

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



**CONSTRUCTION PERMIT**

The Missouri Department of Natural Resources hereby issues a permit to:

City of Warrenton  
Warrenton WWTP  
255 Willow Road  
Warrenton, MO 63383

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (department).

As the department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

December 30, 2024

Effective Date

December 29, 2026

Expiration Date

John Hoke, Director, Water Protection Program

## **CONSTRUCTION PERMIT**

### **I. CONSTRUCTION DESCRIPTION**

The proposed construction will include the replacement of the existing grit removal system with a stacked tray grit removal system, replacement of influent lift station pumps, the installation of two new 65-foot diameter secondary clarifiers, construction of new aerobic sludge digesters, digested sludge storage tank, sludge dewatering building, and a sludge drying building. The proposed improvements would remove a bottleneck on the treatment capacity of the facility and enable the design flow of the facility to be increased from 3.2 million gallons per day (MGD) to 4.0 MGD.

A closure plan will need to be submitted to the St. Louis Regional Office for review and approval prior to any closure activities. Identified closure activities within the construction permit include the demolition of the current sludge handling system, grit removal system, and third secondary clarifier.

This project will also include general site work appropriate to the scope and purpose of the project and all necessary appurtenances to make a complete and usable wastewater treatment facility.

### **II. COST ANALYSIS FOR COMPLIANCE**

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

The department is not required to determine Cost Analysis for Compliance because the permit contains no new conditions or requirements that convey a new cost to the facility.

### **III. CONSTRUCTION PERMIT CONDITIONS**

The permittee is authorized to construct subject to the following conditions:

1. This construction permit does not authorize discharge.

2. All construction shall be consistent with plans and specifications signed and sealed by Jeffrey J. Huck, P.E. with Gonzalez Companies, LLC and as described in this permit.
3. The department must be contacted in writing prior to making any changes to the plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(11).
4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the department's St. Louis Regional Office per 10 CSR 20-7.015(9)(G).
5. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of 1 acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the department's ePermitting system available online at <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem>. See <https://dnr.mo.gov/data-e-services/water/electronic-permitting-epermitting> for more information.
6. A United States Army Corps of Engineers (USACE) Clean Water Act Section 404 Department of the Army permit and a Section 401 Water Quality Certification issued by the department may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied or notification is provided that no Section 404 permit is required by the USACE. You must contact your local USACE district since they determine what waters are jurisdictional and which permitting requirements may apply. You may call the department's Water Protection Program, Operating Permits Section at 573-522-4502 for more information. See <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality> for more information.
7. In accordance with 10 CSR 20-6.010(12), a full closure plan shall be submitted to the department's St. Louis Regional Office for review and approval of any permitted wastewater treatment system being replaced. The closure plan must meet the requirements outlined in Standard Conditions Part III of the Missouri State Operating Permit No. MO-0087912.
8. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
  - Flood protection shall apply to new construction and to existing facilities undergoing major modification. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the 100-year flood elevation. 10 CSR 20-8.140(2)(B)

- Unless another distance is determined by the Missouri Geological Survey or by the department's Public Drinking Water Branch, the minimum distance between wastewater treatment facilities and all potable water sources shall be at least 300 feet. 10 CSR 20-8.140(2)(C)1.
- Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140(2)(D)
- All wastewater treatment facilities shall be provided with an alternate source of electric power or pumping capability to allow continuity of operation during power failures. 10 CSR 20-8.140(7)(A)1.
- Disinfection and dechlorination, when used, shall be provided during all power outages. 10 CSR 20-8.140(7)(A)2.
- Electrical systems and components in raw wastewater or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors that are normally present, shall comply with the NFPA 70 National Electric Code (NEC) (2017 Edition), as approved and published August 24, 2016, requirements for Class I, Division 1, Group D locations. 10 CSR 20-8.140(7)(B)
- An audiovisual alarm or a more advanced alert system, with a self-contained power supply, capable of monitoring the condition of equipment whose failure could result in a violation of the operating permit, shall be provided for all wastewater treatment facilities. 10 CSR 20-8.140(7)(C)
- No piping or other connections shall exist in any part of the wastewater treatment facility that might cause the contamination of a potable water supply. 10 CSR 20-8.140(7)(D)1.
- Hot water for any direct connections shall not be taken directly from a boiler used for supplying hot water to a digester heating unit or heat exchanger. 10 CSR 20-8.140(7)(D)2.
- Where a potable water supply is to be used for any purpose in a wastewater treatment facility other than direct connections, a break tank, pressure pump, and pressure tank or a reduced pressure backflow preventer consistent with the department's Public Drinking Water Branch shall be provided. 10 CSR 20-8.140(7)(D)3.A.
- For indirect connections, a sign shall be permanently posted at every hose bib, faucet, hydrant, or sill cock located on the water system beyond the break tank or backflow preventer to indicate that the water is not safe for drinking. 10 CSR 20-8.140(7)(D)3.B.
- Where a separate non-potable water supply is to be provided, a break tank will not be necessary, but all system outlets shall be posted with a permanent sign indicating the water is not safe for drinking. 10 CSR 20-8.140(7)(D)4.
- A means of flow measurement shall be provided at all wastewater treatment facilities. 10 CSR 20-8.140(7)(E)
- Effluent 24 hour composite automatic sampling equipment shall be provided at all mechanical wastewater treatment facilities and at other facilities where necessary under provisions of the operating permit. 10 CSR 20-8.140(7)(F)
- Isolate all wastewater treatment components installed in a building where other equipment or offices are located from the rest of the building by an air-tight partition, provide separate outside entrances, and provide separate and independent fresh air supply. 10 CSR 20-8.140(7)(G)

- Adequate provisions shall be made to effectively protect facility personnel and visitors from hazards. The following shall be provided to fulfill the particular needs of each wastewater treatment facility:
  - Fencing. Enclose the facility site with a fence designed to discourage the entrance of unauthorized persons and animals; 10 CSR 20-8.140(8)(A)
  - Gratings over appropriate areas of treatment units where access for maintenance is necessary; 10 CSR 20-8.140(8)(B)
  - First aid equipment; 10 CSR 20-8.140(8)(C)
  - Posted “No Smoking” signs in hazardous areas; 10 CSR 20-8.140(8)(D)
  - Appropriate personal protective equipment (PPE); 10 CSR 20-8.140(8)(E)
  - Portable blower and hose sufficient to ventilate accessed confined spaces; 10 CSR 20-8.140(8)(F)
  - 10 CSR 20-8.140(8)(G) Portable lighting equipment complying with NEC requirements. See subsection (7)(B) of this rule;
  - 10 CSR 20-8.140(8)(H) Gas detectors listed and labeled for use in NEC Class I, Division 1, Group D locations. See subsection (7)(B) of this rule;
  - Appropriately-placed warning signs for slippery areas, non-potable water fixtures (see subparagraph (7)(D)3.B. of this rule), low head clearance areas, open service manholes, hazardous chemical storage areas, flammable fuel storage areas, high noise areas, etc.; 10 CSR 20-8.140(8)(I)
  - Ventilation shall include the following:
    - Isolate all pumping stations and wastewater treatment components installed in a building where other equipment or offices are located from the rest of the building by an air-tight partition, provide separate outside entrances, and provide separate and independent fresh air supply; 10 CSR 20-8.140(8)(J)1.
    - Force fresh air into enclosed screening device areas or open pits more than four feet deep. 10 CSR 20-8.140(8)(J)2.
    - Dampers are not to be used on exhaust or fresh air ducts. Avoid the use of fine screens or other obstructions on exhaust or fresh air ducts to prevent clogging; 10 CSR 20-8.140(8)(J)3.
    - Where continuous ventilation is needed (e.g., housed facilities), provide at least twelve (12) complete air changes per hour. Where continuous ventilation would cause excessive heat loss, provide intermittent ventilation of at least 30 complete air changes per hour when facility personnel enter the area. Base air change demands on 100 percent fresh air; 10 CSR 20-8.140(8)(J)4.
    - Electrical controls. Mark and conveniently locate switches for operation of ventilation equipment outside of the wet well or building. Interconnect all intermittently operated ventilation equipment with the respective wet well, dry well, or building lighting system. The manual lighting/ventilation switch is expected to override the automatic controls. For a two speed ventilation system with automatic switch over where gas detection equipment is installed, increase the ventilation rate automatically in response to the detection of hazardous concentrations of gases or vapors; 10 CSR 20-8.140(8)(J)5.

- Fabricate the fan wheel from non-sparking material. Provide automatic heating and dehumidification equipment in all dry wells and buildings. 10 CSR 20-8.140(8)(J)6.
- Explosion-proof electrical equipment, non-sparking tools, gas detectors, and similar devices, in work areas where hazardous conditions may exist, such as digester vaults and other locations where potentially explosive atmospheres of flammable gas or vapor with air may accumulate. 10 CSR 20-8.140(8)(K)
- Provisions for local lockout/tagout on stop motor controls and other devices; 10 CSR 20-8.140(8)(L)
- Provisions for an arc flash hazard analysis and determination of the flash protection boundary distance and type of PPE to reduce exposure to major electrical hazards shall be in accordance with NFPA 70E *Standard for Electrical Safety in the Workplace* (2018 Edition), as approved and published August 21, 2017. 10 CSR 20-8.140(8)(M)
- Effective flow splitting devices and control appurtenances (e.g. gates and splitter boxes) shall be provided to permit proper proportioning of flow and solids loading to each settling unit, throughout the expected range of flows. 10 CSR 20-8.160(2)(B)
- Overflow weirs shall be readily adjustable over the life of the structure to correct for differential settlement of the tank. 10 CSR 20-8.160(3)(C)1.
- Walls of settling tanks shall extend at least 6 inches above the surrounding ground surface and shall provide not less than 12 inches of freeboard. 10 CSR 20-8.160(3)(E)
- Safety features shall appropriately include machinery covers, life lines, handrails on all stairways and walkways, and slip resistant surfaces. For additional safety follow the provisions listed in 10 CSR 20-8.140(8). 10 CSR 20-8.160(5)(A)
- The design shall provide for convenient and safe access to routine maintenance items such as gear boxes, scum removal mechanism, baffles, weirs, inlet stilling baffle areas, and effluent channels. 10 CSR 20-8.160(5)(B)
- For electrical equipment, fixtures, and controls in enclosed settling basins and scum tanks, where hazardous concentrations of flammable gases or vapors may accumulate, follow the provisions in 10 CSR 20-8.140(7)(B). The fixtures and controls shall be conveniently located and safely accessible for operation and maintenance. 10 CSR 20-8.160(5)(C)
- Aerobic Solids Digestion High Level Emergency Overflow. An unvalved emergency overflow shall be provided that will convey digester overflow to the treatment plant headworks, the aeration process, or to another liquid sludge storage facility and that has an alarm for high level conditions. 10 CSR 20-8.170(5)
- For solids pumping systems, audio-visual alarms shall be provided in accordance with 10 CSR 20-8.140(7)(C) for:
  - Pump failure; 10 CSR 20-8.170(6)(A)
  - Pressure loss; 10 CSR 20-8.170(6)(B) and
  - High pressure. 10 CSR 20-8.170(6)(C)
- Alarm systems shall be provided for sludge dewatering processes to notify the operator(s) of conditions that could result in process equipment failure or damage, threaten operator safety, or a solids spill or overflow condition. 10 CSR 20-8.170(7)(B)

9. Upon completion of construction:

- A. The City of Warrenton will become the continuing authority for operation and maintenance of these facilities;
- B. Submit an electronic copy of the as built if the project was not constructed in accordance with previously submitted plans and specifications;
- C. Submit the Statement of Work Completed form to the department in accordance with 10 CSR 20-6.010(5)(N) (<https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155>) and request the operating permit modification public noticed from August 9, 2024, to September 23, 2024, be issued.

