10yr	29.98	665.61	666.37	2.99	24.52	0.65	0.73
River 1	7	25yr	32.99	665.61	666.41	3.08	24.62	0.66	0.76
River 1	7	100yr	38.04	665.61	666.47	3.23	24.76	0.66	0.82

2. EROSION CONTROL ANALYSIS

The allowable velocity for a given channel is determined based on channel soil material. Based on SCI Engineering, Inc.'s Geotechnical Report, dated April 2022, the channel can be assumed to have Silty Clay soil. Additionally, as stated before the soil in the channel is observed to be covered in dense grass.

The United States Department of Agriculture's Natural Resources Conservation Services' Part 654 Stream Restoration Design National Engineering Handbook (dated August 2007) Table 8-4 was used to determine the allowable velocity for the existing channel. Based on these observations, the allowable velocity for the channel can be estimated to be 8 ft/s. Since both Pre- and Post development channel conditions show less than 8 ft/s velocity, it can be concluded that no additional channel protection is needed. However, a protective riprap apron was designed at the proposed outfall locations, at the upstream end of the channel, in accordance with Hydraulic Engineering Circular No. 14, dated July 2006.

APPENDIX 4: DESIGN CERTIFICATION STATEMENT

Woodard & Curran | Alberici

April 11, 2024

Pam Hackler
Environmental Program Specialist
Missouri Department of Natural Resources
1101 Riverside Dr.
Jefferson City, MO 65101

Re: American Foods Development Co. - Discharge Permit Application – Engineering Certification

Dear Pam:

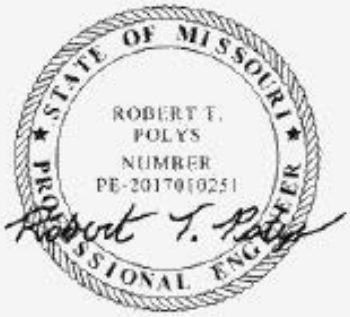
In accordance with the Missouri Department of Natural Resources (MDNR), Division 20 – Clean Water Commission, Chapter 6 – Permits, Article 10 CSR 20-6.010 (7)(B)F and on behalf of the American Foods Development Co., the Alberici Constructors, Inc. and Woodard & Curran, Inc. Joint Venture (JV) is providing this letter as certification that the American Foods Development Co. Discharge Permit Application has been designed to meet applicable requirements of MDNR, Division 20, Chapter 8 – Minimum Design Standards. This certification is also in accordance with 10 CSR 20-6.010 (5) that the project is exempted from the MDNR Construction Permit requirements and process. We appreciate the continued coordination with the Department on this important project.

Sincerely,

W&C – ACI, LLC

Robert T. Polys

Robert T. Polys, P.E.
Senior Principal / Senior Delivery Leader



APRIL 11, 2024

APPENDIX 5: PN ENDING JUNE 6, 2024 COMMENTS AND RESPONSES

American Foods Public Comments for the PN period ending June 6, 2024, and DNR Responses

Public comments were grouped, summarized, abridged, and consolidated, while retaining meaning, substance, and nuance, while excluding comments that have no bearing on the Missouri State Operating Permit. Citations included in the comments were omitted for brevity but were reviewed. The department's responses follow. Items not pertaining to the Missouri State Operating Permit are listed at the end of this section.

Abbreviations:
lbs/day = pounds per day
MGD = million gallons per day
MSOP = Missouri State Operating Permit

Group I Comments: Antidegradation Review and Treatment Type

Comment(s) believes the treatment level should be increased noting the applicant switched from a 5-stage to a 4-stage system. How are design features selected?

> The 4-stage Bardenpho system is designed for biological total nitrogen removal; nitrification and denitrification. The 5-stage Bardenpho wastewater treatment system is a modified 4-stage Bardenpho system designed for biological nitrogen and phosphorus removal. Their choice of the 4-stage Bardenpho system with side stream phosphorus treatment provides the same level of total nitrogen and total phosphorus removal as a 5-stage Bardenpho wastewater treatment system.
>
> Design features are selected based on a number of factors. First, and at a minimum, water quality must be protected. Missouri's WQS are found in 10 CSR 20-7.031. After selecting a treatment technology to meet the water quality standards, the design of the system is based on site layout, operational considerations, the preferences of the owner, engineer, and often the contractor, and cost considerations. While the 5 stage Bardenpho was identified in the Antidegradation Review as the preferred alternative, the Antidegradation does not limit the facility to the preferred alternative as long as the selected treatment technology will meet the effluent limits established in the review. In EPA's review of nutrient removal technologies, both the 4 stage and 5 stage Bardenpho are established technologies for nutrient removal and providing a high level of treatment, as they have been installed across the country to address nutrient concerns, such as in the Chesapeake Bay watershed.

Comment(s) noted that wastewater treatment systems are overwhelmed and underequipped. Comment(s) noted that the flows were increasing from 0.5 MGD to 3.5 MGD and had concerns regarding the hydrologic changes and downstream effects. Meat packing plants produce on average 291 to 532 gallons of wastewater per 1,000 pounds of animal processed per day which has higher pollutant load than domestic wastewater.

> The current Wright City South wastewater treatment plant is rated to treat only 0.5 Millions of Gallons per Day (MGD; is 500,000 gallons), this value is listed in the permit as a design flow. A copy of the current permit is here https://dnrservices.mo.gov/env/wpp/permits/issued/docs/0023191.pdf This means that the facility can only effectively treat 0.5 MGD. The current Wright City South WWTP exceeded the design flow, on at least one day, 76 months over the last 10 years. This means that ammonia, nitrogen, and phosphorus were discharged at elevated loads on those days. The city will have a new, advanced, appropriate treatment facility after the new system is installed. There is a necessity for WWTP upgrades, even if a meat processor was not coming to the city.
>
> Over the course of the last 10 years, ammonia was discharged on average 5.26 mg/L from Wright City South. Using the average ammonia concentration and the average flow from Wright City South of 0.562 MGD, the ammonia loading into the Tributary to Peruque Creek was 24.66 lbs per day; which is more than the 20.45 lbs per day with the new treatment plant. The new treatment plant, even at an increased flow will provide a reduction of 4.21 lbs/day of ammonia or approximately a 17% reduction in ammonia load.
>
> Below are tables related to loading within Warren County and St. Charles County either within the watershed or nearby to provide context. The first table is based on the permitted design flow listed on the various permits and the effluent limits within the permit. For total nitrogen, total phosphorus, nitrate+nitrite not all facilities are currently monitoring for these parameters and as such data was not available. For the facilities that are monitoring nutrients, as none of the facilities currently have nutrient effluent limits, the loading was based on the average concentration reported over the last five years. The second table is the maximum daily flow reported by each facility over the last five years and their permitted effluent limit.

Table 1: Annual Loading Comparison based on Permitted Design Flow

						Load (lbs/year)		
Facility Name	Permit #	Design Flow (MGD)	BOD	TSS	Ammonia	Nitrate+Nitrite	Nitrogen	Phosphorus
American Heartland (proposed)	MO0140503	3.5	63,964	106,607	7,463	106,607	117,268	8,529
Wright City South (permitted)	MO0023191	0.5	45,689	45,689	6,853	10,843	21,428	6,549
Foristell	MO0116114	0.022	2,010	2,010	131	n/a	n/a	n/a
Boone Ridge Estates	MO0126594	0.024	1,828	1,828	143	n/a	n/a	n/a
Castlegate	MO0057801	0.05	3,807	3,807	308	n/a	n/a	n/a
Maple Ridge MHP	MO0105007	0.011	1,005	1,005	65	n/a	n/a	n/a
Earnest Farm	MOG8231043		n/a	n/a	n/a	n/a	n/a	n/a
Stewart MHP	MO0119792	0.0025	342.67	609	17	n/a	n/a	n/a
Lake St. Louis Community Association	MOG690015	0.02	0.00	1,340	n/a	n/a	n/a	n/a
General Motors Wentzville	MO0100153	16.8	0.00	3,070,292	n/a	n/a	n/a	n/a
O'Fallon	*MO0028720*	*11.25*	856,666	1,028,000	1,106,813	150,773	757,293	84,639
Warrenton	*MO0087912*	*3.2*	292,409	292,409	25,342	50,197	54,973	16,472
*Incline Village No. 1***	*MO0098817*	*0.08*	4,873	4,873	560	n/a	n/a	n/a
*Incline Village No.2***	*MO0100358*	*0.06*	3,655	3,655	402	n/a	n/a	n/a
Providence Estates	MO0133264	0.25	7,615	11,422	1,371	12,443	14,620	2,650
Wentzville	*MO0093599*	*7.04*	385,980	578,969	38,598	306,210	n/a	82,557
Pleasant Oak MHP	MO0110680	0.019	1,736	1,736	98	n/a	n/a	n/a

Table 2: Annual Load comparison based on maximum daily flow reported over the last 5 years

						Load (lbs/year)		
Facility Name	Permit #	Max reported flow	BOD	TSS	Ammonia	Nitrate+Nitrite	Nitrogen	Phosphorus
American Heartland (proposed)	MO0140503	3.5	63,964	106,607	7,463	106,607	117,268	8,529
Wright City South (existing-actual)	MO0023191	7.00	639,644	639,644	95,947	151,809	299,993	91,682
Foristell	MO0116114	0.0872	7,968	7,968	518	n/a	n/a	n/a
Boone Ridge Estates	MO0126594	0.056839	4,328	4,328	338	n/a	n/a	n/a
Castlegate	MO0057801	0.277641	21,142	21,142	1,708	n/a	n/a	n/a
Maple Ridge MHP	MO0105007	0.009	822	822	53	n/a	n/a	n/a
Earnest Farm	MOG8231043	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Stewart MHP	MO0119792	0.009	1,234	2,193	61	n/a	n/a	n/a
Lake St. Louis Community Association	MOG690015	0.3456	n/a	23,159	n/a	n/a	n/a	n/a
General Motors Wentzville	MO0100153	9.12	n/a	1,666,730	n/a	n/a	n/a	n/a
O'Fallon	*MO0028720*	*22*	1,675,259	2,010,311	2,164,434	294,846	1,480,929	165,516
*Warrenton***	*MO0087912*	*4.456*	407,179	407,179	35,289	69,899	76,550	22,938
*Incline Village No. 1***	*MO0098817*	*0.28*	17,057	17,057	1,962	n/a	n/a	n/a
*Incline Village No.2***	*MO0100358*	*0.23196*	14,131	14,131	8,549	n/a	n/a	n/a
Providence Estates	MO0133264	0.058483	1,781	2,672	321	2,911	3,420	620
Wentzville	*MO0093599*	*7.04*	385,980	578,969	38,598	306,210	n/a	82,557
Pleasant Oak MHP	MO0110680	0.018	1,645	1,645	93	n/a	n/a	n/a

***Incline Village and Warrenton are in the process of upgrading and expanding their plants.*

At the permitted design flow and effluent limits, American Heartland will be approximately:
17% of the existing permitted flow; 33% of the BOD load; 2% of the TSS load; and 8% of the ammonia load in Peruque Creek.

The flow from the new wastewater treatment plant is limited to 3.5 million gallons per day on a monthly average basis. Approximately 1.5 MGD will come from the meatpacking operation which leaves 2.0 MGD to serve the community's wastewater. The design flow is based on the engineering calculations that is the flow each component of the treatment plant can fully treat at daily. Each component within the treatment plant also has a peaking factor that the component is capable of treating a higher flow or load for short durations, but not for a sustained period of time. When a treatment plant consistently is over their design flow, it increases the risk that the different components will not work effectively or efficiently, and the facility may begin to experience issues in meeting effluent limits and treatment levels.

Missouri's WQS general criteria (sometimes referred to as "free-froms," or narrative criteria) found in 10 CSR 20-7.031(4), indicate that waterbodies must be free from hydrologic changes as the result of a discharge. Hydrologic changes were considered when the permit was completed, and the Peruque Watershed document was reviewed. Later in this response section are calculations regarding hydrologic changes. The antidegradation review indicated approval of the new wastewater

treatment system and increasing flows (above the Wright City South WWTP current design flow of 0.5 MGD), the permit allows the expanded discharge.

The approval of the increasing flow was based on information submitted to the department; see Appendix 6, next in this section.

A comment was received with respect to the 4/08/2022 Woodard & Curran ADA: Perhaps the major comment to be made on this report is the fact that there is limited historic data to support the assumptions made for the influent quality of the wastewater. For TKN and TP the report uses data based on "typical medium strength domestic wastewater" for the municipal contribution, however, the application is for a nondomestic wastewater treatment facility. Data provided by AFG was considered acceptable for "anticipated" TKN and TP values. Has the AFG provided data from other similar operations to support their numbers? The basis for values selected for DO and BOD5 from the beef processing wastewater stream is not clearly stated.

Influent from the beef processing plant will be combined with domestic wastewater for treatment through the 4-stage Bardenpho system. With the proposed split, 43% of the flow will be from the industrial beef processing plant and 57% will be from the municipality. In consideration of the design and to reduce BOD, TSS, and nutrient loads from the beef processing plant, the industrial process wastewater goes through pretreatment prior to being pumped to the wastewater treatment facility. The pretreatment process includes the beef processing waste stream being screened to remove solids and proceeds to a dissolved air flotation system (DAF). In a DAF unit, air creates bubbles that adhere to suspended solids, causing the solids to float to the surface where they can be removed by skimming. DAF removes suspended solids (e.g., soil, sand), fatty tissue from meat and poultry, oils, grease, and metals. A DAF system can minimize the impact on downstream biological treatment processes.

The EPA has proposed new pretreatment effluent guidelines for meat processors that the pretreatment facility will be required to meet. As of June 2024, the proposed pretreatment effluent limit guidelines have not been finalized by EPA, but Woodward & Curran and American Heartland Packing is aware of the upcoming EPA requirements.

The effluent limits contained in the OP are the final concentrations determined to protect water quality and designated uses of the receiving waterbody regardless of influent concentrations.