#### **IV. REVIEW SUMMARY**

##### **1. CONSTRUCTION PURPOSE**

The proposed construction is to accommodate anticipated growth of the region served by the Warrenton WWTP. An antidegradation review request and report was submitted to the department to evaluate a proposed expansion of the facility. The report discusses the methodologies that were utilized for estimated future flows for the wastewater system, which included an analysis of historic hydraulic and organic loadings, population projections based on census data, and estimated flows per acre based on current and projected land use for the facility planning area. The report estimates that the existing population served by the facility is 9,347 as of 2020 and is expected to reach approximately 14,984 by the year 2047. While the current oxidation ditch treatment system is capable of handling 4.0 MGD, the rated capacity of the plant is restricted at 3.2 MGD due to the limitations of the secondary clarifier capacity. Improvements would therefore be aimed at removing this bottleneck by the addition of two new clarifiers installed to the west of the existing oxidation ditch and would also include replacement of the grit handling process and sludge handling process. A future phase of improvements is planned that would expand the design flow to 6.4 MGD by the addition of a new oxidation ditch. This future phase of construction is preliminarily planned for consideration around 2035 based on the current growth patterns.

##### **2. FACILITY DESCRIPTION**

Prior to 2001, the Warrenton WWTP was a conventional activated sludge treatment plant with a design flow of 1.0 MGD. In 2001, the facility was upgraded to an oxidation ditch activated sludge treatment plant and the design flow was increased from 1.0 MGD to 2.0 MGD. In addition to the oxidation ditch, the upgrade provided a new influent pump station, an excess flow basin for wet weather flow storage, new screening facilities, a new grit tank, and new final clarifiers. The scope of work also included conversion of the existing aeration basins to aerobic digestion basins as well as conversion of the original clarifiers to sludge holding tanks. Since the upgrade, the facility has continued to utilize the oxidation ditch treatment technology. In 2013, the

design flow of the facility was revised to 3.2 MGD after a rerating study. Recent improvements include the completion of a new headworks screening facility in 2017, and a UV disinfection system in 2022.

The Warrenton WWTP is located at 225 Willow Road, Warrenton, in Warren County, Missouri. The facility currently has a design average flow of 3.2 MGD and serves a population equivalent of approximately 31,400 people. Because of the proposed improvements, the design flow of the facility will be increased to 4.0 MGD following the issuance of the modified operating permit.

### 3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits as established in the Antidegradation review dated October 1, 2024.

The limits following the completion of construction will be applicable to the facility:

Parameter	Units	Monthly average limit
Biochemical Oxygen Demand <sub>5</sub> (BOD <sub>5</sub> )	mg/L	24
Total Suspended Solids	mg/L	24
Ammonia as N-January	mg/L	2.1
Ammonia as N-February	mg/L	1.9
Ammonia as N-March	mg/L	1.5
Ammonia as N-April	mg/L	1.0
Ammonia as N-May	mg/L	0.8
Ammonia as N-June	mg/L	0.6
Ammonia as N-July	mg/L	0.5
Ammonia as N-August	mg/L	0.6
Ammonia as N-September	mg/L	0.7
Ammonia as N-October	mg/L	1.1
Ammonia as N-November	mg/L	1.6
Ammonia as N-December	mg/L	1.9
pH	SU	6.5-9.0
BOD <sub>5</sub> Percent Removal	%	85
TSS Percent Removal	%	85

### 4. ANTIDEGRADATION

The department has reviewed the antidegradation report for this facility and issued the Water Quality and Antidegradation Review dated October 1, 2024, due to the expansion of the design flow afforded by the proposed expansion. See **APPENDIX – ANTIDEGRADATION**.



## **5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA**

### **Existing major components that will remain in use include the following:**

- Screening – Screening devices remove nuisance inorganic materials from raw wastewater. Facility is equipped with both mechanical coarse bar screen and manual bar screen. Following screening, wastewater flows to the influent lift station.
  - Mechanical Coarse Screen – A Parkson Aqua Guard mechanically cleaned coarse screen capable of treating an average daily flow of 4.0 MGD and peak flow of 12.0 MGD. The screen is fitted into a 4-foot channel and is 28 feet high. After being rinsed to remove residual biological materials, the screenings are augured into a compactor and then discharged onto a bagging mechanism to be released into a dumpster and ultimately disposed of at a landfill. The motor is an enclosed 4.5 horsepower motor operating at 1,750 rpm. Bars are spaced ½-inch apart.
  - Manual Coarse Bar Screen – a manual bar screen is provided in a bypass channel parallel to the mechanical screen to provide redundancy and a means of unit isolation for the mechanically cleaned coarse screen.
- Influent Pump Station – Two lift stations contained in a shared wet well.
  - Domestic Flows Lift Station – triplex lift station to pump flows up to 4 MGD to the grit tank. Two of the pumps are for regular operation and the third is provided as standby. Pumps are sized for 1,500 gpm at 38 feet of total dynamic head and will be replaced with pumps rated for the same duty point.
  - Excess Flow Lift Station – duplex pump station to pump flows in excess of 4 MGD to the peak flow equalization basins. One pump operates for the regular operation with the second pump on standby. Pumps are sized for 2,200 gpm at 38 feet of total dynamic head. With one pump in operation, lift station is capable of pumping 3.2 MGD to the excess flow storage basins.
- Excess Flow Storage Basins – two earthen basins to provide storage of influent flows in excess of 4 MGD. One 5-million-gallon HDPE-lined earthen basin with wastewater drained back to the grit tank by means of a control valve. One 2-million-gallon earthen basin which is controlled via weirs, pipes, and valves.
- Oxidation Ditch – a 1.5-million-gallon oxidation ditch manufactured by US Filter Envirex Products providing 9 hours of detention time at the design average flow of 4 MGD. The design organic loading is 24 lbs/day/1000 ft<sup>3</sup>. Oxygen is supplied by ten Orbal disc rotors, two in the outer channel and four in each of the two inner channels. Outer channel rotors powered by two-25 horsepower motors and inner rotors powered by eight-50 horsepower motors. Operation of the rotors is controlled by oxidation-reduction potential and dissolved oxygen sensors and a variable frequency drive to adjust the motor speed in response to the sensor readings. Flow generally starts from the outer channel and flows to the inner channels, eventually discharging from the oxidation ditch at the innermost ring over a weir and flows to the clarifier flow splitter box.
- Secondary Clarifier – the existing treatment system includes three 55-foot diameter final clarifiers. Clarifiers are center feed and peripheral withdrawal, with sludge scrapers moving the settled sludge to the center hopper for withdrawal. Each clarifier is equipped with telescoping valve to control the sludge removal

rate. Sludge flows by gravity to the return activated sludge/waste activated sludge pump station. Clarified effluent flows over the weirs and then flows by gravity to the disinfection process. One of the clarifiers was existing prior to the 2001 expansion, with the other two being added as part of the expansion. The original secondary clarifier will be demolished following the construction of the two new clarifiers. The other two existing clarifiers will remain in service along with the new clarifiers.

- Disinfection – Disinfection is the process of removal, deactivation, or killing of pathogenic microorganisms. Disinfection is provided by open channel Trojan UVSigna™ system capable of treating average design flow of 6.4 MGD and peak daily flow of 12 MGD.

**Construction will cover the following items:**

- Influent Pump Station – Pumps in the domestic flows lift station to be replaced with pumps rated for 1,500 gpm at 38 feet of total dynamic head.
- Multi-Tray Vortex Flow Grit – The existing grit removal system will be replaced with a new grit concentrator, grit classifier and washer unit, and new grit pump. These components to be installed in a new building that will house the grit equipment and will also provide additional equipment storage and a break room and restroom.
  - Grit Concentrator – Installation of one stacked tray mechanical grit removal system to process an average flow of 4 MGD and peak flow of 10 MGD. One unit with 9 trays per unit thus providing 9 trays or 63.9 sf of surface area. Maximum surface loading rate of 11.8 gpm/ft<sup>2</sup>.
  - Grit Classifier – Installation of one 32-inch diameter grit classifier with a maximum flow capacity from the grit concentrator to process an average flow of 4 MGD and peak flow of 10 MGD.
  - Grit Dewatering Escalator – Installation of one grit dewatering escalator unit to capture and dewater concentrated grit slurry from the classifier unit. To be designed based on a settling rate not to exceed 3.2 gpm/ft<sup>2</sup>.
- Secondary Clarifier – Two new secondary clarifiers will be constructed with a total surface area of 6,633 ft<sup>2</sup> or 3,317 ft<sup>2</sup> per clarifier. The sidewater depth will be 12 ft. The clarifiers will have a 65 ft total diameter and weir length of 204 ft. The surface overflow rate at design peak hourly flows including both the existing and proposed new clarifiers is 879 gpd/ft<sup>2</sup> which is less than the maximum 1,000 gpd/ft<sup>2</sup> for surface overflow rate. The weir loading rate is 13,263 gpd/ft which meets the requirements of 10 CSR 20-8.160(3)(C)2 of being less than 30,000 gpd/ft. The solids loading rate is 20.52 lbs/day/ft which meets the requirements of 10 CSR 20-8.160(3)(B)3 of less than 35 lbs/day/ft at peak flow.
- Aerobic Digestion – Two aerobic digesters and one holding tank to process sludge. Installation of fine bubble membrane disc aeration system will provide aeration and mixing of the sludge to prevent anaerobic conditions. Digesters to be supplied with 3 nozzle headers per tank and 10 nozzles per header for a minimum total number of 30 nozzles per tank. Holding tank to be supplied with 4 nozzle headers and 4 nozzles per header for a minimum total of 16 nozzles. Aeration to be supplied by a 125 HP blower, with an additional blower on standby. Blowers are capable of providing a maximum air rate of 1,646 standard cubic feet per

minute (scfm) at 10.1 psig to treat a total design waste activate sludge loading of 5,303 lbs./day for the total suspended solids and 3,977 lbs./day for the volatile suspended solids. The aerobic digester follows the RAS/WAS pump station but prior to the screw press and sludge dewatering building. The facility must ensure compliance with any applicable 503(b) requirements for vector attraction reduction and pathogen reduction depending on the proposed use(s) of the biosolids.

- Sludge Handling Tanks – Construction of two sludge handling tanks with each tank having dimensions of 30 ft by 60 ft. A sidewater depth of 18.71 ft and total volume of 67,356 ft<sup>3</sup> or about 503,858 gallons.
- Thickened Sludge Transfer Pump Station – Duplex pump station to convey thickened sludge to the digested sludge storage tank following the handling tanks. Haywood Gordon XCS4 pump or equivalent capable of operating at about 175 gpm at 69 feet of TDH.
- Digested Sludge Storage Tank – Construction of one tank for storage of digested sludge prior to the proposed screw press. The tank will have dimensions of 32 ft by 32 ft and a sidewater depth of 7.71 ft, for a total volume of 10,240 ft<sup>3</sup> or about 76,600 gallons.
- Screw Press – One sludge screw press to dewater thickened sludge. Specified to produce a sludge discharge solids percent of 16 percent with polymer addition.
- Sludge Drying Building – Following dewatering by the screw press, a conveyor will delivery dried sludge to a 60 ft by 100 ft storage building that will allow staff to handle dried sludge prior to land application.

## **6. OPERATING PERMIT**

Operating permit MO-0087912 will require a modification to reflect the construction activities. The modified Warrenton WWTP, MO-0087912, was successfully public noticed from August 9, 2024, to September 23, 2024, with one comment received. Sunny Wellesley with Region 7 of the United States Environmental Protection Agency sent a comment to question why it appeared the antidegradation review included monthly average effluent limits of 1.0 mg/L for total phosphorus when the operating permit included monitoring only. The department response to this comment clarified that the antidegradation review did not implement effluent limits for total phosphorus but included the 1.0 mg/L figure within the *Table 2-1: Performance Based Levels*, to make the facility, stakeholders, and the public aware of the requirement to comply with the new total phosphorus rule as found in 10 CSR 20-7.015(9)(B)2.A. This rule requires the facility to select one of four options for compliance with the rule, which the facility is required to comply with by January 1, 2033. The *6.0 Derivation and Discussion of Parameters, Limits, and Performance Based Effluent Levels* section of the antidegradation review document clarifies that no effluent limits are being implemented for total phosphorus at this time since the current permit cycle would finish prior to January 1, 2033, but that the facility would need to plan for the eventual requirement.

Submit the Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification be issued.

Operating permit MO-0087912 expired on December 31, 2023. A renewal application was received by the department on June 26, 2023, meeting the requirement to apply for renewal at least 180 days in advance of the permit expiration date. The renewal must be issued before the modified operating permit is implemented. If you have questions on the operating permit, please contact the NPDES permitting section at 573-522-4502.