Comment(s) were received regarding nutrient removal, specifically how are Nitrogen and Phosphorus removed?

Nitrogen and phosphorous are removed through several mechanisms in the advanced treatment system. The four stage Bardenpho is an activated sludge process designed for total nutrient removal. Total nutrient removal is becoming more common across the United States, but most of the research and development happened overseas and then was implemented in the US first in large-scale in the Chesapeake Bay watershed. The four stage Bardenpho process starts with an anoxic (in the absence of aeration) tank followed by an aeration tank in the first two stages. The third stage is a secondary anoxic zone to provide nitrogen removal (denitrification) of the portion of the flow that is not recycled to the primary anoxic zone. The fourth and final zone is a re-aeration zone that serves to strip any nitrogen gas and increase the dissolved oxygen concentration before clarification. If necessary, the facility can add a carbon source in the third stage to continue the removal of nitrogen, see image below for an example diagram (EPA's Nutrient Control Design Manual Section 6.2.1.2). Phosphorus removal is being done by a side stream system where flows are controlled and recycled with aeration controlled to force biological organisms to grow that basically eat the phosphorus present in the water. As it is a challenge for systems to do both biological nitrogen removal and total phosphorus removal with the same treatment trains, many communities and American Foods often propose chemical phosphorus removal and filtration to ensure they consistently meet phosphorus limits. Chemical phosphorus removal uses common metal salts such as aluminum sulfate (commonly referred to as alum) or ferric chloride to precipitate out the phosphorus, then use the filtration as a polishing step to ensure phosphorus is removed. Filtration at the end of the treatment train is often a polishing step for additional removal of wastewater pollutants. It is proposed for this facility and is common with the Chesapeake Bay facilities to ensure the high treatment levels are maintained.

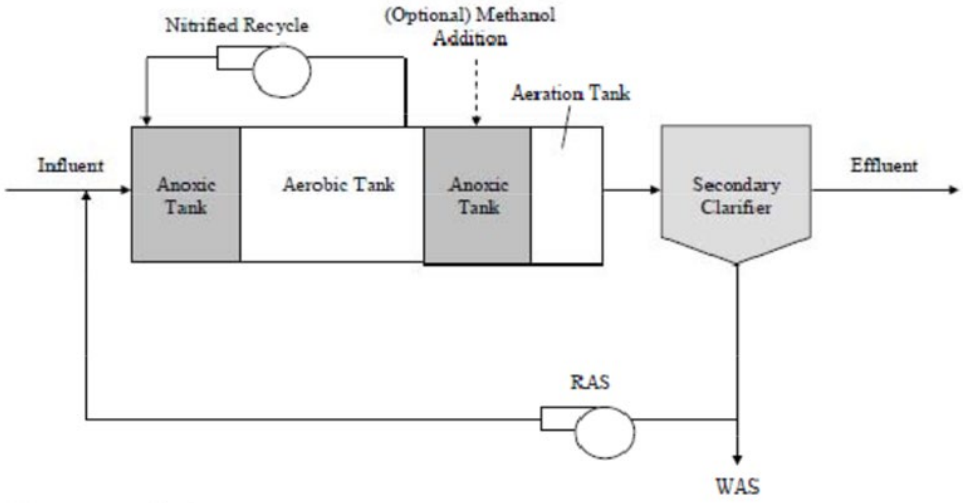


Figure 6-2. 4-stage Bardenpho process.
Source: USEPA 2008b Figure 2-5.

A comment was received stating "In the absence of meaningful stream water quality data, operational treatment plant performance values, or historic wastewater influent data, MO DNR should identify discharge permit limits that are based on conservative best-available-technology. rather than general information or assumed values. The WCWWTF Upgrade is intended to meet community needs for 20 years. It seems counterintuitive to select a lower cost treatment option that will primarily provide financial benefit for the owner, AFG, while significantly degrading the water quality of a stream already listed as degraded before the addition of contamination from the "Upgraded" WCWWTF".

The 4-stage Bardenpho system is designed for biological total nitrogen removal; nitrification and denitrification. The 5-stage Bardenpho wastewater treatment system is a modified 4-stage Bardenpho system designed for biological nitrogen and phosphorus removal. Their choice of the 4-stage Bardenpho system with side stream phosphorus treatment provides the same level of total nitrogen and total phosphorus removal as a 5-stage Bardenpho wastewater treatment system. While the 5-stage Bardenpho was identified in the Antidegradation Review as the preferred alternative, the Antidegradation does not limit the facility to the preferred alternative as long as the selected treatment technology will meet the effluent limits established in the review. In EPA's review of nutrient removal technologies, both the 4 stage and 5 stage Bardenpho are established technologies for nutrient removal and providing a high level of treatment, as they have been installed across the country to address nutrient concerns, such as in the Chesapeake Bay watershed.

Comment(s) questioned why the no-discharge option was dismissed.

A non-discharging option is rarely, if ever, suitable for cities collecting and treating domestic wastewater. The sheer volume of the water makes it unmanageable for land application practices which is a non-discharging method. Other comments have indicated that an unwanted increase in truck traffic will be occurring (outside the scope of this MSOP action) due to this new facility; but to haul wastewater to land application fields, would be a significant increase in tanker traffic. Most tankers only hold about 6,000 gallons, which would require over 580 tankers pump out the water each day.

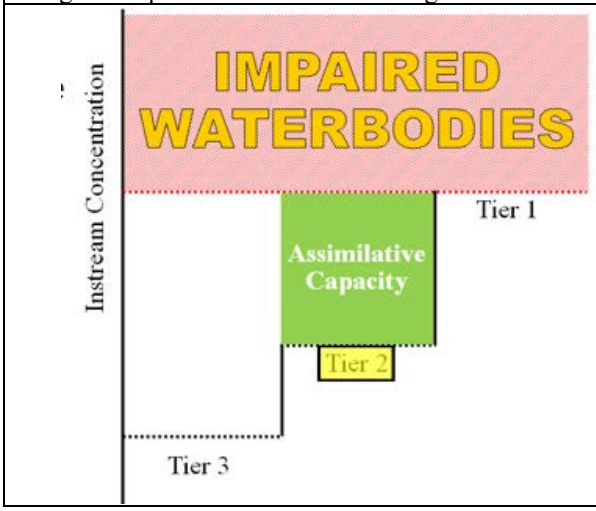
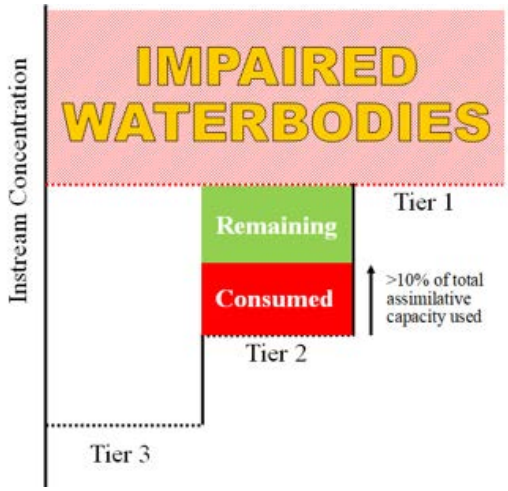
To land apply 3.5 million gallons daily, there would need to be a minimum of 1,960 acres (which does not account for setbacks) of fields able to accept that wastewater, while not hydraulically overloading the soil; meaning that if it is raining, has rained, or is expected to rain, application cannot occur. Additionally, per Missouri's design standards, a facility is required to have 105 days of wastewater storage. This would require a basin that can hold (105 * 3.5 million gallons) = 367.5 million gallons of water. 105 is the minimum days of storage for Warren County per 10 CSR 20-8.200(6)(C)1.C, and 3.5 is the design flow. The basin would need to be a minimum of 57 acres in size if it was 20 feet deep.

Another option was diverting flows to other wastewater treatment plants. This is impractical, because wherever the flows are diverted to, those receiving WWTPs will also need to upgrade to accept the additional flows. Missouri's waters are protected equally throughout the state. Discharge to another stream was considered under the antidegradation review; however, pumping water is energetically costly, and there was no benefit to discharge to an alternate location.

For these reasons, the no-discharge options were dismissed.

Comment(s) noted a concern with the language "significant degradation" used in the Water Quality and Antidegradation Review document. What is assimilative capacity? How are antidegradation values assigned if the receiving waterbody is impaired?

The Antidegradation Implementation Procedure (AIP) defines significant degradation as, "A reduction by 10 percent or more of the facility assimilative capacity for any pollutant as a result of any single discharge…" Assimilative Capacity is the amount of contaminant load that a specific water body can naturally attenuate without exceeding the Water Quality Standards (WQS) or impairing beneficial uses. For Tier 1 and Tier 2 waterbodies, Antidegradation is done on a pollutant-by-pollutant basis, which is why the Antidegradation Review in Table 3 list the pollutants of concern and their tier level. The images below provide a visual representation of the tier levels and assimilative capacity. Tier 1 level is the pollutant is near, at or exceeding the water quality criteria which in this case would be BOD/DO in Peruque Creek. In the images below, the water quality standard is shown by the red dotted line at the Tier 1 label. A Tier 2 pollutant is a pollutant of concern that is found in the stream below the water quality standard and the review evaluates looking at treatment options that economically efficient for the community installing the technology and still protective of the water quality criteria.

Image 1: Representation of the Antidegradation Tier Levels	Image 2: Tier 2 Significant Degradation Review
	

The words "significant degradation" does not mean lowering the quality of water to above the allowable in-stream concentrations of pollutants (Table 1 in 10 CSR 20-7.031), or allowing a discharge that would impair the beneficial uses. The department's interpretation of significance, therefore, is compatible with the EPA's August 10, 2005 memo, *Tier 2 Antidegradation Reviews and Significance Thresholds*, from Ephraim King, Director of Science and Technology. https://www.epa.gov/sites/default/files/2014-10/documents/tier2.pdf Significant degradation is used when there is more than 10% of the assimilative capacity being consumed by the proposed discharge or for facilities proposing a discharge to a receiving stream where there is not existing water quality data upstream of the proposed discharge to determine the percent of assimilative capacity consumed, which is the case here with the proposed discharge to Tributary to Peruque Creek, with the proposed discharge 0.17 miles from the confluence with Peruque Creek.

In practice, the terminology is used when the owner and engineer evaluate treatment alternatives and provide a socio-economic justification for a discharge. The antidegradation review process ensures that the proposed discharge fully protects beneficial uses and achieves the highest statutory and regulatory requirements. It is unfortunate that the language chosen by the developers of antidegradation requirements, that simply mean that there are required additional considerations (in the form of additional technological controls), is not necessarily representative when describing actual changes in waterbody conditions.

The effluent limits established through the antidegradation review process for American Foods Group are protective of all designated used of Peruque Creek and the downstream Lake St. Louis. Peruque Creek is on the 2022 303(d) list for low dissolved oxygen (DO) and low aquatic macroinvertebrate diversity and Lake St Louis is on the 2022 303(d) list for Chlorophyll-a. All effluents limits are at least as stringent as the respective water quality criterion. The limits are also consistent with the Department Water Quality Model that demonstrated they would not result in degradation sufficient to cause or contribute to beneficial use impairment.

For solids, the TSS limit in the permit equates to 0.00001 % solids, and therefore the department has every expectation that this new discharge will not cause negative downstream effects.

The Water Quality Standards (WQS), not the existing water quality (EWQ), establishes the target effluent limits. For waters receiving additional pollutants from permitted facilities that are in compliance with the terms and conditions of their permits, the EWQ shall be maintained or improved from the new discharger. Concentration-based effluent limits protect the EWQ through the WQS. EWQ assessment is conducted under the department's Watershed section; permit effluent limits are administered by the department's Operating Permits section. The 2016 Antidegradation Implementation Procedure (AIP)

includes procedures for groups other than operating permits to use, such as the Watershed Protection Section, which includes the Total Maximum Daily Load (TMDL) and modeling units. This may have caused some confusion in the applicability of sections of the AIP to this MSOP.

Commenters noted a lack of proper economic analysis and cited there was a benefit to Wright City and no benefit to Lake St. Louis. How was necessity and social/economic importance demonstrated? Affected community definition. "The project application fails to accurately define the community who will be impacted by this project. The Social and Economic Importance analysis referenced in the Draft Permit misinterprets the community who will be most affected by the proposed discharge. Specifically, the draft permit defines the "affected community" as the city of Wright City. However, communities in St. Charles County, including Foristell, Wentzville, and Lake Saint Louis will be significantly more burdened by the project given the direction of flow of Peruque Creek: downstream of Wright City, but upstream of St. Charles County. Accordingly, the Draft Permit application fails to adequately consider the social and economic impact of the preferred alternative. It also fails to meaningfully address the comments, appeals, and participation of the communities who will be most impacted by the project which is truly at the heart of the application—the slaughterhouse itself."

The MSOP is limited in scope to the Missouri clean water law and the federal clean water act and those implementing regulations. In no event can an MSOP confer or disseminate other requirements that are beyond the scope of the NPDES program, which includes the antidegradation review. While slaughterhouses are a categorical discharger pursuant to 40 CFR 423, only the discharges are regulated under the MSOP.

Because the permit is implementing the requirements of the antidegradation review and the state statutory and regulatory requirements; and the requirements of the federal Clean water Act and the supporting regulations, this MSOP cannot further define positive or negative effects that could occur that is not intrinsically tied to the water protections that the MSOP affords. The importance of the project from a social/economic importance was described in the antidegradation review, following the procedures in the July 13, 2016 Missouri Antidegradation Implementation Procedure.

Comment(s) noted that the time of the hearing was not convenient for them. The department strives to be available to the public to hear concerns; the online hearing was from 4:30 pm to 6:30 pm, the in-person hearing was from 4 pm to 7 pm. Any person wishing to speak did not have to be present at the beginning of the meeting to provide a comment. The comment period for this MSOP started April 12, 2024 and ended June 6, 2024, even though the department is only required to provide 30 days for comments. Comments are received a variety of ways to ensure that everyone's comment could be heard, including via postal service, in person drop-off, and via email. All comments were reviewed.