## **V. NOTICE OF RIGHT TO APPEAL**

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

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

Thomas Silkwood  
Engineering Section  
[thomas.silkwood@dnr.mo.gov](mailto:thomas.silkwood@dnr.mo.gov)

Chia-Wei Young, P.E.  
Engineering Section  
[chia-wei.young@dnr.mo.gov](mailto:chia-wei.young@dnr.mo.gov)

## **APPENDICES**

- **Process Flow Diagram**
- **Antidegradation**

**Process Flow Diagram**

**8a**  
**EXISTING SECONDARY CLARIFIER**  
 - NUMBER: 1  
 - DIAMETER: 55'-0"  
 - SWD: 12'-0"  
 - SURFACE AREA: 2,376 SF  
 - WEIR LENGTH: 172'-0"  
 - VOLUME: 28,512 CF

**6**  
**OXIDATION DITCH**  
 - NUMBER OF CHANNELS: 3  
 - TOTAL VOLUME: 200,529 CF  
 - INNER DRIVES: 4-50 HP  
 - OUTER DRIVES: 3-25 HP  
 - D.O.: VARIES

**4**  
**GRIT COLLECTING EQUIPMENT**  
 - VOLUME: 17,593 GALLONS

**3a**  
**STORM BASIN**  
 - 5.0 MILLION GALLONS

**2a**  
**INFLUENT STORM PUMPS**  
 - NUMBER: 3-40 HP  
 - 1 UNIT IS STANDBY  
 - TYPE: SUBMERSIBLE  
 - CONTROL: CONSTANT SPEED  
 - FLOW: 3.2 MGD (1 PUMP)

**1**  
**AUTOMATIC BAR SCREEN**  
 - CHANNEL WIDTH: 8'-0"  
 - CHANNEL DEPTH: 14'-0"

**8b**  
**EXISTING SECONDARY CLARIFIER**  
 - NUMBER: 1  
 - DIAMETER: 55'-0"  
 - SWD: 14'-0"  
 - SURFACE AREA: 2,376 SF  
 - WEIR LENGTH: 159'-0"  
 - VOLUME: 33,264 CF

**7**  
**CLARIFIER FLOW SPLITTER**  
 - PROPORTIONAL FLOW SPLIT  
 - WEIR CONTROLLED

**5**  
**OXIDATION DITCH SPLITTER**  
 - FLOW SPLITTER AND MONITORING  
 - WEIR CONTROLLED

**3b**  
**AUTOMATIC FLOW CONTROL VALVE**  
 - REGULATES STORM BASIN RETURN FLOW

**2b**  
**DOMESTIC PUMPS**  
 - NUMBER: 3-28 HP  
 - 1 UNIT IS STANDBY  
 - TYPE: SUBMERSIBLE  
 - CONTROL: VFD  
 - FLOW: 4.0 MGD (1 PUMP)  
 - FLOW: 10.0 MGD (3 PUMPS)

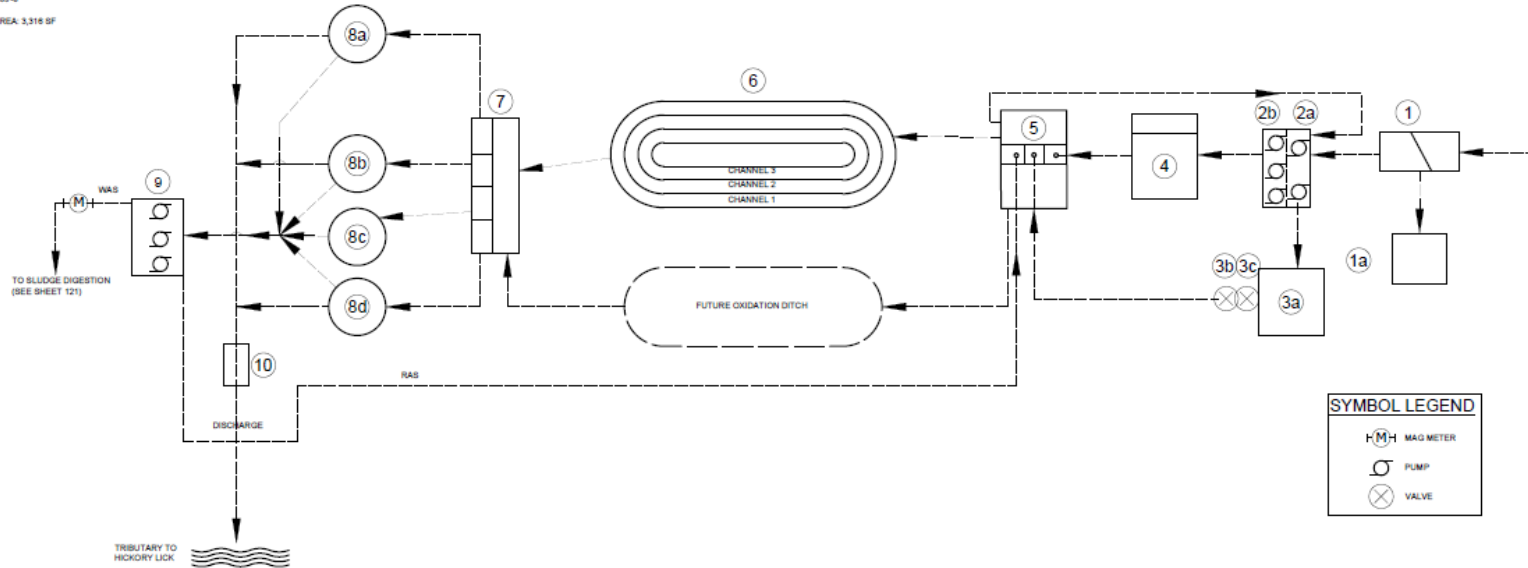
**1a**  
**EXCESS FLOW BASIN (2016)**  
 - 2.0 MILLION GALLONS

**8c/8d**  
**PROPOSED SECONDARY CLARIFIERS**  
 - NUMBER: 2  
 - DIAMETER: 85'-0"  
 - SWD: 12'-0"  
 - SURFACE AREA: 3,316 SF

**8**  
**TOTAL SECONDARY CLARIFICATION**  
 - NUMBER: 4

**5a**  
**INFLUENT OVERFLOW**

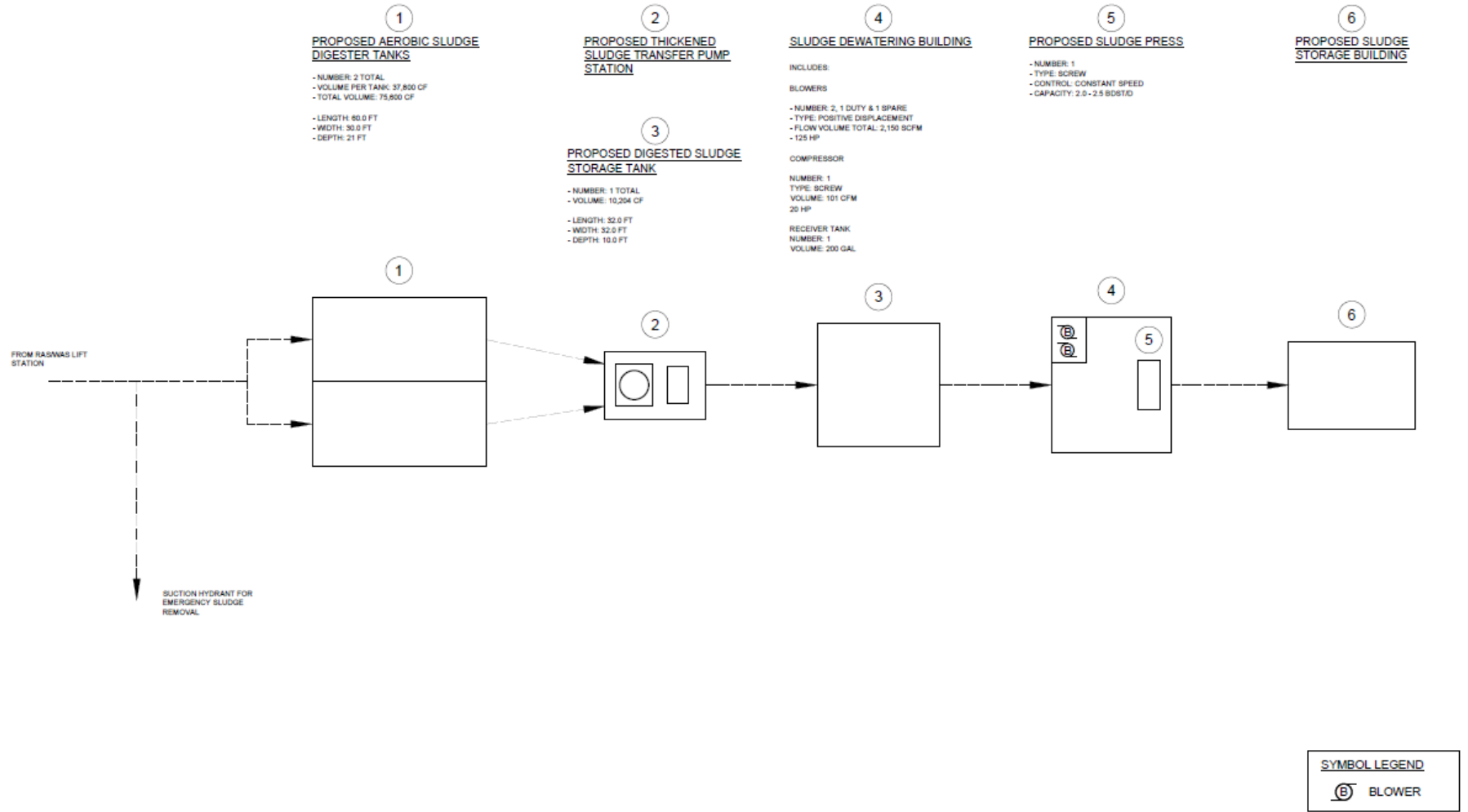
**3c**  
**10' GATE VALVE**



**SYMBOL LEGEND**  
 (M) MAG METER  
 P PUMP  
 X VALVE

**9**  
**RAS/WAS PUMP STATION**  
 - NUMBER: 2-33 HP  
 - 1 STANDBY RAS FOR BOTH RAS AND WAS  
 - TYPE: SUBMERSIBLE  
 - CONTROL: VFD

**10**  
**UV DISINFECTION SYSTEM**  
 (2022)  
 - 8.0 MGD  
 - 12.0 MGD PEAK





**Water Protection Program**

**Water Pollution Control Branch**

**Engineering Section**

**Antidegradation**

## **Water Quality and Antidegradation Review**

For the Protection of Water Quality  
and Determination of Effluent Limits

Unnamed Tributary to Hickory Lick Creek

Requested by  
Jeffrey J. Huck, P.E.  
Gonzalez Companies, LLC

For  
Warrenton WWTP Phase 1 Improvements  
City of Warrenton

October 2024



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## 1. PURPOSE OF ANTIDegradation REVIEW REPORT

An Antidegradation Review Request was submitted by Jeffrey J. Huck, P.E. with Gonzalez Companies, LLC on behalf of the City of Warrenton to evaluate the expansion of the Warrenton Wastewater Treatment Plant (WWTP) to accommodate growth in the City of Warrenton, the City of Truesdale and the surrounding area. Jeffrey J. Huck, P.E. with Gonzalez Companies, LLC prepared and submitted the *Warrenton WWTP – WWTP Facility Plan* report dated February 14, 2024, which discusses the proposed improvements. The report discusses the methodologies that were utilized for estimated future flows for the wastewater system, which included an analysis of historic hydraulic and organic loadings, population projections based on census data, and estimated flows per acre based on current and projected land use for the facility planning area. The report estimates that the existing population served by the facility is 9,347 as of 2020 and is expected to reach approximately 14,984 by the year 2047. To accommodate the anticipated growth, the report proposes to expand the treatment facility in several phases. While the current oxidation ditch treatment system is capable of handling 4.0 MGD, the rated capacity of the plant is restricted at 3.2 MGD due to the limitations of the secondary clarifier capacity. Phase 1 improvements would therefore be aimed at removing this bottleneck by the addition of two new clarifiers installed to the west of the existing oxidation ditch and would also include replacement of the grit handling process, upgrades to the flow-splitting structure preceding the secondary clarifiers, and installation of covers on all four clarifiers to aid in control of suspended algae solids. This antidegradation review addresses phase 1 of the proposed improvements which involves expanding the design flow from 3.2 MGD to 4.0 MGD. Additional improvements are planned for two additional phases of improvements. Future phase 2 construction would not change the design flow of the plant and would be focused on improvements to the sludge handling process. Phase 2 is preliminarily planned to be considered around 2025. Future phase 3 construction would include another expansion to the facility by the construction of an additional three-train oxidation ditch to mirror the existing process and is intended to allow for nitrogen and phosphorus treatment in the case that nutrient limits are required. Phase 3 would expand the design flow to 6.4 MGD and is preliminarily planned for consideration around 2035 based on the current growth patterns.