No negative economic impacts are expected in the Lake St. Louis area from this facility's discharge because the treatment facility and the operating permit are developed to protect the water quality and beneficial uses of Peruque Creek and the downstream Lake St. Louis. The NPDES program can only protect the water, and cannot confer protections elsewhere.

Comment(s) were received asking whether collection systems are regulated under this permit; if so are regular collection system inspections conducted? What if the capacity is met?

Collection systems are not regulated under this MSOP as this permit is currently assigned to American Foods. Once the permit is transferred as a POTW, it's collection system will be regulated under the permit by requiring the permittee to develop a program to maintain and repair their collection system with annual reporting requirements. Collection system inspections are typically initiated by issues such as significant Inflow and Infiltration (I&I) problems in the collection system. 40 CFR 122.41 (e) and RSMo §644.026.1. (15) requires proper operation and maintenance of treatment facilities and sewer systems.

Capacity is determined by the treatment system, the current system is designed to treat 3.5 MGD. The flow is limited in the permit.

Group II. Section 1. Comments: Operating Permit Application Form A

Form A, Item 3. Which party or parties have a current ownership interest in what parts of the Wright City Wastewater Treatment Facility (WCWWTF)? Which party or parties will be responsible for operating the WCWWTF? Which party or parties would be subject to enforcement action, in the event that the facility fails to meet permitted discharge limits. Is the proposed WCWWTF discharge considered to be from a privately or publicly owned treatment facility? Is this expected to change in the future?

The owner is listed on page 1 of the permit. The owner and the continuing authority are responsible for all annual fees and any potential enforcement action. This is deemed a privately held industrial permit and is expected to change in the future, although the Department has no requirement that the ownership change in the future. Permits are issued to the owner and continuing authority pursuant to 10 CSR 20-6.010(7)(A) which coincides to boxes 3 and 4 on Form A. This facility is not a

Publicly Owned Treatment Works (POTW) as defined in 40 CFR 403.3(q) and CWA 502(4) as American Foods Development Co,. LLC is a privately held business.

Form A, Item 7. Comment(s) identified that the applicant listed only one downstream landowner.

There is no state or federal requirement that the applicant list any downstream land owner. The “s” in landowner(s) is in parentheses therefore there is no requirement that any additional land owner be identified.

Form A, Item 9. D. Comment(s) noted that the applicant identified that sludge and ash are not stored or land applied. Comment(s) believes Form R is required.

The department sought additional information regarding this item on June 5, 2024. The applicant responded on June 7, 2024 with the following information.

Biosolids Handling at the WWTF:
The solids collected in the BNR trains and clarifiers are transferred to the process building via dedicated underground piping. In the process building, the sludge will be mechanically dewatered and transferred via screw conveyor to a sealed container to be transported. All excess water generated during the dewatering process will be transported back into the wastewater influent stream and processed again through the system before discharge. At full facility operations, the container will be transported daily to an offsite to a permitted facility for disposal.

Solids Handling at the Harvest Facility:
Solids and float are collected from the DAF will be skimmed off mechanically and collected. This will be then transported via conveyor and pump to a holding tank inside the same room. The solids are then transported by enclosed pipe to the rendering department for further processing. The finished materials are stored in enclosed tanks and then transported offsite via truck to be further processed for commercial uses.

Paunch Handing at the Harvest Facility:
During the evisceration process paunch is collected and transferred internal to the building via conveyor. The paunch is then mechanically dewatered. The excess water generated is pumped and incorporated back into the wastewater system where it will go through the pretreatment process again and ultimately piped to the WWTF for final processing. The dewatered paunch is then transferred via conveyor to a sealed container and hauled offsite for permitted disposal. The sealed container is loaded and stored internal to the building. Paunch is transported offsite daily.

Blood Handing at the Harvest Facility:
Blood is collected on the harvest floor through a series of catch basins, sloped floors and dedicated blood drains all designed to segregate blood from wastewater. This blood is transported via piping to a holding tank in the basement of the facility. From there, the blood is piped to the blood dryer located in the rendering department where it will be processed into a powder. The powder is then stored in tanks where it will be loaded onto trucks for transport to offsite locations for further processing to commercial applications.

This facility has not disclosed that land application or irrigation of wastewater is occurring; nor does the department believe that land application or irrigation of wastewater is occurring, therefore, Form R is not necessarily required. While the checkbox on Form A is not checked, the facility did indicate in subsequent dialogue that there is a storage component for solids, albeit brief. Given the ambiguity within Form A itself, the department asked the facility to submit Form R on June 10, 2024, and the facility submitted the form on June 17, 2024. Form A is moderately confusing in this aspect. Form R disclosures were reviewed, and nothing found within that part of the application changes any decisions within this operating permit.

Form A, Item 9. G. Comment(s) noted the 1:2000 map was missing from the application.

The department sought additional information regarding this item on June 5, 2024. The applicant responded on June 6, 2024, with an additional map. While the applicant had provided drawings and maps that were more informative than the 1:2000 map, the 1:2000 map was nonetheless obtained.

Group II. Section 2. Comments: Operating Permit Application Form C

Form C, Items 1.0 and 1.1. Comment(s) noted that the form had a different name and a different permit number.

The department noted that the applicant identified the co-located Wright City MO-0023191 permit as the name and permit number for this part of the application; however, after consulting with the applicant, the proper name is found on Form A, and as this is a new permit, the department then assigned a new permit number to this facility on Form A.

Form C, Items 1.2. and 2.1. Comment(s) noted the absence of a construction permit (CP) and questioned the absence of the CP. The applicant lists an average municipal sanitary wastewater component of 2.0 MGD, however, Form A indicates the application is for a new, nondomestic discharge permit. What is the reason that a nondomestic discharge permit application includes a municipal sanitary wastewater component that amounts to 57% of the total average 3.5 MGD discharge?

The department re-evaluated the need for a CP based on these comments. After reviewing the statutes, it appears that a previous exemption of a construction permit was incorrect. Therefore, the facility cannot utilize this permit until a construction permit application is submitted, and the construction is approved by the department.

Form C, Item 1.3. Comment(s) noted that the business description was lacking in detail. The information applicant provided in response to this request for detailed information regarding an extensive list of operational factors is too general in nature to be meaningful and otherwise incomplete. Does MO DNR consider the applicant's response sufficient?

Yes, frequently applicants provide information in submittals in addition to the narrative in Form C Item 1.3. The Application form A is reviewed in conjunction with the antidegradation review, Form C, and other information provided for clarity throughout the permitting process. The department sought additional information from the facility regarding their operational practices when it was necessary to make valid, scientifically backed permitting decisions. The antidegradation review was much more detailed and the engineers also sought additional information.

Form C, Item 2.0. Comment(s) noted the flow diagrams were difficult to discern.

The department strives to include as much information as possible in the fact sheet of the MSOP. Complex diagrams, while included, are not meant to convey additional information; that information is conveyed in the text of the permit.

Form C, Item 2.3 ELG

The department noted the information on Form C did not match the application submitted for the antidegradation review. The facility provided the correct information on June 27, 2024 that relates to the appropriate information for the Effluent Limitation Guideline.

Form C, Item 3.1 A & B for WET testing

The applicant submitted WET testing which was conducted under permit MO-0023191. However, given the changes that the facility is undergoing, those tests were deemed not applicable to this discharge. WET testing is found in this permit with limit as an annual testing requirement. The decision to include WET testing was based on other factors in the permit, not the WET tests performed at Wright City South.

Form C, Item 3.0 for parameter analysis.

Because this is a new wastewater source, sampling could not be conducted. However, the facility was required to attest to each pollutant as being present or absent. The applicant provided an updated table on January 11, 2024. If present, the permit contains a limit. If the applicant marked believed absent, then no permit requirement is necessary, unless, through best professional judgment, a permit requirement is necessary.

Group II. Section 3. Comments: Operating Permit Application Form D

Commenters indicated that Form D is required.

This type of facility is not a primary facility because it is not designated as such by 40 CFR 122 Appendix A; therefore, Form D is not required. Categorical industries, such as this one where an ELG applies, are not necessarily a primary facility.

Group III Comments: The Permit and Effluent limits

Comment(s) noted the allowance for alternative methods for composite sampling is too lenient. Comment(s) noted grab sampling is not representative of daily change in flows. Are the samples required to be taken at a certain time of day or week, how do we know if they take them when the plant is running? Comment(s) asked who takes the samples. Comment(s) asked if daily parameter testing can be implemented. Comment(s) indicated that any permit for a discharge into Peruque Creek should contain weekly monitoring requirements for conventional pollutants.

The department reviewed the note which allows the applicant to collect samples via alternative means if the automatic sampler is out of service. In response to this comment, a requirement that a minimum number of grab samples be collected, and they contact the regional office. Additionally, sampling type for the nutrients was changed from grab to composite; this also applies to influent monitoring. Certain parameters are prohibited from being collected as composite samples, such as pH, oil and grease, dissolved oxygen, total residual chlorine, and bacteria due to changes that occur over the time the composite sampling is operating. pH and dissolved oxygen both have 15-minute holding times.

Samples are collected by the operator. The samples must be certified, under penalty of law, that the samples are representative of the discharge. Pursuant to 40 CFR 122.41(k)(2), "The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both." A representative sample is one that describes the effluent when the plant is operating.

Continuous flow monitoring is occurring at the influent and at the effluent of the domestic portion of the facility. The applicant submitted this information on June 7, 2024. The operator will be conducting continuous pH monitoring on the BNR tanks to ensure proper operational controls. A sentry pH monitor will be placed on the effluent; this sentry sampler is alarmed and will notify staff of too high or too low pH.

Conventional pollutants are identified by the Clean Water Act §304(a)(4) as biological oxygen demanding, suspended solids, fecal coliform, and pH. *E. coli* sampling was already required to occur weekly pursuant to 10 CSR 20-7.015(9)(D)7.A. Federal effluent limitation guidelines (like the one established for fecal coliform), do not stipulate the frequency of sampling, but sampling generally is weekly or monthly.

The design of the treatment plant indicates that disinfection will occur year-round. Because the public wished for more frequent testing, and because the operator is already disinfecting year-round, the operating permit extends the E. coli sampling to year-round.

BOD, TRC, O&G, DO, pH, and TSS are frequently identified as conventional pollutants in permits, although not traditionally considered as conventional by the CWA. Federal and state rules are silent on requiring any specific monitoring frequency except that more than one sample per day is prohibited per 10 CSR 20-7.015(8)(B). The permit specifies monitoring which is frequent enough to sufficiently to characterize the effluent quality and to detect events of noncompliance. The sampling frequency was not altered based on this comment as no evidence was submitted that necessitated a change to the sampling frequency.

Comment(s) noted the Schedule of Compliance (SOC) is too long.

This permit does not contain an SOC. SOCs are not allowed for new permits as the design and construction of all new facilities must be consistent with all terms and conditions of state and federal regulations per 40 CFR 122.47(a)(2). Pursuant to 644.029 RSMo, all new permit applicants are required to meet the new requirements at the time the permit is issued to them. This includes minimum technological controls on the wastewater to meet the effluent limits.

Comment(s) indicated there is a need for lower limits. Potassium and phosphate in sediment concerns. Can nitrogen and phosphorus limits be decreased to decrease degradation. The phosphorus loading is too high.

Many comment(s) did not identify any specific parameter or propose an alternative value, but the department did review all the limits in the permit. Without direct evidence and a specific request, (except for others within this response section) it was difficult to discern which limits specifically needed addressed although nutrients and solids were identified numerous times.

Potassium and Phosphate do not have numeric water quality criteria in Missouri. However, total phosphorus (TP) is a pollutant requiring control pursuant to 10 CSR 20-7.015(3)(C)3.F. for lakes and reservoirs identified as drinking water supply and drought resilience; 10 CSR 20-7.015(3)(E), (F), and (G) for special lakes and reservoirs; and 10 CSR 20-7.015(9)(B) et. seq. for all other permits. Rule 015 is identified as effluent regulations, which are not water quality standards, (found in 10

CSR 20-7.031 (Rule 031)). This difference means that unlike WQS found in Rule 031, pollutants listed in Rule 015 are not afforded mixing, nor are they designed to take the place of WQS but do confer water quality protections. Potassium has no listing in either rule and while phosphate is not listed, total phosphorus is listed in Rule 015 which encompasses all forms of phosphorus, including orthophosphate, metallic phosphates, salts of phosphate, and organic phosphate.

Based on comments received and discussions with the facility, the operating permit was revised to include an annual total phosphorus limit of 8,529.48 lbs/year, which translates into a daily concentration of 0.8 mg/L. Because nutrients fluctuate in concentration in the environment based on factors such as temperature and pH, the annual average is an appropriate measure to ensure the receiving waterbodies are protected while also allowing minor operating fluctuations in the treatment plant. Additionally, the permit added a 0.5 mg/L goal to the permit, which is a requirement for the facility to strive to maximize phosphorus removal through operations and continued optimization. The department has used goals in other permits, specifically permits within the James River Watershed for total nitrogen.

Some commenters identified phosphate; phosphate is a portion of total phosphorus.

Wright City South currently only has quarterly total phosphorus monitoring, with an average concentration over the last 5 years of 4.3 mg/L. The reduction in concentration from 4.3 mg/L actual average to an annual average based on 0.8 mg/L is an 81% reduction in concentration. Basing existing annual loading on Wright City South's actual average flow of 0.562 MGD, that is an annual loading of 7,361 lbs/year. American Foods new annual limit is 8,529 lbs/year. That is a 16% increase in annual load; however as mentioned the facility will have a goal requirement in the permit of 0.5 mg/L, which translates to an annual load of 5,330 lbs/year. A discharge of 5,330 lbs/year would be a 27% decrease in loading.

According to the 2005 Peruque Watershed Study Draft Watershed Management Action Plan, page 3-18, phosphorus appears to be the primary limiting nutrient in Lake Saint Louis as indicated by an average total phosphorus to total nitrogen (TN:TP) ratio of 15:1**.** TN:TP ratios above approximately 10:1, are typically considered phosphorus limited. Therefore, reducing in-lake phosphorus concentrations should lower algal productivity within the reservoir. The relationship between total phosphorus and chlorophyll is presented in Figure 3-21 in that document.

Comment(s) were received requesting explanation of the EPA Effluent Limit Guideline (ELG). Chromium and un-ionized ammonia are pollutants of concern in this industry.

The federal effluent limitation guideline (ELG) applicable to this facility is 40 CFR 423. This applicant described itself as performing three or more actions which makes it a complex slaughterhouse. Federal ELGs are minimum requirements for specified types or groups of facilities, performing similar activities or services. The permit compares the ELG to Missouri's WQS, and chooses the most protective factor, and implements that as a limit in the permit. For example, TSS is limited in the ELG at 48 mg/L but the antidegradation review found that lower limits were possible with the new treatment plant and would protect downstream uses.

An operating permit cannot limit downstream sediment from other sources; all samples must occur at the outfall. However, because phosphorus and solids are limited in the permit, sediments that might originate from this facility, are also protected.

Commenters indicated chromium and un-ionized ammonia are pollutants of concern in this industry.

Chromium presence was reviewed for the meat processor point source category. Chromium was not identified as a pollutant of concern in the above development document. (Table 7.1, page 50) https://www.epa.gov/system/files/documents/2023-12/mpp_tdd_proposed_dec-2023.pdf

Un-ionized ammonia is NH_3, and does not have a free ion; ionized ammonia, NH_4^+ has an additional hydrogen and an singular free cation. Unionized ammonia and ionized ammonia are both measured using the parameter "ammonia" that is included in the permit.

Comment(s) indicated that truck washing and truck washout typically occurred at this type of facility and that it should be prohibited.

The applicant did not indicate that animal hauling truck washing or animal hauling truck washout was occurring on their site, therefore an allowance for this specific activity is not approved for the MSOP. Given the public comments, the department added a prohibition for truck washing and truck washout at this facility. The MSOP can only regulate the specified entity.

Comment(s) asked about the discharge temperature, and how temperature effects receiving waterbodies. Other comment(s) questioned how the dissolved oxygen impairment is being addressed. What is DO, how does this effect the waterbody? Is DO normal? Seasonal? Is there an expected recovery timeframe for DO?

The temperature of domestic wastewater effluents is usually 55 to 65 °F therefore there is no reasonable potential to cause or contribute to exceedances of water quality criteria for temperature. Missouri's WQS limit temperature to a maximum of 90 °F for a WWH (warm water habitat) stream to protect aquatic life.

The applicant did not disclose that temperature was a parameter of concern. Additionally, there are no systems operations that require water for cooling, such as cooling towers or exothermic chemical reactions at this site, therefore temperature is not limited in this permit.

Even though not limited in this permit, temperature is considered a pollutant in 10 CSR 20-7.031 (5)(D). However, a 1978 ruling held that discharging water with a low oxygen level does not constitute either "pollution" or "contamination" since both require the addition of contaminants or pollutants. State ex rel. Ashcroft v. Union Electric Co. (A.), 559 S.W.2d 216. Missouri does not add dissolved oxygen (DO) limits to permits without sufficient information such as having a model completed on the receiving stream. A QUAL2K model was completed to determine the minimum dissolved oxygen level that the WWTF can discharge while protecting downstream uses. DO is an inverse parameter, a low value indicates a possible issue, while higher values are generally beneficial to aquatic life. Missouri's WQS for in-stream DO is a minimum of 5 mg/L for WWH. The DO limit in the permit is 7 mg/L minimum.

Small streams with intermittent flow may have pools of water that support life but may become too hot in the summer if no water is added to the stream through precipitation or from an anthropogenic source. When temperatures go up, dissolved oxygen within the water column decreases. DO is a response parameter, meaning that DO by itself is meaningless unless other factors are identified. Higher demand pollutants, such as those measured by Biochemical Oxygen Demand (BOD) require effective removal so that the DO limit in the permit can be met. Factors that affect BOD are pH, temperature, microorganism presence, and the types and quantity of organic and inorganic material. To meet 6.0 mg/L BOD5, the wastewater treatment plant will need to be highly controlled and evaluated internally on a very frequent basis. The sampling frequency of the discharge is not the same as the internal monitoring a facility conducts; internal sampling occurs at important steps in the treatment process to ensure that each system is operating effectively.

Because this facility does not discharge heated water, the added water from this discharge will serve to supply habitat for macroinvertebrates, and studies show that an increase of stream flow will increase in-stream DO levels. https://www.epa.gov/caddis/flow-alteration

DO impairments are more complex and require more complex modeling to determine effluent targets as DO is an indicator parameter, influenced by a variety of factors, like total phosphorus, nitrogen, BOD and temperature. There is currently a TMDL being written in response to the impaired Lake St. Louis for Chlorophyll-a. Chlorophyll-a is also an indicator parameter influenced by total phosphorus and total nitrogen. The Lake St. Louis TMDL currently in progress addresses nutrient loading throughout the entire watershed, including Peruque Creek. With reductions in the nutrient levels for watershed being set in the Lake St. Louis TMDL, the hope is this will help with the DO impairment in Peruque Creek. Upon implementation of the Lake St. Louis TMDL, the department will continue monitoring Peruque Creek for DO to see if it remains impaired or not.

Additionally, the Department has already conducted a QUAL2K model for this potential facility to determine their impact on DO in the Peruque Creek. The model is set to ensure water quality criteria are met and the outputs of the model determined and set the effluent limits for this permit to ensure this facility will not cause or contribute to the DO impairment. The model does account for potential contributions from the WWTF.

Comment(s) asked if it is possible to direct the outflow from the new PWSD2 facility to some place other than Peruque Creek, and if the outflow cannot be diverted elsewhere is there a way to create a sediment basin closer to the AFG site so that outflow nutrients settle out before coming further down the creek.

The city of Wright City already has the infrastructure in place to collect, move, treat, and discharge wastewater to the Wright City South wastewater treatment plant location. While the meat processor is east of the WWTP location, the new wastewater treatment plant will be at nearly the same location as the old wastewater treatment facility.

There is no statutory requirement that this facility regionalize, which means to transfer flows to another wastewater treatment plant. https://dnr.mo.gov/water/what-were-doing/initiatives/clean-water-regionalization 10 CSR 20-6.010(2)(F) identifies if a regional treatment service is established, the regional authority must have their plan approved by the Clean Water Commission.

This permit cannot prohibit wastewater discharges to Peruque Creek. Designation of Waters of the State, as found in 10 CSR 20-7.015, prohibit discharge to metropolitan no-discharge streams listed in Table F (page 43), and prohibit discharge to special streams, such as Outstanding State Resource Waters, and Outstanding National Resource Waters; Tables D and E

respectively (pages 41 and 42). A prohibition also exists for lakes designed as drinking water sources pursuant to 10 CSR 20-7.015(3)(C), which Lake St. Louis is not a lake designated as a drinking water supply, it is categorized as L3, whereas a drinking water supply lake or reservoir is designated as L1.

The treatment system designed for this facility will already effectively remove solids. The addition of a settling basin after the established mechanical treatment system would not remove any additional solids. The new wastewater treatment system will have grit removal. Grit includes sand, gravel, cinder, or other heavy solid materials that are "heavier" (higher specific gravity) than the organic biodegradable solids in the wastewater. Grit also includes eggshells, bone chips, seeds, coffee grounds, and large organic particles, such as food waste. When wastewater flows into the grit chamber, particles settle to the bottom according to their size, specific gravity, and the velocity. Grit removal equipment can be designed and operated to remove nearly 100% of the desired particle size. Grit removal protects downstream equipment and improves treatment efficiency.

Following the activated sludge treatment process the system incorporates secondary clarifiers. Clarifiers are used to remove solid particulates or suspended solids from liquid. During the secondary clarification process the biomass from microorganisms settles to the bottom in the form of activated sludge. After settling over a period of time, the biomass of microorganisms is returned to the aeration tank with the cycle repeating until the effluent is clean before sent for tertiary filtration and disinfection.

The system also includes tertiary filtration following the clarification process. Tertiary filtration further eliminates non-biodegradable pollutants and particles. This allows further solids removal and removal of phosphorus and nitrogen contained in the treated wastewater prior to discharge.

Solids settling in basins settle out large particles quickly but takes a very long time to settle very small particles. The very small particles, like that released after the treatment process is completed, do not readily settle out in basins therefore a final settling basin is unnecessary. This is why wastewater treatment plants use flocculants and coagulants to bunch and connect the solids particles together to make the solids easier to remove.

Comment(s) asked about the permit transfer from AFG to PWSD2, and what will change.

This permit action only applies to American Foods Development Company. A change in ownership from a private industrial entity to a publicly owned entity, will require an official permit modification and a public notice. You can review applications the department has received here https://apps5.mo.gov/mocwis_public/applicationInprocessSearch.do and public notices here https://dnr.mo.gov/water/what-were-doing/public-notices

One major change from industrial to domestic will be a requirement that a certified wastewater operator operate the wastewater treatment facility. A calculation was completed, and we expect that a Class A operator will be required. Operator levels are based on the type of treatment system, and what particular steps of treatment occur at the site. A Class A operator is the highest level of operator in Missouri. Additionally, operational laboratory testing and monitoring will be required to ensure adequate wastewater treatment operations per 10 CSR 20-9.010.

It is worthy to note that permits cannot become less stringent pursuant to antibacksliding requirements. Federal antibacksliding requirements per CWA §402(o) and 40 CFR 122.44(l) https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-122#p-122.44(l) generally prohibit a reissued permit from containing effluent limitations that are less stringent than the previous permit, with some exceptions. There are no exceptions for water-quality based effluent limits (WQBELs), which include any limit developed as part of an antidegradation review. Technology based effluent limits (TBELs), like those found in 40 CFR 432, can be removed or changed based on applicability of the ELG to the discharger or a change in operations. In most circumstances, WQBELs are more stringent than the ELG, therefore those are not changed. Examples of TBELs in this permit are number of head processed and Fecal Coliform. The rest are WQBELs.

Comment(s) asked about pretreatment requirements and that pretreatment requirements should be placed into the permit.

Currently this permit is written as American Foods is a "direct discharger," however, the WWTP upgrades are occurring for Wright City; and the Wright City treatment plant will be accepting the American Foods wastewater, then, per federal regulations, American Foods will be an "indirect discharger." While treatment is occurring at the meat processor as well as at the new Wright City treatment plant, American Foods will have what is deemed a pretreatment system which provides initial pollutant removal prior to piping the wastewater to Wright City. Additional information about industrial users is here https://www.epa.gov/npdes/pretreatment-roles-and-responsibilities-industrial-users

An NPDES discharge permit for American Foods (and Wright City) cannot stipulate pretreatment requirements. That is a separate part of the NPDES program. The accepting entity must regulate all of the significant industrial users under 40 CFR

403, therefore, in the future, Wright City will regulate the water coming from American Foods, if the ownership transfer occurs.

Commenter states: Failure to perform a TMDL for Peruque Creek before permitting a project into an impaired waterway violates the Clean Water Act and Missouri law.

As you are aware, Peruque Creek is a class C waterbody included in the state's 303(d) impaired waters list due to dissolved oxygen and benthic life/aquatic invertebrates. State regulations passed pursuant to the Clean Water Act prohibit DNR from taking action that would further any existing impairment. Additionally, the Clean Water Act prohibits Missouri from issuing a NPDES permit that would cause or contribute to a violation of water quality standard (33 U.S.C. §§ 1311, 1312).1 Authorizing a new discharge into Peruque Creek, without first preparing a TMDL demonstrating that there are sufficient pollutant load allocations available to allow for the discharge, violates the Clean Water Act. *See* 40 C.F.R. § 122.4(i).

Without a TMDL, it is impossible to accurately assess the permissible *remaining* allocation because there are no allocation loads from which anything could remain in the first place. Consequently, a state may only issue a permit for new discharges into impaired waters like Peruque Creek where the State has prepared a TMDL and concluded that there is adequate buffer between the prospective discharge and the load limit, and that the buffer is likely to continue to exist in the future. If DNR cannot make this showing, the proposed discharge is prohibited.

Public records indicate that DNR has not performed the required TMDL for Peruque Creek's dissolved oxygen levels. Without the necessary information provided by a TMDL, DNR is essentially "flying blind" with regard to the effect the proposed discharge will have on St. Charles County. Not only will the proposed WWTP affect Peruque Creek, but it will also inevitably have a significant impact on Lake Saint Louis as well.

In sum, without a TMDL, DNR may not issue a NPDES permit for the proposed WWTP because the agency cannot demonstrate that "there are sufficient remaining pollutant load allocations to allow for the discharge." 40 C.F.R. § 122.4(i). This is especially imperative here because the antidegradation analysis document filed by the prospective permittee expressly acknowledges that the proposed WWTP will exacerbate impairment of Peruque Creek, which is already overburdened and threatened by ongoing development in the area.

The department is not prohibited from issuing a permit if the stream is impaired. The department is also not prohibited from issuing a permit if a TMDL has not been developed for an impaired waterbody. However, per 40 CFR 122.4(i) any new source cannot cause or contribute to a violation of water quality standards. This facility will not cause or contribute to an exceedance of water quality standards, as all limits contained in this permit are as stringent or more stringent than Missouri's Water Quality Standards (WQS), and for those pollutants associated with existing impairments, limits were derived using models demonstrating attainment of water quality standards.

The concentration-based effluent limits contained in this permit are lower than Missouri's Water Quality Standards (WQS), which are also concentration-based. There is no exceedance of water quality criteria when a concentration-based effluent limit is found in the permit. For example, and because Missouri's water quality standards are in mg/L or µg/L (concentrations), the addition of other facility's wastewater is not summed. For example, if Pollutant X WQS is 20 mg/L, and is limited at 16 mg/L in Facility A's permit and 8 mg/L in Facility B's permit, the sum is not 24 mg/L. The minimum quality of effluent is still 16 or 8 mg/L because mg/L is a concentration. If Facility A supplies a liter of water and Facility B supplies a liter of water, and we measure all of the pollutant in both liters, the sum of the total pollutant would be 24 mg per 2 (two) L (liters), where the fraction is mathematically reduced to 12 mg/L (24 divided by 2). Both facilities in this example are below this hypothetical WQS which is 20 mg/L; and added together, taking the volume into account is 12 mg/L. Missouri's WQS are not load-based requirements.