In accordance with Missouri's Water Quality Standards [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 that documents that the use of a water body's available assimilative capacity is justified. Effective August 30, 2008, and revised July 13, 2016, a facility is required to use Missouri's Antidegradation Implementation Procedure (AIP) for new and expanded wastewater discharges.

The AIP specifies that when the proposed activity results in a reduction by 10 percent or more of the:

- facility assimilative capacity for any pollutant as a result of any single discharge;
- segment assimilative capacity for any pollutant as a result of all discharges combined after existing water quality (EWQ); or
- any new or expanded discharge that the department determines will likely result in the increased accumulation of pollutants or their degradation products in sediment or fish tissue,

then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required.

The applicant elected to determine that all pollutants of concern (POC) are non-degrading in the receiving stream using a mass-loading balance to demonstrate a reduction or maintenance of loading in the receiving waters. This analysis was conducted to fulfill the requirements of the AIP. Information that was provided by the applicant in the submitted report and summary forms in Appendix D was used to develop this review document.

The preferred alternative is to continue utilizing the existing oxidation ditch treatment system and to upgrade the secondary clarification process to remove the current bottleneck and enable the facility to accommodate a proposed design flow of 4.0 MGD. The receiving waterbody is the unnamed tributary to Hickory Lick Creek, a presumed use stream and confluences with the Hickory Lick Creek approximately 0.04 miles downstream of the outfall.

## 2. PERMIT LIMITS AND MONITORING INFORMATION

**Table 2-1: Performance Based Levels**

PARAMETER	Unit	Basis	Daily Maximum	Weekly Average	Monthly Average
Flow	MGD	FSR		*	*
BOD <sub>5</sub>	mg/L	NDEL		30	24
TSS	mg/L	NDEL		30	24
<i>Escherichia coli</i> **	#/100mL	FSR		1,030	206**
Ammonia as N (January) (February) (March) (April) (May) (June) (July) (August) (September) (October) (November) (December)	mg/L	NDEL, PEL	5.6 5.1 3.9 2.7 2.2 1.7 1.2 1.5 1.9 2.9 4.1 5.1		2.1 1.9 1.5 1.0 0.8 0.6 0.5 0.6 0.7 1.1 1.6 1.9
Total Phosphorus***	mg/L	FSR	*		1.0
Total Kjeldahl Nitrogen	mg/L	FSR	*		*
Nitrite + Nitrate	mg/L	FSR	*		*
Copper, Total Recoverable	µg/L	BPJ	*		*
Zinc, Total Recoverable	µg/L	BPJ	*		*
Oil & Grease	mg/L	BPJ	*		*
PARAMETER	Unit	Basis for Limits	Minimum		Maximum
pH	SU	FSR	6.5		9.0
PARAMETER	Unit	Basis for Limits			Monthly Avg. Min
BOD <sub>5</sub> Percent Removal	%	FSR			85
TSS Percent Removal	%	FSR			85

\* - Monitoring requirement only

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

\*\*\* - As a major facility with a design flow greater than 1.0 MGD, the facility is required to select one of the options from 10 CSR 20-7.015(9)(B)2.A.(I)-(IV) for compliance with the total phosphorus rule by January 1, 2033. The facility may work with the operating permit writer to establish the preferred compliance path.

**Basis for Limitations Codes:**

MDEL – Minimally Degrading Effluent Limit  
 NDEL – Non-Degrading Effluent Limit  
 PEL – Preferred Effluent Limit  
 BPJ – Best Professional Judgment

TBEL – Technology-Based Effluent Limit  
 WQBEL – Water Quality-Based Effluent Limit  
 FSR – Federal or State Regulation

### 3. FACILITY INFORMATION

Prior to 2001, the Warrenton WWTP was a conventional activated sludge treatment plant with a design flow of 1.0 MGD. In 2001, the facility was upgraded to an oxidation ditch activated sludge treatment plant and the design flow was increased from 1.0 MGD to 2.0 MGD. In addition to the oxidation ditches, the upgrade provided a new influent pump station, an excess flow basin for wet weather flow storage, new screening facilities, a new grit tank, and new final clarifiers. The scope of work also included conversion of the existing aeration basins to aerobic digestion basins as well as conversion of the original clarifiers to sludge holding tanks. Since the upgrade, the facility has continued to utilize the oxidation ditch treatment technology. In 2013, the design flow of the facility was revised to 3.2 MGD after a rerating study. Recent improvements include the completion of a new headworks screening facility in 2017, and a UV disinfection system in 2022.

Facility Name:	Warrenton WWTP
Address:	225 Willow Rd, Warrenton, MO 63383
Permit #:	MO-0087912
County:	Warren
Facility Type:	Domestic, POTW
Owner:	City of Warrenton
Continuing Authority:	Same as owner
UTM Coordinates:	X = 662765, Y = 4301450
Legal Description:	Sec. 10, T47N, R2W
12 digit watershed:	07110008-0404
Ecological Drainage Unit:	Central Plains/Cuivre/Salt

#### A. FACILITY PERFORMANCE HISTORY:

A review of the past five years of Discharge Monitoring Report data shows that the facility is operating well. No permit limit exceedances were recorded since January 1, 2019.

An inspection was conducted on April 29, 2014, to determine the facility's treatment capabilities and to evaluate compliance. Based on observations at the time of the inspection, it was determined that the facility was in compliance with the Missouri Clean Water Law, the Clean Water Commission Regulations, and Missouri State Operating Permit MO-0087912. The inspector noted that plant equipment appeared to be in good condition and was well maintained.

The most recent compliance inspection was conducted on July 11, 2019. The facility was found to be in noncompliance with the Missouri Clean Water Law, the Missouri Clear Water Commission regulations, and Missouri State Operating Permit MO-0087912 because SOUR test results failed to satisfactorily demonstrate that the sludge samples were properly stabilized. Other than the noted concerns with sludge stabilization, the facility was considered to be in good condition and no additional recommendations or requirements were provided to the facility. The facility was issued a return to compliance letter from the department dated October 30, 2019.

#### B. 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:

- Revegetate disturbed areas to minimize erosion using native plant species compatible with the local landscape and wildlife needs.
- 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.
- If any trees need to be removed for the project, contact the U.S. Fish and Wildlife Service for coordination under the Endangered Species Act.
- Check your project site for any karst features and make every effort to protect groundwater in the project area.
- 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 any 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 and dry in the hot sun before using again.

**C. GEOHYDROLOGIC EVALUATION**

Per 10 CSR 20-8.110(5)(E)6.G., a geohydrologic evaluation is required for all new wastewater treatment facilities, new outfalls or relocated outfalls, new or major modifications to earthen basin structures, and new features (e.g., wastewater irrigation sites, subsurface soil dispersal sites). Because the scope of the project does not include a new facility, changes to the outfall, changes to earthen basins, or new features, a geohydrologic evaluation is not required and was not submitted with the request. The receiving stream is considered gaining for discharge purposes.

**4. RECEIVING WATERBODY INFORMATION**

**A. RECEIVING WATERBODY**

**Table 4-2: Outfalls Table**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
001	6.19	Secondary	Domestic

**Table 4-3: Receiving Stream(s)**

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
<b>Tributary to Hickory Lick Creek (Presumed Use Stream)</b>	C	5024	AHP-WWH, WBC-B, SCR, HHP, IRR, LWP	07110008-0404	0.04
<b>Hickory Lick Creek</b>	C	5024	AHP-WWH, WBC-B, SCR, HHP, IRR, LWP	07110008-0404	

\* **AHP** = Aquatic Habitat Protection - To ensure the protection and propagation of fish, shellfish, and wildlife. AHP is further subcategorized as: **WWH** = Warm Water Habitat; **CLH** = Cool Water Habitat; **CDH** = Cold Water Habitat; **EAH** = Ephemeral Aquatic Habitat; **MAH** = Modified Aquatic Habitat; **LAH** = Limited Aquatic Habitat; **DWS** = Drinking water supply; **GRW** = Groundwater; **HHP** = Human Health Protection as it relates to the consumption of fish; **IND** = Industrial water supply; **IRR** = Irrigation - Application of water to cropland or directly to cultivated plants that may be used for human or livestock consumption; **LWP** = Livestock and wildlife protection - Maintenance of conditions in waters to support health in livestock and wildlife; **WBC** = Whole Body Contact recreation where the entire body is capable of being submerged. WBC is further subcategorized as: **WBC-A** = Whole body contact recreation that supports swimming uses and has public access; **WBC-B** = Whole body contact recreation that supports swimming; **SCR** = Secondary Contact Recreation (like fishing, wading, and boating).

**Table 4-4: Receiving Stream Segments**

Receiving Water Body Segment Outfall #1:		
Upper end segment* UTM coordinates:	X = 662716; Y = 4301432	outfall
Lower end segment* UTM coordinates:	X = 663077; Y = 4301470	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.

**B. LOSING STREAM ALTERNATIVE DISCHARGE LOCATION**

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

The current outfall discharges to the unnamed Tributary to Hickory Lick Creek, which is considered a gaining segment at the outfall.

**C. MIXING CONSIDERATIONS AND LOW FLOW VALUES**

The proposed receiving waterbody is the unnamed Tributary to Hickory Lick Creek, which is a class C stream. The applicant elected to use USGS StreamStats to establish low flow values. See Appendix B for StreamStats summary.

**Table 4-5: Receiving Stream(s) Low-Flow Values**

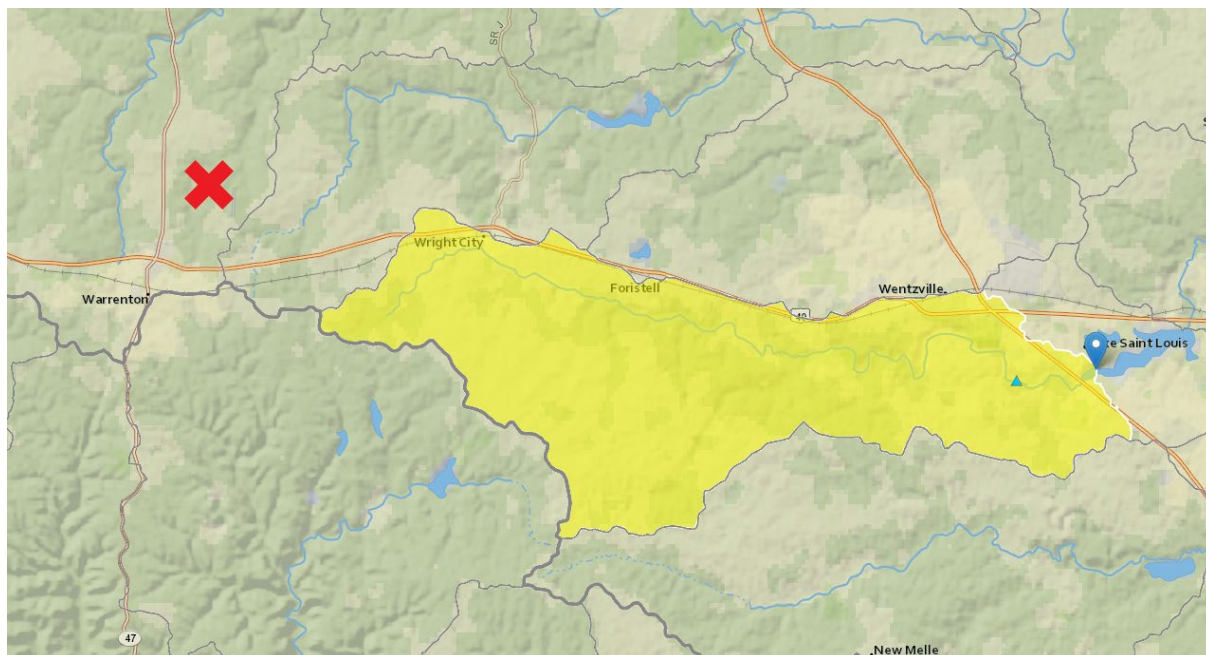
RECEIVING STREAM	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
<b>Tributary to Hickory Lick Creek</b>	0.0	0.0	0.0

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)].