Commenter states: The project application fails to adequately consider and plan for impacts to endangered and threatened species in the project area. Other Comment(s) indicated concern with ecosystem balance and native species.

The draft permit's Natural Heritage Review fails to adequately provide assurances for the protection of Northern Long Eared Bats and Indiana Bats in the project area. Specifically, the draft permit fails to consider secondary and cumulative impacts to these species. Although the application and draft permit deliberately contemplate the likelihood of rapid growth and development of Wright City which will stem from this project, the natural heritage review fails to account for these same factors which will negatively impact the habitat and water quality which these endangered bats require to survive.

Additionally, the Natural Heritage Review fails to identify the occurrence of alligator snapping turtles, a state endangered species, in the Peruque Creek watershed. Several local residents—including myself—have had the great pleasure of seeing these magnificent creatures in and near Peruque Creek. An appropriate survey should be done of the project area to determine the full extent of the turtle's occurrence in the project area to ensure compliance with state law.

Numeric water quality criteria for the protection of livestock and wildlife are found in 10 CSR 20-7.031 Table A1, the 7th column. Numeric criteria for the protection of aquatic life are also found in Table A1 in the 3rd and 4th columns. To ensure protection of the most sensitive designated use (aquatic life or livestock/wildlife), effluent limits are derived using the more stringent criterion value. Additionally, general criteria pursuant to 10 CSR 20-7.031(4) indicate there shall be no harm to wildlife. The pollutant types were compared with similar facilities. The limits established in this permit are lower than similar permits, therefore there is no reasonable potential for exceedance of the narrative general criteria. Therefore there is no acute toxicity to livestock or wildlife watering; and the waters are free from physical, chemical, or hydrologic changes that would impair the natural biological community.

There is no requirement that the applicant submit a Natural Heritage Review. The 2016 Antidegradation Implementation Procedure does not specify that it must be completed; the AIP is incorporated by regulation pursuant to 10 CSR 20-7.031(3). However, forms are not incorporated by reference and "may" be submitted pursuant to 10 CSR 20-6.010(3)(A), meaning that the department will accept other types of complete disclosures to make informed decisions.

The department contacted the Missouri Department of Conservation (MDC) regarding this concern. Their response follows:

> After reviewing the Natural Heritage Review Report (NHRR) included in the permit documentation, the language included in the NHRR is appropriate for a project occurring in a location with no known records in the project vicinity. Indiana Bats and Northern Long Eared Bats are known to occur in Warren County and although no records occur in the project vicinity, coordination with the U.S. Fish and Wildlife Service office in Columbia is still necessary if tree removal is part of the project.
>
> [MDC] has no records of Alligator Snapping Turtles in the Peruque Creek watershed. Though their range can include eastern portions of Missouri along the Mississippi River. The majority of records for occurrences of Alligator Snapping Turtle are in the southern watersheds of the state flowing into the St. Francis or Mississippi River.

The MDC was consequently notified of the sighting as they have received a copy of the comment.

Group IV Comments: Watershed and Downstream Effects

Solids

Commenters stated the analysis of Total Suspended Solids (TSS) is insufficient to evaluate downstream effects in Lake St. Louis; the department should use Suspended Solids Concentration (SSC) as well or instead.

The Watershed Protection Section reviewed the use and analytical details of the SSC parameter. In general, the analyses results for TSS and SSC provide the same physical parameter, an inorganic sediment mass per a given volume of water. The analyses vary slightly in the laboratory procedure. TSS uses a predetermined aliquot volume (typically 100 mL or 0.1 L) taken from a larger sample volume (1 L bottle), while SSC will use the whole liter sample to determine the sediment mass. The TSS aliquot is required to be representative of the collected sample. Per the USGS, SSC as a parameter should be focused on natural water bodies (not wastewater treatment facilities) and used during elevated flow, making it more applicable as a measure for sediment resulting from nonpoint source runoff. Wastewater treatment facilities are relatively static discharges that do not vary with flow and are not likely to contribute the large, heavier sediment particles that occur from overland erosion during precipitation events.

Both of the analyses filter the samples and use a "bake and weigh" approach, SSC weighs the total sample (water and bottle) prior to filtration and after (filtered water and bottle). As previously stated, the SSC measurement does account for larger particles. However, because of the design of the treatment system, and the limit on TSS, there is no expectation that large particles are going to be discharged.

The new wastewater treatment system will have grit removal. Grit includes sand, gravel, cinder, or other heavy solid materials that are "heavier" (higher specific gravity) than the organic biodegradable solids in the wastewater. Grit also includes large organic particles, such as food waste. When wastewater flows into the grit chamber, particles settle to the bottom according to their size, specific gravity, and the velocity. Grit removal equipment can be designed and operated to remove nearly 100% of the desired particle size. Grit removal protects downstream treatment-train equipment and improves treatment efficiency.

Following the activated sludge treatment process the system incorporates secondary clarifiers. Clarifiers are used to remove solid particulates or suspended solids from liquid. During the secondary clarification process the biomass from microorganisms settles to the bottom in the form of activated sludge. After settling over a period of time, the biomass of microorganisms is returned to the aeration tank with the cycle repeating until the effluent is clean before sent for tertiary filtration and disinfection.

The system also includes tertiary filtration following the clarification process. Tertiary filtration further eliminates non-biodegradable pollutants and particles. This allows further solids removal and removal of phosphorus and nitrogen contained in the treated wastewater prior to discharge.

By the time the treated wastewater, or effluent, is discharged the system has removed the larger particles.

The Water Protection Program Data Management Unit searched the federal National Pollutant Discharge Elimination System (NPDES) database, Integrated Compliance Information System (ICIS), for the SSC parameter, or any parameter that may be very similar to SSC. There were no parameters matching SSC. This means, that there are no facilities in the United States that are using this parameter for measuring compliance with their NPDES permit.

TSS is a long-standing analysis used to assess conventional wastewater treatment effectiveness, and TSS is also universally used for regulatory control purposes in the United States. SSC is generally used for surface waters and non-point stormwater sample analysis. When considering solids measurement in a permit, TSS, is the appropriate analysis for measuring effluent.

Comment(s) were made concerning solids buildup in the lake.

The Missouri State Operating Permit assigned to this facility, can only regulate amounts of pollutants that this facility discharges. The permit allows 10 mg/L total suspended solids (TSS) average each month to be discharged. 10 mg/L is the same as 10 parts per million (PPM). Out of a million particles, only 10 are allowed for discharge in the volume specified here as 1 liter.

Comment(s) were also received asking about how 3.5 MGC compares to the current “look” of Peruque Creek. The Peruque Creek watershed is 55,148 acres. Calculations for different stormwater events were made. 0.5 and 1 inch per day are typical frequently occurring storm events in this area. One inch was mentioned by commenters. 5.5 inches per day is a maximum storm event that is used in many permits to calculate maximum stormwater runoff from facility property.

Acres AC.	Stormwater Rate inches/day	Runoff Coefficient (unitless)	Runoff in MGD
55148	0.5	0.2	149
55148	0.5	0.4	297
55148	0.5	0.6	446
55148	0.5	0.8	594
55148	1	0.2	297
55148	1	0.4	594
55148	1	0.6	891
55148	1	0.8	1188
55148	5.5	0.2	1634
55148	5.5	0.4	3267
55148	5.5	0.6	4901
55148	5.5	0.8	6535

https://www.lmnoeng.com/Hydrology/rational.php

Ground Cover	**Runoff Coefficient, c**
Lawns	0.05 - 0.35
Forest	0.05 - 0.25
Cultivated land	0.08-0.41
Meadow	0.1 - 0.5
Parks, cemeteries	0.1 - 0.25
Unimproved areas	0.1 - 0.3
Pasture	0.12 - 0.62
Residential areas	0.3 - 0.75
Business areas	0.5 - 0.95

Ground Cover	Runoff Coefficient, c
Industrial areas	0.5 - 0.9
Asphalt streets	0.7 - 0.95
Brick streets	0.7 - 0.85
Roofs	0.75 - 0.95
Concrete streets	0.7 - 0.95

Lake St. Louis, according to comments, has been around for more than 50 years. The public has noted that the lake has previously required multiple dredging, some comments even note that it must be dredged every two years to maintain a useable pool level. Therefore, and according to the 2004 Peruque Creek watershed assessment, and the data above, the addition of 3 million gallons to the watershed system will be negligible in flow to the overall Peruque Creek watershed.

The watershed area was reviewed. While many comments were concerned about the MSOP TSS discharge, some comments did accurately identify that other solids, not from this facility, were entering Lake St. Louis. If the community wishes to explore alternatives for management of their watershed, the department is also a designated authority for the Clean Water Act §319 program for non-point sources. https://dnr.mo.gov/water/what-were-doing/initiatives/nonpoint-source-management-program

Comment(s) were concerned with cow manure and, cattle unloading practices, and the possible negative effect on stormwater; stormwater as no-exposure, and discharge of slaughterhouse byproducts.

The facility has attested that there is no industrial exposure for stormwater; this means that none of these components will be outside, exposed to stormwater. The applicant identified that all cattle handling under this permit was taking place inside the building. The federal effluent limitation guideline (ELG) at 40 CFR 432 indicates that, unless not exposed, animal holding areas are to be treated as process water discharges. However, as there is no stormwater exposure, no additional outfalls were identified in the permit for stormwater. All raw materials, waste and by products, and other potential sources of pollutants are all handled interior to the building or under storm resistant shelters to prevent their exposure to rain, snow, or snowmelt runoff.

The facility has submitted a no-exposure form for the department's review. However, a no exposure certification cannot be granted until the facility is not discharging wastewater; i.e. the domestic portion of the facility is transferred to another entity. Because of this, the permit itself has determined that stormwater is no exposure while simultaneously allowing a discharge.

This permit does not allow the discharge of byproducts from the slaughterhouse industry. The effluent must be treated. Part of the treatment is solids removal. The TSS limit in the permit is 10 mg/L (milligram per liter is the same as parts per million) monthly average. The application indicates that solids are captured and treated. Blood is not discharged.

The facility's representative submitted an email to the department on May 29, 2024, explaining that American Foods does not provide trailer washout services at any of their locations.

On June 7, 2024, the facility further described a 10-million-gallon stormwater retention pond location on the southern portion of our lot. This retention pond is designed to hold approximately 10 million gallons of stormwater. The sizing is established to address a 100-year rain event. With the slope of the meat processing property as well as the storm drains located in the paved surfaces of the meat processing portion of the facility being piped to the pond, the intent of the pond is to receive all the rainwater that would be onsite. This pond discharges into the creek through an outfall that is controlled by a gate valve. The pond allows the meat processing portion of the facility to ensure that stormwater flow from the meat processing property is controlled, it allows any potential solids from the meat processing facility to settle in the pond before discharge and serves as a single discharge point that can be closed in the event of an upset condition to prevent contaminants from being entering into the watershed.

Recreational Uses

Comment(s) indicated that individuals use Lake St. Louis for recreation such as swimming, playing, wading, kayaking, canoeing, boating, skiing, and fishing. Comment(s) indicated the lake was once unsafe for whole body contact.

For each discharging operating permit, the department develops, the assigned uses for each waterbody are determined. One resource that permit writers use is the publicly available MAPiT system. This map has layers for streams and lakes which identify the uses ties to each of the classified waterbodies in the state.
https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=87ebef4af15d438ca658ce0b2bbc862e

For Peruque Creek, WWH, LWP, IRR, HHP, WBC-B, and SCR are listed. For Lake St. Louis, WWH, LWP, IRR, HHP, WBC-A, and SCR are listed. WWH is warm water habitat, which provides protection for aquatic organisms; LWP is for livestock and wildlife protection. IRR means that the waterbody may be used for irrigation. And HHP is human health protection. HHP includes the Food and Drug Administration's (FDA) requirements for cancer risks, or the criterion may limit pollutants which may be consumed from fish tissue. The specific numeric criterion that matches the uses are found in 10 CSR 20-7.031 Table A. HHP protections are listed in column 5, and IRR and LWP are listed together in column 7. Chapter 7 is available here https://www.sos.mo.gov/CMSImages/AdRules/csr/current/10csr/10c20-7a.pdf

WBC-A, WBC-B, and SCR are all protections for recreational uses of the stream and lake. Designated uses are defined in 10 CSR 20-7.031(1)(F). Paragraph 2 identifies recreational uses. Subparagraph A describes Whole Body Contact (WBC), and Parts I and II describe Category A and B respectively. Category A "applies to waters that have been established by the property owner as public swimming areas welcoming access by the public for swimming purposes and waters with documented existing whole body contact recreational use(s) by the public. Examples of this category include but are not limited to: public swimming beaches and property where whole body contact recreational activity is open to and accessible by the public through law or written permission of the landowner." While Category B "applies to waters designated for whole body contact recreation not contained within category A." Subparagraph B describes Secondary Contact Recreation (SCR) as uses that "include fishing, wading, commercial and recreational boating, any limited contact incidental to shoreline activities, and activities in which users do not swim or float in the water. These recreational activities may result in contact with the water that is either incidental or accidental and the probability of ingesting appreciable quantities of water is minimal."

Each of Missouri's classified waterbodies has at least one of the above recreational uses assigned. Lake St. Louis has the most protective use assigned, WBC-A, therefore the permit was written with this most stringent recreational use in mind. *E. coli* is a parameter listed for WBC-A; *E. coli* is limited in the permit in accordance with the requirements in 10 CSR 20-7.031 to protect for recreational activities such as swimming.