**D. EXISTING WATER QUALITY**

No existing water quality data was submitted. The facility discharges to the unnamed tributary to Hickory Lick Creek, which is not a 303(d) listed stream and does not have a total maximum daily load for any pollutants. Lake Saint Louis is located about 19 miles from the City of Warrenton and is on the 2022 303(d) list for chlorophyll-a from nonpoint sources. While the Lake Saint Louis watershed is close to the City of Warrenton’s municipal boundaries, the Warrenton WWTP itself does not lie within the Lake Saint Louis watershed. Note that stormwater discharges within the City of Warrenton are not within the scope of this review, which addresses only the Warrenton WWTP under the Missouri State Operating Permit MO-0087912. The receiving stream for the facility is the unnamed tributary to Hickory Lick Creek, which has a downstream confluence with Hickory Lick Creek. Hickory Lick Creek eventually flows into Big Creek, followed by Cuivre River, and finally the Mississippi River. Below is a map which shows the location of the Warrenton WWTP relative to the Lake Saint Louis watershed. The yellow highlighted portion shows the watershed boundaries for Lake Saint Louis, and the red “x” marks the approximate location of the Warrenton WWTP.



#### E. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

### 5. ANTIDEGRADATION REVIEW INFORMATION

#### 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 which 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. 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.

- There are no Tier 1 Pollutants of concern for this review.

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 2 Pollutants for this review include: biochemical oxygen demand (BOD), total suspended solids (TSS), ammonia, total phosphorus, total kjeldahl nitrogen, nitrite + nitrate, total recoverable copper, total recoverable zinc, oil and grease, and pH.

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.

- As this proposed discharge is located at the unnamed Tributary to Hickory Lick Creek, the receiving waterbody is not an Outstanding National Resource Water or an Outstanding State Resource Water, and as such Tier 3 is not applicable.

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).

**Table 5-6: Pollutants of Concern and Tier Determinations**

Pollutants of Concern	Tier	Review Type	Comment
Biological Oxygen Demand (BOD <sub>5</sub> )/DO	2*	Insignificant	Non-degrading limits
Total Suspended Solids (TSS)	**	Insignificant	Non-degrading limits
<i>Escherichia coli (E. coli)</i>	2*		Disinfection required, UV disinfection utilized
Ammonia as N	2*	Insignificant	Non-degrading limits
Total Phosphorus	**		Total Phosphorus Rule, 10 CSR 20-7.015(9)(B)2.A.
Total Kjeldahl Nitrogen	**		Monitoring required per 10 CSR 20-7.015(9)(D)8.
Nitrite + Nitrate	**		Monitoring required per 10 CSR 20-7.015(9)(D)8.
Copper, Total Recoverable	2*		Permit limits applied; monitoring only
Zinc, Total Recoverable	2*		Permit limits applied; monitoring only
Oil & Grease	2*		Permit limits applied
pH	***		10 CSR 20-7.031(5)(E) applied

\* Tier assumed.

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

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

**B. NECESSITY OF DEGRADATION**

The AIP specifies that if the proposed activity results in a reduction by 10 percent or more of the assimilative capacity then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. The proposed activity will result in insignificant degradation and therefore a demonstration of necessity is not required. However, the applicant conducted an evaluation of regionalization and non-discharging treatment options to establish the necessity of the proposed discharge.

**I. REGIONALIZATION**

The Warrenton WWTP is a regional facility that serves the City of Warrenton as well as the nearby City of Truesdale. The nearest regional plant that has the potential to accept the flows from the Warrenton WWTP is the Wentzville Water Reclamation Center (MO-0093599), which is approximately 14 miles from the Warrenton WWTP. The engineer estimates that the cost to regionalize at the Wentzville facility would be approximately \$20 million when considering the costs of the pipe and easements alone. Therefore, this option is considered economically inefficient and is not practicable to implement.

**II. NO DISCHARGE EVALUATION – LAND APPLICATION**

The applicant evaluated land application as a non-discharging alternative. This alternative would require appropriate irrigation equipment and would require sufficient land for both the application

and the storage basin to provide 105 days of storage of the design wastewater flows and net rainfall minus evaporation per 10 CSR 20-8.200(6)(C)1.C. The engineer estimates that approximately 2240 acres would be required to implement this alternative, and that the cost of land acquisition would be approximately \$20 million. Therefore, this option is considered economically inefficient and is not practicable to implement.

III. PREFERRED ALTERNATIVE – EXPANSION OF EXISTING TREATMENT SYSTEM

The preferred alternative for the project is to expand the existing treatment system through a three-phased approach. For the phase 1 improvements, which is the only phase that is within the scope of this antidegradation review, the design flow of the facility is to be increased from 3.2 MGD to 4.0 MGD. Construction for phase 1 is to include a new grit handling process, upgrades to the flow splitting structure prior to the clarification process, two new 65-foot diameter clarifiers, and launder covers to be installed on both the new clarifiers and the two existing clarifiers. A planned phase 2 of construction would provide improvements to the sludge handling process and would not increase the facility’s design flow. Future phase 2 as currently planned would not require an antidegradation review. A planned phase 3 of construction would increase the design flow to 6.4 MGD by the addition of a second oxidation ditch to mirror the existing process. Phase 3 improvements as currently planned will require an antidegradation review.

C. SOCIAL AND ECONOMIC IMPORTANCE

The AIP specifies that if the proposed activity will result in significant degradation, then a demonstration of the social and economic importance of the project is required. The proposed activity will result in insignificant degradation and therefore a demonstration of necessity is not required. However, a brief discussion of socioeconomic factors is provided below.

Based on United States Census Bureau data, the population of the City of Warrenton was approximately 8,648 in 2022. The city is growing significantly faster than the state average rate of growth. The data for median household income, unemployment rate, the percent of population below poverty level, and the percent of households receiving food stamps shows that economic characteristics for the city is similar to the state average.

No.	Administrative Unit	Warrenton City	Missouri State	United States	Comparison (Community vs. State)
1	Population (2022)	8,648	6,154,422	331,097,593	
2	Percent Change in Population (2000-2022)	63.8%	10.0%	17.7%	Slightly higher than state average
3	2022 Median Household Income (in 2023 Dollars)	\$64,652	\$68,634	\$78,242	Slightly lower than state average
4	Percent Change in Median Household Income (2000-2022)	3.9%	-1.1%	1.9%	Slightly higher than state average
5	Median Age (2022)	32.0	38.8	38.8	Slightly younger than state average
6	Change in Median Age in Years (2000-2022)	-0.2	2.7	3.5	Slightly lower than state average
7	Unemployment Rate (2022)	5.2%	4.3%	5.3%	Slightly higher than state average
8	Percent of Population Below Poverty Level (2022)	14.6%	12.8%	12.5%	Slightly higher than state average
9	Percent of Household Received Food Stamps (2022)	11.2%	10.0%	11.5%	Slightly higher than state average
10	(Primary) County Where the Community Is Located	Warren County			



D. 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. As demonstrated in the submitted *Antidegradation Review Summary Path A: Tier 2 – Non-Degradation Mass Balance* form, Tables 5-2 and 5-3 below summarizes the results of current loading based on the current permit concentrations and proposed loadings based on the proposed permit concentrations.

**Table 5-2: Net Changes in Loading for Average Weekly and Daily Maximum Effluent Limitations**

POLLUTANTS OF CONCERN	CURRENT WEEKLY AVERAGE OR MAXIMUM DAILY LIMIT (MG/L)	PROPOSED WEEKLY AVERAGE OR MAXIMUM DAILY LIMIT (MG/L)	CURRENT LOADING (LBS/DAY)	PROPOSED LOADING (LBS/DAY)	NET CHANGE (LBS/DAY)
BOD <sub>5</sub>	45 (AWL)	36 (AWL)	1200.96	1000.8	-200.16
Total Suspended Solids (TSS)	45 (AWL)	36 (AWL)	1200.96	1000.8	-200.16
<i>Escherichia coli</i> ( <i>E. coli</i> )	Regulatory limits apply	Regulatory limits apply	Not applicable**	Not applicable	Not applicable
Ammonia as N – Jan	14.4 (MDL)	5.6 (MDL)	384.31	186.82	-197.49
Ammonia as N – Feb	12.1 (MDL)	5.1 (MDL)	322.92	170.14	-152.79
Ammonia as N – Mar	10.1 (MDL)	3.9 (MDL)	269.55	130.10	-139.44
Ammonia as N – Apr	10.1 (MDL)	2.7 (MDL)	269.55	90.07	-179.48
Ammonia as N – May	12.1 (MDL)	2.2 (MDL)	322.92	73.39	-249.53
Ammonia as N – Jun	14.4 (MDL)	1.7 (MDL)	384.31	56.71	-327.60
Ammonia as N – Jul	12.1 (MDL)	1.2 (MDL)	322.92	40.03	-282.89
Ammonia as N – Aug	14.4 (MDL)	1.5 (MDL)	384.31	50.04	-334.27
Ammonia as N – Sep	12.1 (MDL)	1.9 (MDL)	322.92	63.38	-259.54
Ammonia as N – Oct	12.1 (MDL)	2.9 (MDL)	322.92	96.74	-226.18
Ammonia as N – Nov	14.4 (MDL)	4.1 (MDL)	384.31	136.78	-247.53
Ammonia as N – Dec	12.1 (MDL)	5.1 (MDL)	322.92	170.14	-152.79
Total Phosphorus	Total Phosphorus Rule, 10 CSR 20-7.015(9)(B)2.A.	Total Phosphorus Rule, 10 CSR 20-7.015(9)(B)2.A.	Not applicable	Not applicable	Not applicable
Total Kjeldahl Nitrogen	Monitoring	Monitoring	Not applicable	Not applicable	Not applicable
Nitrite + Nitrate	Monitoring	Monitoring	Not applicable	Not applicable	Not applicable
Copper, Total Recoverable	Monitoring	Monitoring	Not applicable	Not applicable	Not applicable
Zinc, Total Recoverable	Monitoring	Monitoring	Not applicable	Not applicable	Not applicable
Oil & Grease	Monitoring	Monitoring	Not applicable	Not applicable	Not applicable
pH	6.0-9.0 SI units	6.0-9.0 SI units	Not applicable	Not applicable	Not applicable

\*QBEL=water quality based effluent limit. \*\*See Derivation and Discussion of Limits, Section 10. \*\*\*Value is in the current permit, rather than the expired permit. AWL = average weekly limit. MDL = maximum daily limit.