Impairments are tied to uses. The impairments listed on the 2022 Clean Water Act 303(d) list, developed by Missouri and approved by EPA, indicate that Peruque Creek (WBID 0218) is listed for macroinvertebrate and low DO. Lake St. Louis (WBID 7054) is listed for chlorophyll-a (Chl-a). Chl-a is an indicator pollutant that acts in response to other pollutants. As such, there are no directly applicable numeric Missouri WQS for Chl-a to serve as effluent limits.

Dissolved oxygen (DO) is a measure of how much oxygen is dissolved in the water which is the amount of oxygen available to living aquatic organisms. The use that is impaired by low DO is support of aquatic life. Aquatic life includes macroinvertebrates, fish, mussels, and all aquatic organisms. Low DO is an indicator pollutant. Stagnant water has low DO, as well as the warmer the water has lower DO. In-stream DO concentrations are also influenced by various physical and environmental factors, such as flow, channel gradient, and riparian cover. Water is made up of hydrogen and oxygen, but the oxygen in water molecules (H20) is not what is breathed by aquatic life. Oxygen, as well as other atmospheric gasses, readily diffuses or dissolves into water until an equilibrium is reached. The amount of oxygen that will dissolve into water is dependent upon pressure and temperature; cold water can hold more oxygen than warm water. Dissolved oxygen in water also comes from photosynthetic respiration by aquatic plants and algae.

Dissolved oxygen in the water is consumed by aquatic organisms, bacteria, decay of organic matter and plants (yes, plants also need oxygen even when they are not photosynthesizing).

In summertime when water temperatures rise, dissolved oxygen levels become critical because the water cannot hold as much oxygen, and the aquatic organisms are still consuming oxygen. Low flows that are common during the summer can also contribute to low oxygen conditions due to a reduction in re-aeration through turbulence, which occurs when flows are greater. Summertime is also the height of plant productivity. Through photosynthesis, aquatic plants and algae cause the levels of dissolved oxygen to peak in late afternoon but then drop at night. Algae also consume oxygen and compete for resources. When algae and other organisms die, the organic matter left behind as well as the bacteria consuming the organic matter consume oxygen. Excessive levels of algae can cause the levels of dissolved oxygen to drop rapidly to the point where fish and other organisms begin to suffer and die.

Missouri's Water Quality Standards for protecting aquatic life is located in Code of State Regulations, 10 CSR 20-7. These standards change for cold water species protection versus warm water species protection. Flowing waters must maintain a minimum of 5.0 mg/L of dissolved oxygen to support warm water aquatic life, and 6.0 mg/L of dissolved oxygen to support cold water aquatic life. At concentrations below 5.0 mg/L sensitive species of fish and other organisms start to show signs of distress such as lethargy and "piping," swimming to the water surface and gulping or gasping.

Nutrients and organic material are the major pollutants that can cause excess consumption of dissolved oxygen in streams.

Chlorophyll-a (Chl-a) is a measure of how much nutrients overall is present in the water The use that is impaired by excess Chl-a is support of aquatic life. Nutrients are an important component to life and play an important role in the food web. Nutrients naturally increase in an ecosystem as organic materials break down. Plants cannot grow without nutrients. However, over-fertilizing crops, lawns, or gardens can cause problems. Excessive nutrients become detrimental to aquatic environments.

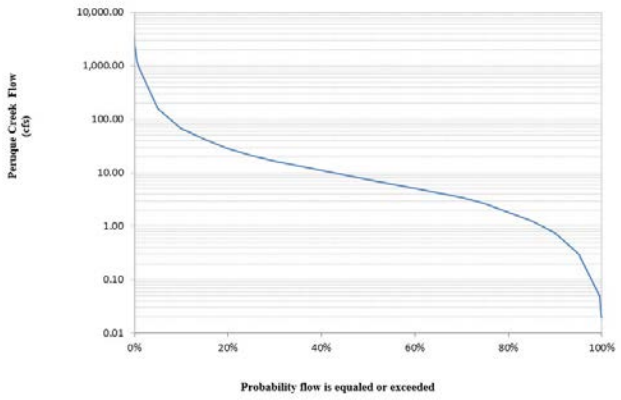
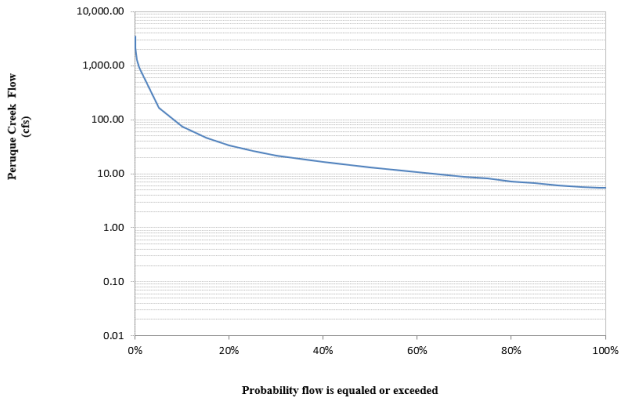
Nutrient pollution is caused when excess nutrients, such as nitrogen and phosphorus, are introduced into aquatic ecosystems. These excess nutrients drive a process called eutrophication. Excess nitrogen and/or phosphorus can lead to increased production of algae, resulting in algal blooms. At the very least, algal blooms can block out the sun to aquatic plants, slowing down plant growth. Over production of algae can also cause swings in pH, which describes how acidic or basic the liquid is. If algal blooms become severe, aquatic plants cannot perform photosynthesis, which can cause dissolved oxygen levels drop to the point of causing fish and other aquatic life to die. Different types of algae can produce toxins that are harmful to aquatic life, humans, and pets.

Nutrient pollution is a widespread, costly, and challenging environmental problem. Excessive algae in sources of drinking water can cause increased costs for treatment, taste and odor issues, as well as disinfection byproducts.

Missouri has water quality criteria, which are defined in 10 CSR 20-7.031, for nutrients and chlorophyll in lakes for protecting aquatic life. The criteria are specific to nitrogen, phosphorus and chlorophyll-a. Chlorophyll-a is a photosynthetic pigment used by plants. Measuring chlorophyll-a is a fairly accurate way to measure how much algae growth is occurring in the water. These criteria are set to protect aquatic life from the effects of eutrophication. Pursuant to 10 CSR 20-7.031(5)(N)1.C.(I)a, the response Impairment Threshold is the maximum ambient concentrations of chlorophyll-a (Chl-a) that is based on annual geometric means of samples collected May through September with an allowable exceedance frequency of one in three (1-in-3) years for lakes that have not been assigned site-specific criteria. Lake St. Louis has not been assigned a site-specific criterion.

Comment(s) noted that Peruque Creek may be affected by an increase in flow. Indicating the creek is typically shallow during summer dry weather conditions, estimating about 6 inches to 1 foot deep depending on the channel depth at any given point; and the creek bed width is about 30 feet; during heavy rains, the level rises by about 3-4 feet. What is the normal flow in the creek now? How much will going from 0.5 to 3.5 MGD change the flow and characteristics of the creek?

Stream flow is the volume of water that moves over a designated point over a period of time and can be impacted by a variety of factors. Because flow is a function of both volume and velocity, actual flows at any given point in the stream can vary due to channel characteristics such as width, depth, slope, sinuosity (the curviness of a stream), and roughness. The presence of vegetation can also have an influence on stream flows. Stream flows are also directly related to the amount of water that runs off the land, so can vary greatly with changes in climate and precipitation. In general, streams with larger flows will have higher levels of dissolved oxygen because they are better aerated (due to churning) and will have more capacity to dilute and degrade pollutants. Although flow at any given point is dependent upon a variety of factors, it is expected that the additional flows from this facility will result in an overall increase in flow downstream from the point of discharge to Lake St. Louis. Flow data from Peruque Creek is available for the period of Sept. 28, 2005, through June 9, 2010, collected from USGS gaging station 05514712 Peruque Creek at Lake St. Louis.

Flow Duration Curve without American Foods	Flow Duration Curve with American Foods Discharge
	

The x-axis is the probability the flow will be exceeded, as a percentage. The y-axis is a logarithmic scale of Peruque Creek flow.

From this information, the department was able to derive an estimate of flow duration for Peruque Creek. Ideally, several decades of data are needed to provide a more robust estimate and account for occasional periods of drought or wet weather. Even so, the available dataset can provide some estimation of existing flows and potential changes resulting from increased flows. From this information, the median average flow for the period of record is 7.5 cubic feet per second (cfs). The minimum flow for this period is 0.02 cfs, which is exceeded approximately 99 percent of the time, and the maximum flow for this period is 3,720 cfs which occurs less than 1 percent of the time. Although actual flow will vary with location and stream characteristics at any given point, a general assumption would be that the facility may increase these flows by approximately 5.43 cfs when discharging at its design flow. Assuming this additional flow remains constant throughout the stream, this would result in an increased median average stream flow of 12.9 cfs. Variation during high flow conditions, when stormwater runoff occurs is expected to be minimal, while low flows are expected to increase and be less variable than present conditions.

Comment(s) were concerned with the models; models are "guesses".

Models, such as BATHTUB and QUAL2K, are quality assured and scientifically accepted as representing real world conditions. These surface water quality models have been used for a number of years and for other similar actions completed by the department that have been approved by EPA. Conservative assumptions input into the model serves as margins of safety and ensure calculated effluent limits are adequately protective during all seasons and flows, with particular consideration given to critical conditions when impairment is most likely to occur. Available data collected from Peruque Creek and Lake St. Louis were used to calibrate each model. Various model scenarios were run to determine appropriate effluent concentrations for the discharge that would not cause or contribute to water quality violations associated with low dissolved oxygen in Peruque Creek and Chlorophyll-a (Chl-a) in Lake St. Louis. Although existing TN of the lake was below the plains ecoregional screening threshold of 843 micrograms per liter (µg/L, or 0.843 mg/L), the model required reductions in TN and TP in order to obtain the Chl-a plains ecoregional criterion of 30 µg/L.

Group V Comments: Other Concerns

Comment(s) were concerned with odors.

While the Water Protection Program does not regulate air emissions, the wastewater treatment system has been designed with an odor control system. At the influent headworks, the facility has dedicated biotrickling filter with carbon polishing system. The unit has a capacity of 1130 CFM and is designed to remove odorous compounds such as hydrogen sulfide at a 99% efficiency. All processes that are connected to this system are enclosed by aluminum covers to ensure the air is directed through the odor control system. While not required by this permit, the owner disclosed that the process building has an activated carbon odor control system which is designed to handle up to 3930 CFM and remove odor at 99% efficiency. The process building is an enclosed structure to ensure the air is directed through the odor controls prior to emissions.

A comment was received indicating concern with depletion of the aquifer; and perhaps recharging the aquifer with the wastewater instead of discharging it.

While the permit has no authority to regulate water used, the Missouri Geological Survey and the implementing regulations do require all entities that withdraw 70 GPM or 0.1 MGD or more from state waters (surface and groundwater) register with MGS under the Major Water User program. If the applicant wishes to recharge the aquifer with their wastewater, they may apply for an Underground Injection Control (UIC) permit. The permit would have similar requirements but would be written to protect groundwater instead of surface waters.

Comment(s) noted that treatment systems fail.

Other than prohibition of discharges not specifically allowed in the permit, the facility is required to maintain their facility per Standard Conditions Part I, Section D, #5 https://dnr.mo.gov/document-search/standard-conditions-npdes-permits-part-i-aug-1-2014 NPDES implementing regulations do not regulate spills; the permit can only regulate disclosed discharges that the operator knows will occur. If the operator identifies any changes that need to occur to the facility, the operator is required by Standard Conditions Part I (linked above), Section B, item 1 to report those planned changes to the department. In many instances, these changes require that a permit be officially modified. The Standard Conditions attached to the permit are legal requirements, just as if they were written into the permit.

Comment(s) are worried that hazardous material will enter the creek.

The Water Protection Program has evaluated the parameters that were disclosed in the application and also those pollutants of concern that frequently occur at meat processors. The pollutants allowed for discharge, in the amounts allowed for discharge as described in the permit, do not meet the definition of hazardous materials.

Comment(s) noted that the discharge will be toxic.

Missouri's Water Quality Standards prohibit toxicity, both numerically (10 CSR 20-7.031 Table A) and narratively 10 CSR 20-7.031(4). Protection and propagation of fish, shellfish, and wildlife described in 10 CSR 20-7.031(F)1 provide that waters identified with WWH (both Peruque Creek and Lake St. Louis) are protected under columns 3 and 4 of Table A in 10 CSR 20-7.031. For all pollutants found in the operating permit, a comparison of the pollutants in the application and the antidegradation review was completed with the Aquatic Life Protection values in Table A. The pollutants listed in the Aquatic Life Protection column are designed to protect for toxicity and other negative consequences to aquatic life. Missouri considers not only fish aquatic life, but snails, mussels, and invertebrates, among others, to require protection. The standards that Missouri promulgates are reviewed every three years and are approved by the Environmental Protection Agency (EPA).

Regarding narrative toxicity, the operating permit has implemented Whole Effluent Toxicity (WET) testing. WET testing is a laboratory test that uses live organisms introduced into the effluent under laboratory conditions. The organism mortality and fecundity (offspring produced) is measured. WET testing is numerically limited in the permit.

What are the long-term effects of consuming biological oxygen, phosphorus, and nitrogen in our water?

Neither Peruque Creek nor Lake St. Louis are designated for Drinking Water Supply use, which is a level of water quality intended to protect raw water supplies prior to treatment and distribution. In no instance does the department recommend the use of surface waters for direct human consumption. Incidental ingestion of water may occur during recreation. However, such incidental exposure is not expected to contribute to any long-term health effects. When recreating in surface waters, exposure to pathogens is a greater concern. Missouri's Water Quality Standards include specific *E. coli* criteria for the protection of whole body (i.e., swimming) and secondary contact (i.e, boating or fishing) recreation. The Department of Health and Senior Services provides guidance for recreating in surface waters on their website at https://health.mo.gov/safety/recreationalwater/naturalwaterareas.php. The Department of Health and Senior Services also maintains Missouri's Fish Advisory at https://health.mo.gov/living/environment/fishadvisory/index.php. Specific concerns regarding the safety of water body can be directed to the local health department.