**Table 5-3: Net Changes in Loading for Monthly Average Effluent Limitations**

POLLUTANTS OF CONCERN	CURRENT MONTHLY AVERAGE LIMIT (MG/L)	PROPOSED MONTHLY AVERAGE LIMIT (MG/L)	CURRENT LOADING (LBS/DAY)	PROPOSED LOADING (LBS/DAY)	NET CHANGE (LBS/DAY)
BOD <sub>5</sub>	30	24	800.64	800.64	0
Total Suspended Solids (TSS)	30	24	800.64	800.64	0
<i>Escherichia coli</i> ( <i>E. coli</i> )	Regulatory limits apply	Regulatory limits apply	Not applicable**	Not applicable	Not applicable
Ammonia as N – Jan	3.5	2.1	93.41	70.06	-23.35
Ammonia as N – Feb	3.1	1.9	82.73	63.38	-19.35
Ammonia as N – Mar	2.7	1.5	72.06	50.04	-22.02
Ammonia as N – Apr	2.4	1.0	64.05	33.36	-30.69
Ammonia as N – May	1.9	0.8	50.71	26.69	-24.02
Ammonia as N – Jun	1.7	0.6	45.37	20.02	-25.35
Ammonia as N – Jul	1.3	0.5	34.69	16.68	-18.01
Ammonia as N – Aug	1.5	0.6	40.03	20.02	-20.02
Ammonia as N – Sep	1.7	0.7	45.37	23.35	-22.02
Ammonia as N – Oct	2.6	1.1	69.39	36.70	-32.69
Ammonia as N – Nov	3.5	1.6	93.41	53.38	-40.03
Ammonia as N – Dec	3.1	1.9	82.73	63.38	-19.35
Total Phosphorus	Total Phosphorus Rule, 10 CSR 20-7.015(9)(B)2.A.	Total Phosphorus Rule, 10 CSR 20-7.015(9)(B)2.A.	Not applicable	Not applicable	Not applicable
Total Kjeldahl Nitrogen	Monitoring	Monitoring	Not applicable	Not applicable	Not applicable
Nitrite + Nitrate	Monitoring	Monitoring	Not applicable	Not applicable	Not applicable
Copper, Total Recoverable	Monitoring	Monitoring	Not applicable	Not applicable	Not applicable
Zinc, Total Recoverable	Monitoring	Monitoring	Not applicable	Not applicable	Not applicable
Oil & Grease	Monitoring	Monitoring	Not applicable	Not applicable	Not applicable
pH	6.0-9.0 SI units	6.0-9.0 SI units	Not applicable	Not applicable	Not applicable

\*QBEL=water quality based effluent limit. \*\*See Derivation and Discussion of Limits, Section 10. \*\*\*Value is in the current permit, rather than the expired permit.

## 6. DERIVATION AND DISCUSSION OF PARAMETERS, LIMITS, AND PERFORMANCE BASED EFFLUENT LEVELS

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:

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

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

Where

- C = downstream concentration (mg/L)
- C<sub>s</sub> = upstream concentration (mg/L)
- Q<sub>s</sub> = upstream flow (cfs)
- C<sub>e</sub> = effluent concentration (mg/L)
- Q<sub>e</sub> = effluent flow (cfs)

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

### Outfall #001 – Main Facility Outfall

- **Flow.** Though not limited itself, the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations [40 CFR Part 122.44(i)(1)(ii)]. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the department, which may require the submittal of an operating permit modification. Influent monitoring has been and will be required for this facility in its Missouri State Operating Permit.
- **Biochemical Oxygen Demand (BOD<sub>5</sub>).** Effluent limits of 24 mg/L average monthly and 30 mg/L average weekly were established as a result of a mass loading maintenance or reduction demonstration by the applicant. At the existing design flow of 3.2 MGD the mass loading to the waterbody is 1200.96 lbs/day for the weekly limits and 800.64 lbs/day for the monthly limits, while the proposed loading was

calculated to be 1000.8 lbs/day for the weekly limits and 800.64 lbs/day for the monthly limits at the proposed effluent concentration and increased design flow. These limits are at least as stringent as the minimum effluent regulations established in 10 CSR 20-7.015(8)(A)1.

**Dissolved Oxygen Modeling:**

Dissolved oxygen modeling is not required for applicants which are undergoing a non-degrading review with respect to BOD<sub>5</sub>. This project proposed non-degrading limits for BOD<sub>5</sub> and was thus exempted from the requirement to conduct dissolved oxygen modeling.

- **Total Suspended Solids (TSS).** Effluent limits of 24 mg/L average monthly and 30 mg/L average weekly were established as a result of a mass loading maintenance or reduction demonstration by the applicant. At the existing design flow of 3.2 MGD the mass loading to the waterbody is 1200.96 lbs/day for the weekly limits and 800.64 lbs/day for the monthly limits, while the proposed loading was calculated to be 1000.8 lbs/day for the weekly limits and 800.64 lbs/day for the monthly limits at the proposed effluent concentration and increased design flow. These limits are at least as stringent as the minimum effluent regulations established in 10 CSR 20-7.015(8)(A)1.
- **Escherichia coli (E. coli).** Monthly average of 206 per 100 mL as a geometric mean and weekly average of 1,030 per 100 mL as a geometric mean during the recreational season (April 1 – October 31), for discharges within two miles upstream of segments or lakes with Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.015(9)(B). An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). The geometric mean is calculated by multiplying all the data points and then taking the nth root of this product, where n = # of samples collected.
- **Total Ammonia Nitrogen.** Limits for total ammonia nitrogen were calculated based on a maintenance or reduction of loading to the receiving stream as well as the [Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013](#). This updated criteria has not yet been officially adopted in Missouri, but it is anticipated that these limits will be implemented at some point in the future. The applicant opted to propose limits to comply with potential future limits based on the updated criteria.

The proposed non-degrading effluent limits are:

Parameter	Units	MDL	AML
Ammonia as N – Jan	mg/L	5.6	2.1
Ammonia as N – Feb	mg/L	5.1	1.9
Ammonia as N – Mar	mg/L	3.9	1.5
Ammonia as N – Apr	mg/L	2.7	1.0
Ammonia as N – May	mg/L	2.2	0.8
Ammonia as N – Jun	mg/L	1.7	0.6
Ammonia as N – Jul	mg/L	1.2	0.5
Ammonia as N – Aug	mg/L	1.5	0.6
Ammonia as N – Sep	mg/L	1.9	0.7
Ammonia as N – Oct	mg/L	2.9	1.1
Ammonia as N – Nov	mg/L	4.1	1.6
Ammonia as N – Dec	mg/L	5.1	1.9

To verify that the proposed non-degrading limits provided by the facility are protective of the water quality based effluent limits, below is the following calculation of water quality based effluent limits. It demonstrates that the proposed non-degrading effluent limits proposed by the applicant are more protective.

Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L.

**Table 6-7: Ammonia Criteria as of March 21, 2024**

Month	Temp (°C)*	pH (SU)*	Total Ammonia Nitrogen CCC (mg N/L)	Total Ammonia Nitrogen CMC (mg N/L)
January	2.8	7.8	3.1	12.1
February	4.0	7.9	2.7	10.1
March	10.6	7.9	2.7	10.1
April	17.0	7.9	2.3	10.1
May	22.0	7.8	1.9	12.1
June	26.0	7.8	1.5	12.1
July	28.9	7.9	1.1	10.1
August	28.0	7.8	1.3	12.1
September	24.1	7.8	1.7	12.1
October	17.5	7.8	2.6	12.1
November	11.6	7.8	3.1	12.1
December	4.9	7.9	2.7	10.1

\* Ecoregion Data (Central Irregular Plains)

WBQEL equation

$$C_e = (((Q_e + Q_s) * C) - (Q_s * C_s)) / Q_e$$

**January**

Chronic WLA:  $C_e = ((6.19 + 0.0)3.1 - (0.0 * 0.01)) / 6.19$  Ce = 3.1  
 Acute WLA:  $C_e = ((6.19 + 0.0)12.1 - (0.0 * 0.01)) / 6.19$  Ce = 12.1  
 AML = WLA<sub>c</sub> = 3.1 mg/L  
 MDL = WLA<sub>a</sub> = 12.1 mg/L

**February**

Chronic WLA:  $C_e = ((6.19 + 0.0)2.7 - (0.0 * 0.01)) / 6.19$  Ce = 2.7  
 Acute WLA:  $C_e = ((6.19 + 0.0)10.1 - (0.0 * 0.01)) / 6.19$  Ce = 10.1  
 AML = WLA<sub>c</sub> = 2.7 mg/L  
 MDL = WLA<sub>a</sub> = 10.1 mg/L

**March**

Chronic WLA:  $C_e = ((6.19 + 0.0)2.7 - (0.0 * 0.01)) / 6.19$  Ce = 2.7  
 Acute WLA:  $C_e = ((6.19 + 0.0)10.1 - (0.0 * 0.01)) / 6.19$  Ce = 10.1  
 AML = WLA<sub>c</sub> = 2.7 mg/L  
 MDL = WLA<sub>a</sub> = 10.1 mg/L

**April**

Chronic WLA:  $C_e = ((6.19 + 0.0)2.3 - (0.0 * 0.01)) / 6.19$  Ce = 2.3  
 Acute WLA:  $C_e = ((6.19 + 0.0)10.1 - (0.0 * 0.01)) / 6.19$  Ce = 10.1  
 AML = WLA<sub>c</sub> = 2.3 mg/L  
 MDL = WLA<sub>a</sub> = 10.1 mg/L

**May**

Chronic WLA:  $C_e = ((6.19 + 0.0)1.9 - (0.0 * 0.01)) / 6.19$  Ce = 1.9  
 Acute WLA:  $C_e = ((6.19 + 0.0)12.1 - (0.0 * 0.01)) / 6.19$  Ce = 12.1  
 AML = WLA<sub>c</sub> = 1.9 mg/L  
 MDL = WLA<sub>a</sub> = 12.1 mg/L

**June**

Chronic WLA:  $C_e = ((6.19 + 0.0)1.5 - (0.0 * 0.01)) / 6.19$  Ce = 1.5  
 Acute WLA:  $C_e = ((6.19 + 0.0)12.1 - (0.0 * 0.01)) / 6.19$  Ce = 12.1  
 AML = WLA<sub>c</sub> = 1.5 mg/L

MDL = WLAa = 12.1 mg/L

**July**

Chronic WLA:  $C_e = ((6.19 + 0.0)1.1 - (0.0 * 0.01)) / 6.19$  Ce = 1.1  
 Acute WLA:  $C_e = ((6.19 + 0.0)10.1 - (0.0 * 0.01)) / 6.19$  Ce = 10.1  
 AML = WLAc = 1.1 mg/L  
 MDL = WLAa = 10.1 mg/L

**August**

Chronic WLA:  $C_e = ((6.19 + 0.0)1.3 - (0.0 * 0.01)) / 6.19$  Ce = 1.3  
 Acute WLA:  $C_e = ((6.19 + 0.0)12.1 - (0.0 * 0.01)) / 6.19$  Ce = 12.1  
 AML = WLAc = 1.3 mg/L  
 MDL = WLAa = 12.1 mg/L

**September**

Chronic WLA:  $C_e = ((6.19 + 0.0)1.7 - (0.0 * 0.01)) / 6.19$  Ce = 1.7  
 Acute WLA:  $C_e = ((6.19 + 0.0)12.1 - (0.0 * 0.01)) / 6.19$  Ce = 12.1  
 AML = WLAc = 1.7 mg/L  
 MDL = WLAa = 12.1 mg/L

**October**

Chronic WLA:  $C_e = ((6.19 + 0.0)2.6 - (0.0 * 0.01)) / 6.19$  Ce = 2.6  
 Acute WLA:  $C_e = ((6.19 + 0.0)12.1 - (0.0 * 0.01)) / 6.19$  Ce = 12.1  
 AML = WLAc = 2.6 mg/L  
 MDL = WLAa = 12.1 mg/L

**November**

Chronic WLA:  $C_e = ((6.19 + 0.0)3.1 - (0.0 * 0.01)) / 6.19$  Ce = 3.1  
 Acute WLA:  $C_e = ((6.19 + 0.0)12.1 - (0.0 * 0.01)) / 6.19$  Ce = 12.1  
 AML = WLAc = 3.1 mg/L  
 MDL = WLAa = 12.1 mg/L

**December**

Chronic WLA:  $C_e = ((6.19 + 0.0)2.7 - (0.0 * 0.01)) / 6.19$  Ce = 2.7  
 Acute WLA:  $C_e = ((6.19 + 0.0)10.1 - (0.0 * 0.01)) / 6.19$  Ce = 10.1  
 AML = WLAc = 2.7 mg/L  
 MDL = WLAa = 10.1 mg/L

**Table 6-8: Comparison of WQBEL and Proposed Limits (Daily Maximum Limits)**

Month	Daily Maximum Limit	
	WQBEL (mg/L)	Proposed Limits (mg/L)
January	12.1	<b>5.6</b>
February	10.1	<b>5.1</b>
March	10.1	<b>3.9</b>
April	10.1	<b>2.7</b>
May	12.1	<b>2.2</b>
June	12.1	<b>1.7</b>
July	10.1	<b>1.2</b>
August	12.1	<b>1.5</b>
September	12.1	<b>1.9</b>
October	12.1	<b>2.9</b>
November	12.1	<b>4.1</b>
December	10.1	<b>5.1</b>

**Table 6-9: Comparison of QBEL and Proposed Limits (Monthly Average Limits)**

Month	Monthly Average Limit	
	QBEL (mg/L)	Proposed Limits (mg/L)
January	3.1	<b>2.1</b>
February	2.7	<b>1.9</b>
March	2.7	<b>1.5</b>
April	2.3	<b>1.0</b>
May	1.9	<b>0.8</b>
June	1.5	<b>0.6</b>
July	1.1	<b>0.5</b>
August	1.3	<b>0.6</b>
September	1.7	<b>0.7</b>
October	2.6	<b>1.1</b>
November	3.1	<b>1.6</b>
December	2.7	<b>1.9</b>

- **Ammonia as N, Influent Monitoring.** As the proposed facility design flow is greater than 0.1 MGD, influent monitoring will be required per 10 CSR 20-7.015(9)(D)8.
  