Comment(s) noted that a slaughterhouse will cause excessive pollution.

The treatment system is designed to remove almost all pollutants from the wastewater. The slaughterhouse is not allowed to discharge untreated effluent. The effluent limits within the permit and the treatment system are both designed to nearly eliminate the discharge of all pollutants.

Comment(s) noted the timing of the hearing occurred after the building is almost completed.

There is no prohibition of construction as long as the facility obtained the proper land disturbance permit (MORA) which the applicant did obtain two MORA permits. https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/stormwater/construction-land-disturbance There is no maximum acreage for a MORA permit.

For the operating permit, an applicant is required to submit the application at least 180 days prior to wishing to discharge. For a new application, the issued permit must be received prior to any discharge occurring pursuant to 10 CSR 20-6.010(7)(A) "Persons who build, erect, alter, replace, operate, use, or maintain any water contaminant source, point source, or wastewater treatment facility which discharges to waters of the state shall obtain an operating permit from the department before any discharge occurs." The application was received December 8, 2023. The public may review all applications received by the department using https://apps5.mo.gov/mocwis_public/applicationInprocessSearch.do

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The following comments, generalized below, do not apply to the Antidegradation Review or the Missouri State Operating Permit (MSOP) draft because these comments do not fall inside the scope of the Missouri Clean Water Law or the federal Clean Water Act; therefore, no response is due by the department, although in some circumstances, additional information was provided. The list below attempts to be comprehensive but does not include every detail of every comment which does not pertain to the MSOP.

The following are outside the regulatory scope of the NPDES program: non-point sources of pollution, the CWA 319 Program, stream sampling, farm fertilizer runoff, enforcement actions, non-compliance, fines, odors coming from the processing plant itself (the Program does regulate the discharged water's odor), air pollution, number and source of employees, hospitals, ER staffing, the number of people that live in Wright City or Lake St. Louis, waterbodies other than Peruque Creek and Lake St. Louis outside the watershed of this permit such as Coldwater Creek, stormwater entering Peruque Creek or Lake St. Louis from other sources, storms, climate change, flooding, hydrological impacts not pertaining to the applicant, lack of presence of American Foods or Wright City attending the hearings, on-site systems (sub-surface domestic wastewater systems), cities allowing too much development, property values, zoning, watershed impervious surfaces, city planning, infrastructure (other than water treatment), elected officials, crime rates, vaccines, antibiotics, antibiotic resistance, avian influenza, cattle diseases, hormones, mRNA, association fees, housing costs, other meat processors or dischargers, truck traffic, and the slaughterhouse industry as a whole.

The department is unable to change any permit condition based on public approval or disapproval of the project. Only comments that identify; inaccuracies of permit limits or conditions, or inaccuracies based on regulatory or statutory requirements; can be changed from a comment received during the public comment period.

The Water Protection Program cannot prohibit the establishment of any business in Missouri.

This permit does not pertain to other meat processing plants that may decide to establish in the Wright City area. However, if any new industrial facility connects their wastewater to the Wright City collection system, the accepting authority (the operator American Foods or Wright City) is required by 40 CFR 403 to evaluate that incoming wastewater for treatability and pass through of pollutants prior to allowing that connection. If the water being discharged into the city's collection system will exceed the established 3.5 MGD, then the operator of this permit is required to request and complete another antidegradation review prior to accepting the new wastewater source. Industries with any of the SIC codes #0751, 2011, 2013, 2015 and 2077 (or similar) are required to obtain a stormwater permit from the department, unless exempted via a no-exposure certification. Any facility, regardless of the SIC code, wishing to discharge (or land apply) wastewater is required to seek a permit from the department. To assist the department, any individual may contact the St. Louis Regional Office to lodge a concern.

The asset purchase agreement is not under the purview of the permit. The current ownership is established as American Foods as is shown on page 1 of the MSOP. There is no legal requirement established by this permit that the public water supply district take ownership of the 3.5 MGD wastewater treatment plant or this permit. However, the schedule of compliance outlined in the current Wright City permit (MO-0023191) establishes final effluent limitations for total phosphorus, total nitrogen, and ammonia that the current technology serving MO-0023191 is incapable of meeting; therefore, the upgrades proposed under the antidegradation review will need to be installed to meet the final effluent limits outlined in MO-00023191 and MO-0140503.

There is no requirement that any particular party operate the treatment plant; but American Foods Development Company is the legal owner and continuing authority responsible for all discharges. There is no legal requirement that the department have knowledge of the property boundaries; 10 CSR 20-2.010 (52) indicates that the operating location can be held by more than one entity jointly. There is no legal requirement that the department have knowledge of revenue source of the owner; only that the owner and continuing authority is responsible for all permit requirements.

There is no statutory or regulatory requirement that this MSOP evaluate Federal, State, or Municipal grants, or other sources of public funding; or if those funds have been used to support Wright City WWTF upgrades currently under construction prior to permit issuance. There is no requirement that the department determine the funding source for future costs for upgrades or operations under this MSOP. There is no requirement that an industrial operation receive a discharge operating permit prior to construction; the operating permit is however required to discharge from that location. However, after additional information was provided by the applicant, a construction permit is required for the domestic portion of the operation.

Comment(s) noted that reuse of the nutrients could be performed by this facility. House Bills 1956 and 2134, once signed, intend to revise sections 644.016, 644.041, 644.051, and 644.145 of the Revised Statutes of Missouri (RSMo), which are: definitions for "agrichemical facility" and "operational location" and adds requirements for industrial land application and fertilizers licensed under Missouri Fertilizer Law, sections 266.291 to 266.351 RSMo. The applicant has not identified as an agrichemical facility, proposed land application, nor has applied for a fertilizer license under these statutes, therefore none of the statutory changes apply to this MSOP. If the facility wishes to land apply under this MSOP, the permit must be reopened and modified to include specific requirements related to the activity.

This MSOP cannot regulate off site truck and trailer washing and washout. However, car and truck washes are regulated discharges. Car washes that discharge their wastewater to surface waters must have a Missouri State Operating Permit. A general permit has been developed for this specific activity and can be found here https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/wastewater/car-wash-mo-g750000

Additional information about Missouri's volunteer water quality monitoring program can be found here https://dnr.mo.gov/water/get-involved/volunteer-water-quality-monitoring-program

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The department has carefully reviewed the American Foods Development Co, LLC application for a new permit, the antidegradation review, along with the public's comments and concerns. The department is obligated to review each application equally in respect to compliance with regulations set forth by the Clean Water Commission. Based upon this review we have determined that the operating permit application is complete, and that the operation meets the requirements as outlined in the Missouri Clean Water Law and implementing regulations. In accordance with Missouri Clean Water Law and implementing regulations, an operating permit will be issued to American Foods Development Co, LLC. This permitting decision may be subject to an appeal in accordance with 621.250 RSMo.

Thank you for taking the time to become involved in our efforts to protect our environment and preserve our water resources. Your comments were fully considered as this matter was reviewed. We hope that this letter was valuable in providing answers to your questions, and if you have further questions, please contact Pam Hackler at (573) 526-3386, pam.hackler@dnr.mo.gov or by mail at P.O. Box 176, Jefferson City MO 65102-0176.

APPENDIX 6: CHANNEL EROSION ANALYSIS

The following is a copy of the document, with formatting removed to better fit within this document.

TECHNICAL MEMORANDUM
Woodard & Curran Eng and Geo Svcs P.A. P.C.

TO: Jon Himlan
CC: Samantha Weidenbenner
PREPARED BY: Manthan Shah
REVIEWED BY: Joe Kirby
DATE: August 16, 2023
RE: Wright City WWTF Upgrades - Outfall Channel Erosion Impact Analysis

American Food Group (AFG, Owner) has contracted the Woodard & Curran/Alberici JV (W&C-ACI, LLC) to upgrade the pre-development WWTF facility located in Write City, Missouri. The post-development upgrades to the WWTF will lead to an increase in effluent flow from the facilities, as well as an increased runoff from a rainfall event, due to an increase in impervious areas at the facility. However, on-site stormwater detention systems are to be installed to maintain the post-development stormwater runoff from the facilities below pre-development quantities. It has been requested that as part of the due diligence process, a downstream impact assessment for the channel be conducted to determine if any erosion control measures are required for the pre-development outfall channel.

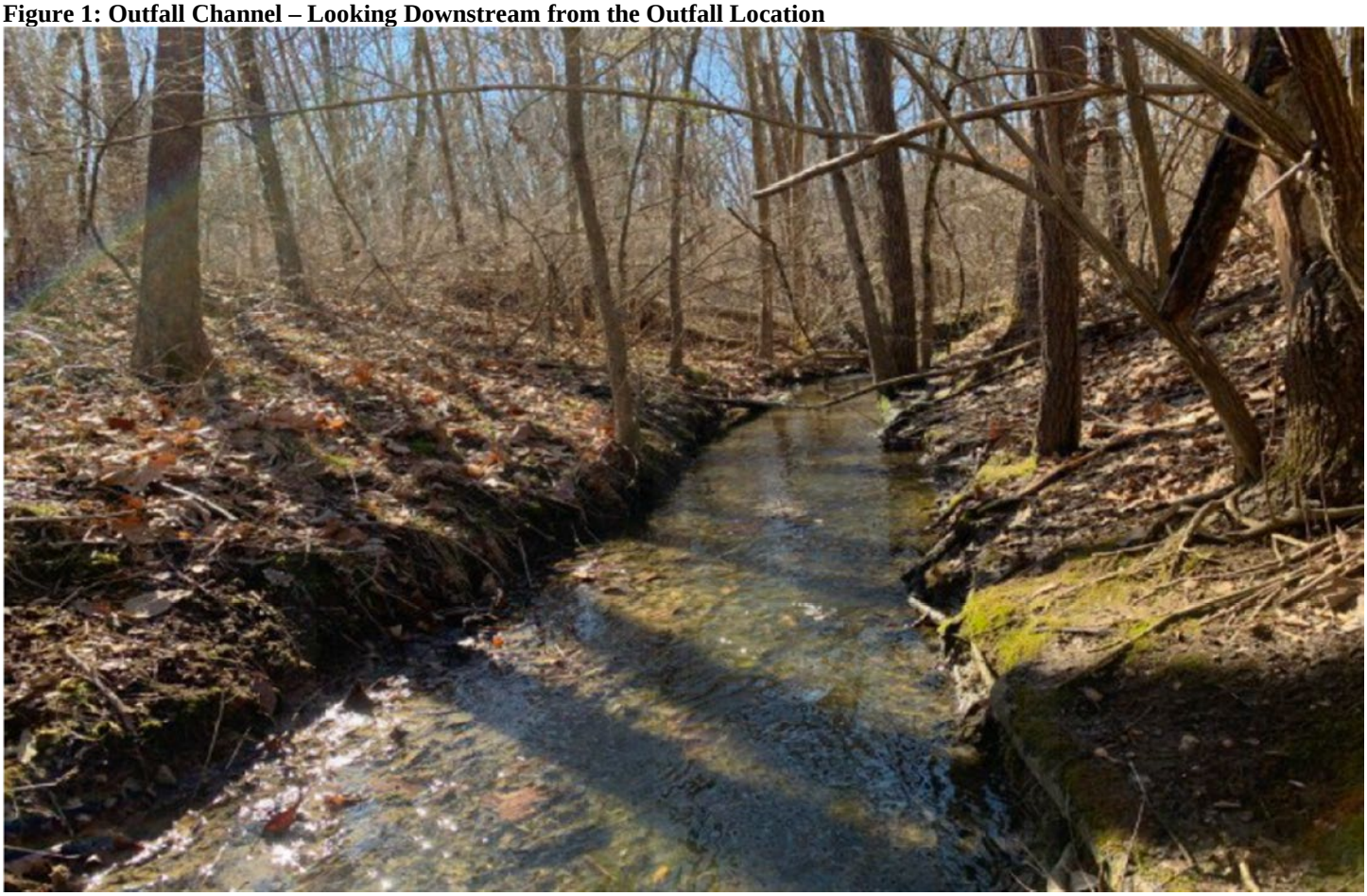
1. HYDRAULIC ANALYSIS
A HydroCAD analysis for pre-development and post-development stormwater conditions was created for the WWTF. Additionally, the pre-development and post-development average outflows for the treatment facility were provided to the W&C-ACI, LLC by the Owner. A summary of pre-development and post development flows to the channel is provided in the table below.

Table 1: Summary of Outflows to the Channel

Storm Event	Pre-development Wastewater Flow (CFS)	Post-development Wastewater Flow (CFS)	Pre-development Stormwater Outflow (CFS)	Post-development Stormwater Outflow (CFS)	Pre-development Total Channel Flow (CFS)	Post-development Total Channel Flow (CFS)
2-Year	0.93	6.50	17.8	16.4	18.8	22.9
10-Year	0.93	6.50	35.8	23.5	36.7	30.0
25-Year	0.93	6.50	43.7	26.5	44.6	33.0
100-Year	0.93	6.50	57.8	31.5	58.7	38.0

HEC-RAS (v.6.3.1) was used to conduct a steady-state hydraulic analysis for the channel. The channel geometry was determined using the survey surface data. Additionally, field photographs from SCI Engineering, Inc.'s Wetland and Waterbody Delineation Report were used to determine the roughness coefficients for the channel and the banks (Figure 1). HEC-RAS reference manual Table 3-1 was used to approximate the value of the roughness coefficients (Manning's n) for the channel. Manning's n of "0.05" was used for "Natural stream with some weed and stones", while "0.1" was used for the banks of the channel, which are covered in deciduous trees. Due to the relative straightness of the channel, the contraction and expansion coefficients for the channel cross-sections were assumed to be 0.1 and 0.3, respectively. A normal tailwater condition was assumed for both pre-development and post-development conditions.