- **Oil & Grease.** Monitoring only requirements were included in the last renewal. The permit writer did not observe a reasonable potential to violate water quality standards. This determination is to be reassessed with the next renewal.
  
- **Total Phosphorus.** As a major facility with a design flow greater than 1.0 MGD, the facility is required to select one of the options from 10 CSR 20-7.015(9)(B)2.A.(I)-(IV) for compliance with the total phosphorus rule. The facility can work with the permit writer on establishing this as an annual average concentration, as an annual mass loading equal to 1.0 mg/L at the design average flow (18.765 lbs/day or 6,849.225 lbs/year), as an overall reduction of 75 percent based on a one-time calculation of 2 years of representative monitoring or process influent and effluent data, or as an overall reduction of annual load discharged by 75 percent based on a one-time calculation of adequately representative effluent data. Discharge monitoring data shows that the facility currently has an average total phosphorus concentration of approximately 1.6 mg/L in the effluent and therefore may not be currently equipped to reliably meet the total phosphorus effluent limitations required by the total phosphorus rule. The facility proposes to meet this limit by optimization of the operation of the existing treatment system. Control changes are to be made as part of the project which are anticipated to aid in bringing phosphorus levels further down to enable future compliance with the rule. Phosphorus removal will continue to be monitored following the control changes to determine whether other changes are needed.
  
- **Total Phosphorus, Influent Monitoring.** As the proposed facility is greater than 0.1 MGD, influent monitoring will be required per 10 CSR 20-7.015(9)(D)8.
  
- **Total Kjeldahl Nitrogen, & Nitrate + Nitrite.** Effluent monitoring for Total Kjeldahl Nitrogen, and Nitrate + Nitrite are required per 10 CSR 20-7.015(9)(D)8. As the facility does not discharge into an impaired stream or lake watershed, ammonia effluent limits are all that are being required at this time, with monthly monitoring of TKN and nitrate+nitrite at this time. Total Nitrogen will be a sum of TKN and nitrate+nitrite.
  - **Total Kjeldahl Nitrogen, & Nitrate + Nitrite, Influent Monitoring.** As the proposed facility is greater than 0.1 MGD, influent monitoring will be required per 10 CSR 20-7.015(9)(D)8.

- **pH.** 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 low-flow values (7Q10) of the receiving stream, therefore the water quality standard must be met at the outfall.
- **Biochemical Oxygen Demand (BOD<sub>5</sub>) Percent Removal.** In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD<sub>5</sub> and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85 percent removal efficiency for BOD<sub>5</sub>.
- **Total Suspended Solids (TSS) Percent Removal.** In accordance with 40 CFR Part 133, removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to BOD<sub>5</sub> and TSS for Publicly Owned Treatment Works (POTWs)/municipals. This facility is required to meet 85 percent removal efficiency for TSS.
- **Metals.**

Ecoregion water hardness for Central Plains/Cuivre/Salt of 160 mg/L as CaCO<sub>3</sub> was used in the Reasonable Potential Analysis conducted for the last permit renewal issued July 1, 2020. That value represents the 50<sup>th</sup> percentile (median) for all watersheds in-stream hardness values through the ecoregion.

  - **Copper, Total Recoverable.** Monitoring only requirements were included in the last renewal. An RPA was conducted based on the water quality standards and determined that there is no reasonable potential to violate the water quality standard. This determination is to be reassessed with the next renewal.
  - **Zinc, Total Recoverable.** Monitoring only requirements were included in the last renewal. An RPA was conducted based on the water quality standards and determined that there is no reasonable potential to violate the water quality standard. This determination is to be reassessed with the next renewal.

## 7. 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. 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.



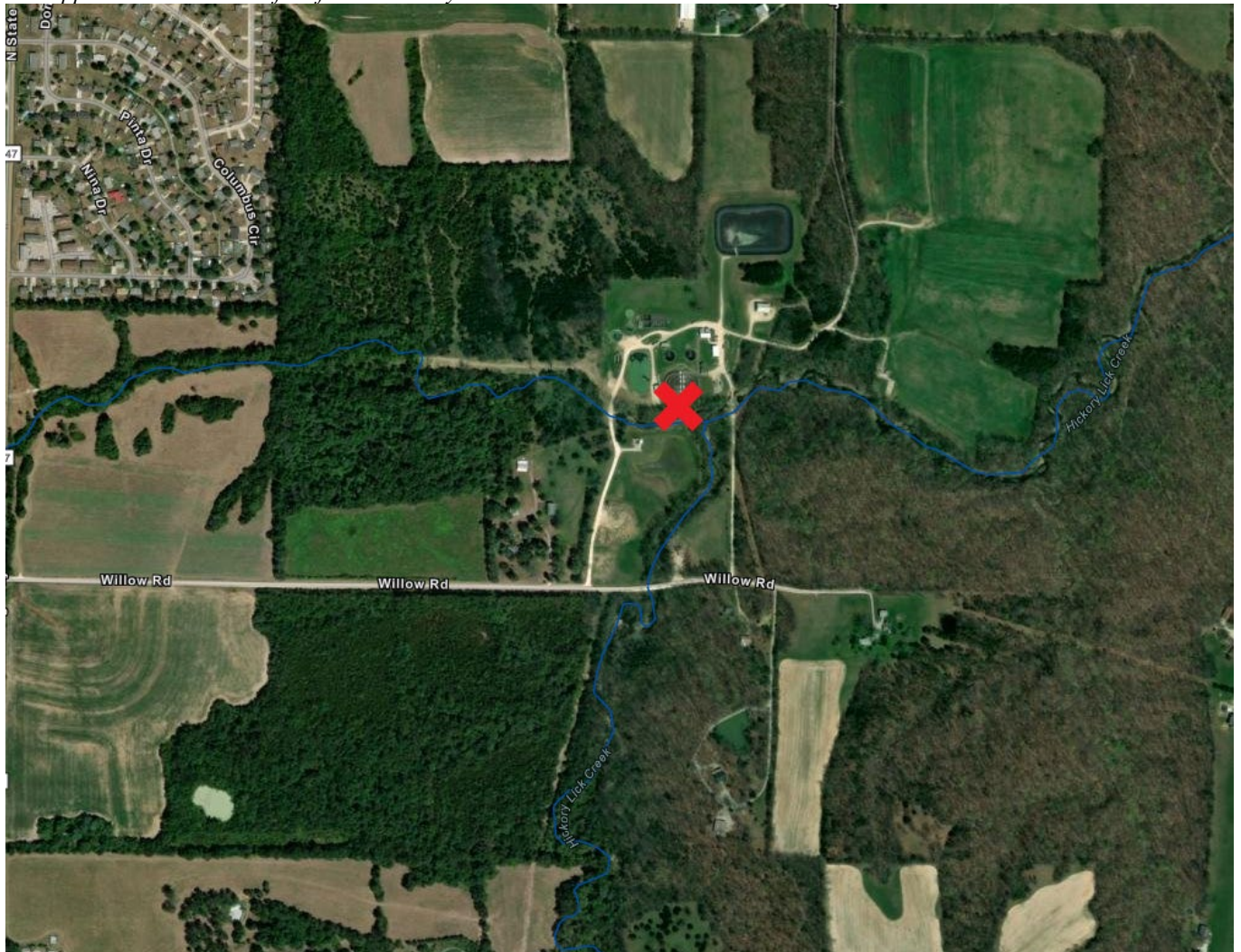
## **8. ANTIDegradation Review Preliminary Determination**

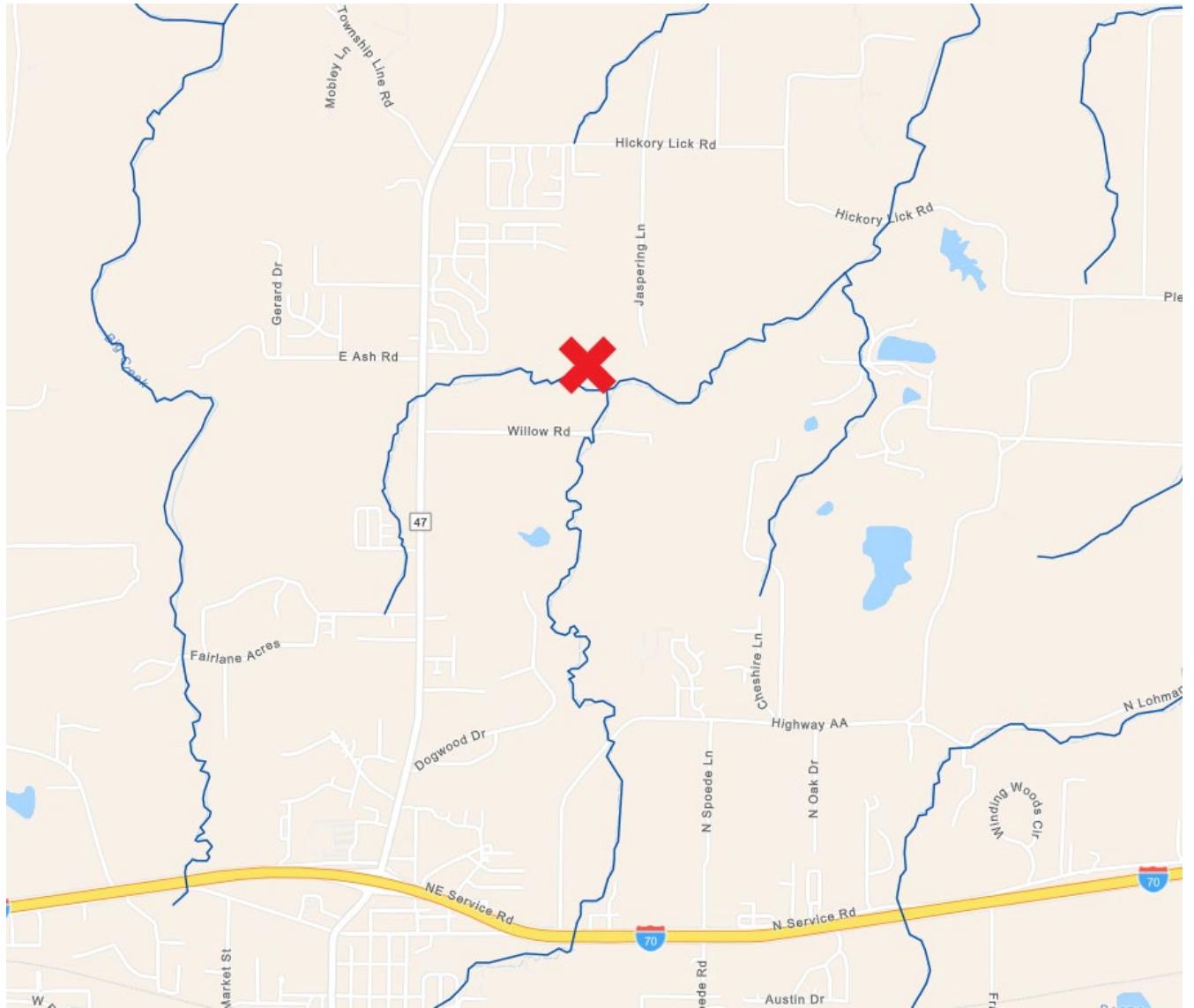
The proposed expanded discharge will result in insignificant degradation to the unnamed tributary to Hickory Lick Creek. Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to attain the highest statutory and regulatory requirements. 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: Thomas Silkwood  
Date: October 2024  
Reviewer: Cailie Carlile, P.E.