Figure 1: Outfall Channel – Looking Downstream from the Outfall Location



Based on the geometry, a steady-state hydraulic analysis was conducted for both Pre-development and post development flows. Due to a slight increase in the flow outflows between pre-development and post development conditions at a 2-year storm event, a slight increase in velocity was observed. As expected, the channels have higher velocities and shear within the channel instead those of the banks. As a result, erosion would be more likely on the channel slopes than on the banks. Tables 2A and 2B provide summaries of the pre-development and post-development condition hydraulics for the channel at selected cross-sections. The location of these selected cross-sections is provided in Figure-2. A detailed HEC-RAS report can be found in Appendix A.

Figure 2: Outfall Channel – Select Cross-section Locations

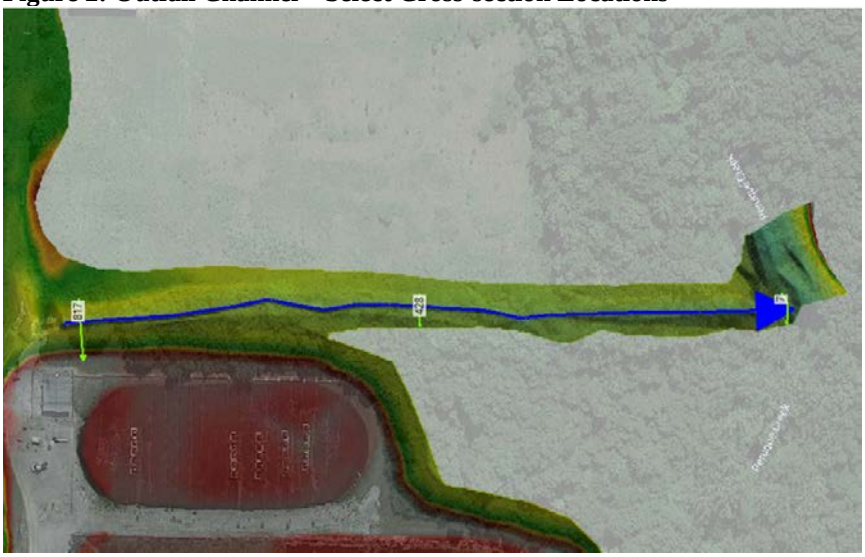


Table 2A: Summary of Pre-development Channel Hydraulics

River	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Top Width	Froude # Chl	Shear Chan
			(cfs)	(ft)	(ft)	(ft/s)	(ft)		(lb/sq ft)
River 1	817	2yr	18.76	672.46	673.72	4.32	6.1	0.9	1.53
River 1	817	10yr	36.69	672.46	674.22	4.47	9.24	0.83	1.51
River 1	817	25yr	44.61	672.46	674.38	4.57	10.21	0.82	1.54
River 1	817	100yr	58.68	672.46	674.62	4.74	11.75	0.81	1.6
River 1	428	2yr	18.76	668.88	670.62	1.32	21.7	0.26	0.13
River 1	428	10yr	36.69	668.88	670.94	1.79	26.18	0.3	0.22
River 1	428	25yr	44.61	668.88	671.06	1.95	27.54	0.31	0.26
River 1	428	100yr	58.68	668.88	671.23	2.21	29.86	0.33	0.31
River 1	7	2yr	18.76	665.61	666.21	2.55	21.94	0.63	0.57
River 1	7	10yr	36.69	665.61	666.45	3.19	24.72	0.66	0.81
River 1	7	25yr	44.61	665.61	666.54	3.4	24.94	0.67	0.89
River 1	7	100yr	58.68	665.61	666.67	3.74	25.3	0.69	1.02

Table 2B: Summary of Post-development Channel Hydraulics

River	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Top Width	Froude # Chl	Shear Chan
			(cfs)	(ft)	(ft)	(ft/s)	(ft)		(lb/sq ft)
River 1	817	2yr	22.88	672.46	674.05	3.41	8.15	0.66	3.6
River 1	817	10yr	29.98	672.46	674.25	3.54	9.41	0.66	3.77
River 1	817	25yr	32.99	672.46	674.33	3.59	9.87	0.65	3.83
River 1	817	100yr	38.04	672.46	674.44	3.67	10.57	0.65	3.94
River 1	428	2yr	22.88	668.88	670.7	1.44	22.89	0.27	0.16
River 1	428	10yr	29.98	668.88	670.83	1.63	24.7	0.29	0.19
River 1	428	25yr	32.99	668.88	670.88	1.7	25.39	0.29	0.2
River 1	428	100yr	38.04	668.88	670.96	1.82	26.42	0.3	0.23
River 1	7	2yr	22.88	665.61	666.28	2.73	23.11	0.64	0.64
River 1	7	10yr	29.98	665.61	666.37	2.99	24.52	0.65	0.73
River 1	7	25yr	32.99	665.61	666.41	3.08	24.62	0.66	0.76
River 1	7	100yr	38.04	665.61	666.47	3.23	24.76	0.66	0.82

2. EROSION CONTROL ANALYSIS

The allowable velocity for a given channel is determined based on channel soil material. Based on SCI Engineering, Inc.'s Geotechnical Report, dated April 2022, the channel can be assumed to have Silty Clay soil. Additionally, as stated before the soil in the channel is observed to be covered in dense grass.

The United States Department of Agriculture's Natural Resources Conservation Services' Part 654 Stream Restoration Design National Engineering Handbook (dated August 2007) Table 8-4 was used to determine the allowable velocity for the existing channel. Based on these observations, the allowable velocity for the channel can be estimated to be 8 ft/s. Since both Pre- and Post development channel conditions show less than 8 ft/s velocity, it can be concluded that no additional channel protection is needed. However, a protective riprap apron was designed at the proposed outfall locations, at the upstream end of the channel, in accordance with Hydraulic Engineering Circular No. 14, dated July 2006.

rec'd 09/18/2024

46587

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR TRANSFER OF OPERATING PERMIT

FOR AGENCY USE ONLY	
CHECK NO.	
DATE RECEIVED	FEE SUBMITTED
JETPAY CONFIRMATION NUMBER	

THE FOLLOWING ITEMS (1 – 4) ARE TO BE COMPLETED BY THE CURRENT OWNER.
SEE INSTRUCTIONS FOR APPROPRIATE FEE TO BE SUBMITTED WITH APPLICATION.

1. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
Wright City South WWTF		636-561-3737 Ext. 101	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP
1000 Lagoon Drive	Wright City	MO	63390
PERMIT NUMBER	COUNTY		
#MO- 0140503	Warren		

2. CURRENT OWNER

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
American Foods Development Co. LLC	jjjones@americanfoodsgroup.com	920-436-6522	
ADDRESS	CITY	STATE	ZIP
500 South Washington St.	Green Bay	WI	54301

3. CONTINUING AUTHORITY

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
American Foods Development Co. LLC FL001693465	jjjones@americanfoodsgroup.com	920-436-6522	
ADDRESS	CITY	STATE	ZIP
500 South Washington St.	Green Bay	WI	54301

4. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME (TYPE OR PRINT)	OFFICAL TITLE	TELEPHONE NUMBER WITH AREA CODE
Jeff Jones	Sr. Director EH&S	920-436-6522
SIGNATURE		DATE SIGNED
		9/17/24

THE FOLLOWING ITEMS (5 – 10) WILL APPLY AFTER THE COMPLETION OF TRANSFER (SALE) AND ARE TO BE COMPLETED BY THE APPLICANT FOR TRANSFER OF OPERATING PERMIT (BUYER) OR AUTHORIZED AGENT.

5. FACILITY (IF DIFFERENT THAN ABOVE)

NAME	TELEPHONE NUMBER WITH AREA CODE
Wright City South WWTF	636-561-3737 Ext. 101

6. FUTURE OWNER

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
Public Water Supply District No. 2	kdunn@waterdistrict2.com	636-561-3737 Ext. 101	
ADDRESS	CITY	STATE	ZIP
100 Water Drive	O'Fallon	MO	63368

Is the owner PSC regulated? ☐ Yes ☑ No If **YES**, please provide your Certificate of Convenience and Necessity.

7. CONTINUING AUTHORITY

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	
Public Water Supply District No. 2	kdunn@waterdistrict2.com	636-561-3737 Ext. 101	
ADDRESS	CITY	STATE	ZIP
100 Water Drive	O'Fallon	MO	63368

8. FACILITY CONTACT

NAME	TITLE		
Kevin Dunn	Executive Director		
EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE		
kdunn@waterdistrict2.com	636-561-3737 Ext. 101		
ADDRESS	CITY	STATE	ZIP
100 Water Drive	O'Fallon	MO	63368

9. ADDITIONAL INFORMATION

9.1 Anticipated effective date of transfer of ownership: November 2024

9.2 Are any changes in production, in raw materials, or in the quantity of discharges from this facility planned or anticipated?
☐Yes ☑ No If yes, explain (Attach sheets as necessary)

10. ELECTRONIC DISCHARGE MONITORING REPORT (eDMR) SUBMISSION SYSTEM

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 timely, complete, accurate, and nationally-consistent set of data. **One of the following must be checked in order for this application to be considered complete.** Please visit http://dnr.mo.gov/env/wpp/edmr.htm to access the Facility Participation Package.

☐ - You have completed and submitted with this permit application the required documentation to participate in the eDMR system.

☑ - You have previously submitted the required documentation to participate in the eDMR system and/or you are currently using the eDMR system.

☐ - You have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.

11. JETPAY

Permit fees may be payed online by credit card or eCheck through a system called JetPay. Use the URL provided to access JetPay and make an online payment.

Modification Fee: https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/596/

12. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME (TYPE OR PRINT)	OFFICIAL TITLE	TELEPHONE NUMBER WITH AREA CODE
Kevin Dunn	Executive Dirctor	636-561-3737 Ext. 101
SIGNATURE		DATE SIGNED
Kevin Dunn		9/17/2024

INSTRUCTIONS FOR COMPLETING APPLICATION FOR TRANSFER OF OPERATING PERMIT

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

Department of Natural Resources regulation 10 CSR 20-6.010 (11) governs the transfer of National Pollutant Discharge Elimination System (NPDES) permits. Until such time as the permit is officially transferred, the current permittee remains responsible for complying with the terms and conditions of the existing permit. The department, within thirty (30) days of receipt of this application, shall notify the new applicant of its intent to revoke and reissue or transfer the permit.

Section 1-4. Current permittee (present owner/seller) is to complete items 1 – 4.
Section 5-10. Applicant for transfer of operating permit (future owner/buyer) is to complete items 5 – 10.
Section 2 & 6. Owner: Provide the legal name, mailing address, phone number, and email address of the owner. The owner identified in this section and subsequently reflected on the certificate page of the operating permit, is the owner of the regulated activity/discharge being applied for and is not necessarily the owner of the real property on which the activity or discharge is occurring.
Section 3 & 7. Continuing Authority – A continuing authority is a company, business, entity or person(s) that will be operating the facility and/or ensuring compliance with the permit requirements. A continuing authority is not, however, an entity or individual that is contractually hired by the permittee to sample or operate and maintain the system for a defined time period, such as a certified operator or analytical laboratory. To access the regulatory requirement regarding continuing authority, 10 CSR 20-6.010(2), please visit https://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c20-6.pdf. If the continuing authority is not an individual(s), government, or otherwise required to register with the Missouri Secretary of State (SoS), then the business name must be listed exactly as it appears on the SoS's webpage: https://bsd.sos.mo.gov/BusinessEntity/BESearch.aspx?SearchType=0

Section 10. Electronic Discharge Monitoring Report (eDMR) Submission System – You can find the eDMR application at the following link: https://dnr.mo.gov/forms/780-2204-f.pdf
Waivers to electronic reporting may be granted by the Department per 40 CFR 127.15 under certain, special circumstances. A written request must be submitted to the Department for approval. Waivers may be granted to facilities owned or operated by:

a. members of religious communities that choose not to use certain technologies or
b. permittees located in areas with limited broadband access. The National Telecommunications and Information Administration (NTIA) in collaboration with the Federal Communications Commission (FCC) have created a broadband internet availability map: http://www.broadbandmap.gov/. Please contact the Department if you need assistance.

Section 4. & 12. Signatures - All applications must be signed as follows and the signatures must be **original**:

a. For a corporation, by an officer having responsibility for the overall operation of the regulated facility or activity or for environmental matters.
b. For a partnership or sole proprietorship, by a general partner or the proprietor.
c. For a municipal, state, federal or other public facility, by either a principal executive officer or by an individual having overall responsibility for environmental matters at the facility.

Section 11. JetPay
Applicants can pay fees online by credit card or eCheck through a system called JetPay.

- Per Section 37.001, RSMo, a transaction fee will be included. The transaction fee is paid to the third party vendor JetPay, not the Department of Natural Resources.
- Upon successful completion of your payment, JetPay provides a payment confirmation. Submit this form with a copy of the payment confirmation if requesting a new permit or a permit modification. For permit renewals of active permits, the Department will invoice fees annually in a separate request.
- If you are unable to make your payment online, but want to pay with credit card, you may email your name, phone number, and invoice number, if applicable, to **WPPFees@dnr.mo.gov**. The Budget, Fees, and Grants Management Unit will contact you to assist with the credit card payment. **Please do not include your credit card information in the email.**
- Applicants can find fee rates in 10 CSR 20-6.011 (https://dnr.mo.gov/pubs/pub2564.htm).
- Permit modifications, including transfers, are subject to the following fees; $200 for Municipals and $100 for All others

Note: Business name and address changes where owner and continuing authority remain the same are not considered transfers.

Submittal of an incomplete application may result in the application being returned.

This completed form and any attachments along with the applicable permit fees, should be submitted to:

Department of Natural Resources
Water Protection Program
ATTN: Operating Permits Section
P.O. Box 176
Jefferson City, MO 65102

Map of regional offices with addresses and phone numbers are available on the Web at http://dnr.mo.gov/regions/. If there are any questions concerning this form, please contact the appropriate regional office or the Department of Natural Resources, Water Protection Program, Operating Permits Section at 800-361-4827 or 573-522-4502.