**APPENDIX A: MAP OF DISCHARGE LOCATION**

*Approximate location of outfall marked by red "X"*

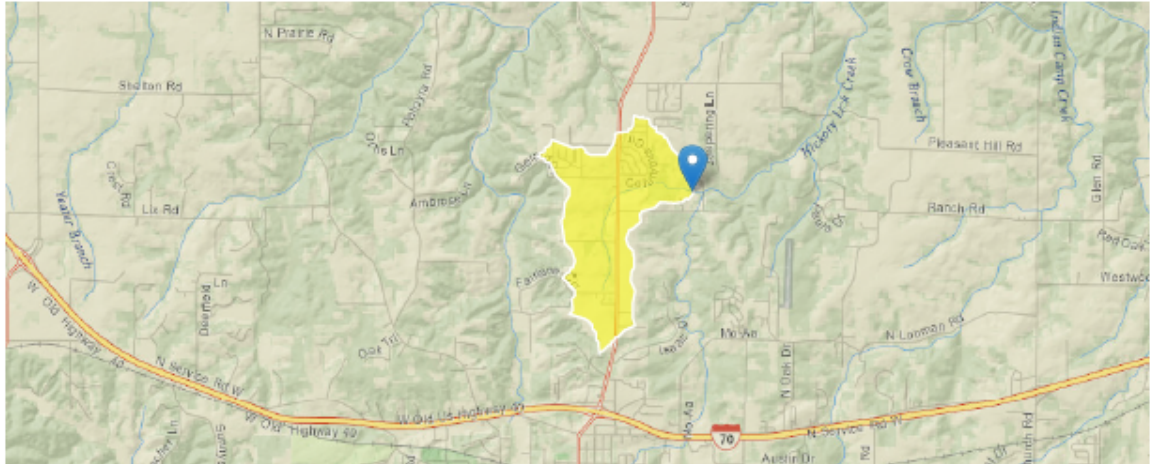




## APPENDIX B: STREAMSTATS LOW-FLOW REPORT

### StreamStats Report

Region ID: MO  
 Workspace ID: MO20240321181519357000  
 Clicked Point (Latitude, Longitude): 38.84666, -91.12509  
 Time: 2024-03-21 13:15:44 -0500



Collapse All

#### > Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.08	square miles
LFLENGTH	Length of longest flow path	2.13	miles
STREAM_VARG	Streamflow variability index as defined in WRIR 02-4068, computed from regional grid	0.73	dimensionless

#### > Low-Flow Statistics

##### Low-Flow Statistics Parameters [LowFlow Region 1 SIR 2013 5090]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.08	square miles	0.34	4320
LFLENGTH	LFP length	2.13	miles	1.28	268
STREAM_VARG	Streamflow Variability Index from Grid	0.73	dimensionless	0.376	1.03

##### Low-Flow Statistics Flow Report [LowFlow Region 1 SIR 2013 5090]

Statistic	Value	Unit
1 Day 10 Year Low Flow	0.000112	ft <sup>3</sup> /s
2 Day 10 Year Low Flow	0.000118	ft <sup>3</sup> /s
3 Day 10 Year Low Flow	0.000138	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	0.000165	ft <sup>3</sup> /s



Statistic	Value	Unit
10 Day 10 Year Low Flow	0.000202	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	0.00105	ft <sup>3</sup> /s
60 Day 10 Year Low Flow	0.00179	ft <sup>3</sup> /s

*Low-Flow Statistics Citations*

**Southard, R.E., 2013, Computed statistics at streamgages, and methods for estimating low-flow frequency statistics and development of regional regression equations for estimating low-flow frequency statistics at ungaged locations in Missouri: U.S. Geological Survey Scientific Investigations Report 2013-5090, 28 p. (<http://pubs.usgs.gov/sir/2013/5090/>)**

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.19.4  
StreamStats Services Version: 1.2.22  
NSS Services Version: 2.2.1

## APPENDIX C: NATURAL HERITAGE REVIEW



### Missouri Department of Conservation

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

#### **Natural Heritage Review Level One Report: No Known Records**

**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 report 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:** Warrenton WWTP Upgrades #13771

**Project Description:** The project consists of adding 2 clarifiers within the current treatment plant footprint and upgrading the grit and sludge handling systems at Warrenton WWTP in Warren County, MO. The Latitude/Longitude is +3850487/-09107297. The plant discharges into an unnamed tributary to Hickory Lick Creek.

**Project Type:** Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Wastewater treatment plant, Modification

**Contact Person:** Karen Barton

**Contact Information:** kbarton@gocos.net or 6185141561



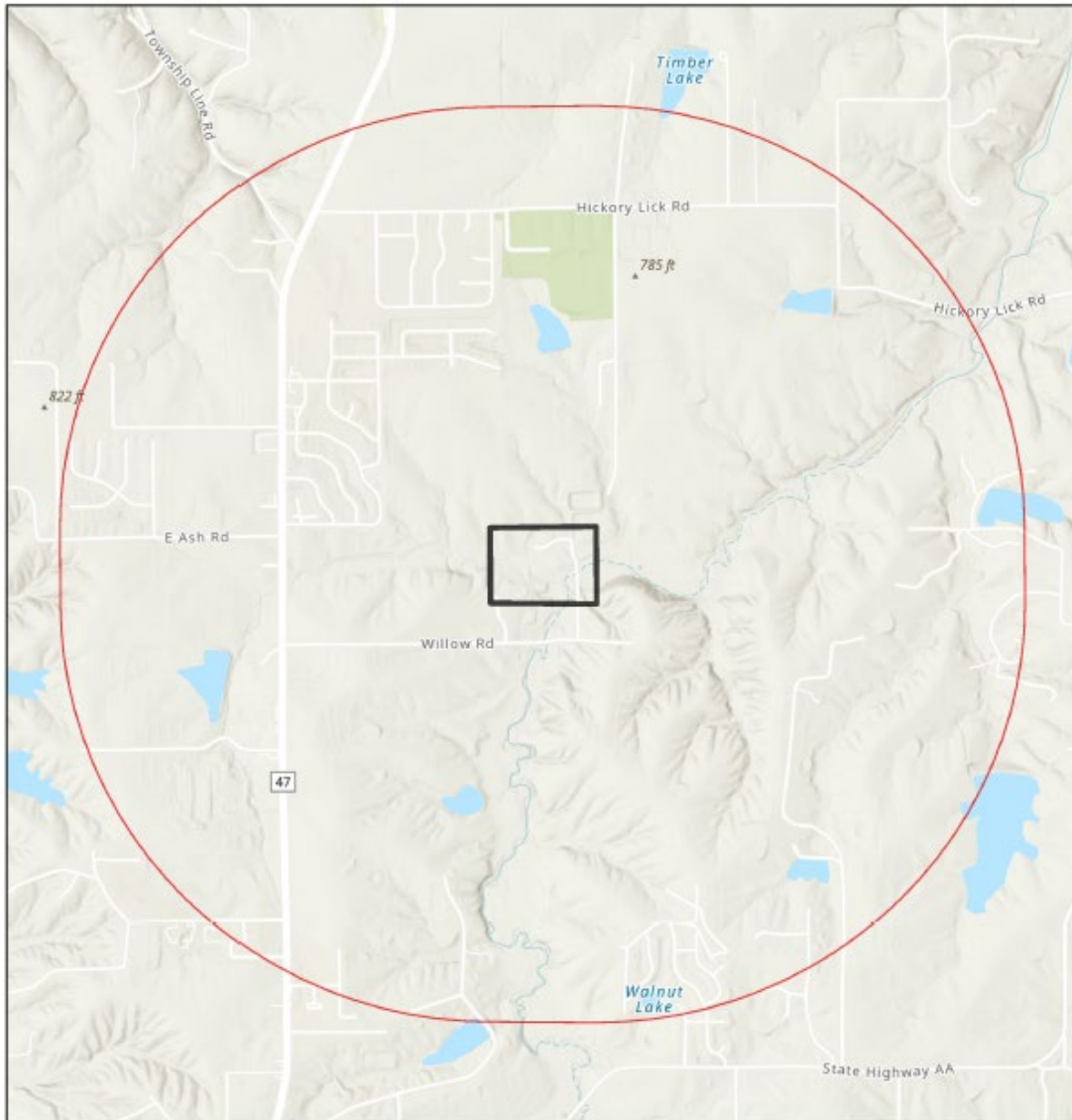
**Disclaimer:** This NATURAL HERITAGE REVIEW REPORT identifies if a species or natural community tracked by the Natural Heritage Program is known to occur within or near the project area submitted, and shares recommendations to avoid or minimize project impacts to sensitive species or natural habitats. Incorporating information from the Natural Heritage Program into project plans is an important step in reducing impacts to Missouri's sensitive natural resources. 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.

This Natural Heritage Review Report is not a site clearance letter for the project. 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. 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. Lack of an occurrence record does not mean that a sensitive species or natural community is not present on or near the project area. On-site verification is the responsibility of the project. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts and additional information (e.g. wetland or soils maps, 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. This report does not fulfill 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 [IPaC: Home \(fws.gov\)](https://www.fws.gov/ipac) to initiate USFWS Information for Planning and Conservation (IPaC) consultation. Contact the Columbia Missouri Ecological Field Services Office (573-234-2132, or by mail at 101 Park Deville Drive, Suite A, Columbia, MO 65203) for more information.

**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 [Home Page | Missouri Department of Transportation \(modot.org\)](https://www.modot.org) for additional information on recommendations.

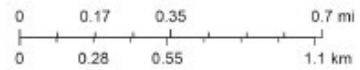
## Warrenton WWTP Upgrades



December 14, 2023

-  Buffered Project Boundary
-  Project Boundary

1:21,101



Esri, NASA, NGA, USGS, FEMA, Missouri Dept. of Conservation, Missouri DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METIMASA, USGS, EPA, NPS, US Census Bureau, USDA



**Species or Communities of Conservation Concern within the Area:**

There are no known records of Species or Natural Communities of Conservation Concern within the defined Project Area.

**Other Special Search Results:**

No results have been identified for this project location.

**Project Type Recommendations:**

**Waste Transfer, Treatment and Disposal -Wastewater treatment plant: New or Maintenance;** [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 Act permit conditions.

Revegetate disturbed areas to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Annual ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crownvetch and sericea lespedeza. Please see [Best Management Practices for Construction and Development Projects Affecting Missouri Rivers and Streams \(mo.gov\)](#).

**Project Location and/or Species Recommendations:**

**Endangered Species Act Coordination** - If this project has the potential to alter habitat (e.g. tree removal, projects in karst habitat) or cause direct mortality of bats, please coordinate directly with 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. 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.

**Karst:** This 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; please check your project site for any karst features and make every effort to protect groundwater in the project area. Additional information and specific recommendations are available at [Management Recommendations for Construction and Development Projects Affecting Missouri Karst Habitat \(mo.gov\)](#).

**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 [Managing Invasive Species in Your Community | Missouri Department of Conservation \(mo.gov\)](#) 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 ([Kansas City District Regulatory Branch \(army.mil\)](#)) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification ([Section 401 Water Quality Certification | Missouri Department of Natural Resources \(mo.gov\)](#)), 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 [Wastewater Permits | Missouri Department of Natural Resources \(mo.gov\)](#) 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](mailto: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 10-4.111. 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 [Missouri Species and Communities of Conservation Concern Checklist \(mo.gov\)](#) for a complete list of species and communities of conservation concern. Detailed information about the animals and some plants mentioned may be accessed at [Mofwis Search Results](#). Please contact the Missouri Department of Conservation to request printed copies of any materials linked in this document.

**APPENDIX D: ANTIDegradation REVIEW SUMMARY ATTACHMENTS**

1) Antidegradation Review Summary Request

 <b>MISSOURI DEPARTMENT OF NATURAL RESOURCES                  WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH                  ANTIDegradation REVIEW SUMMARY / REQUEST</b>		<b>FOR DEPARTMENT USE ONLY</b> APP NO. FEE RECEIVED      CHECK NO. DATE RECEIVED	
<b>1. FACILITY</b>			
NAME Warrenton WWTP		COUNTY Warren	
ADDRESS (PHYSICAL) 225 Willow Rd	CITY Warrenton	STATE MO	ZIP CODE 63383
PERMIT NUMBER MO-0087912	PROPOSED DESIGN FLOW 4.0 MGD	SIC / NAICS CODE 4952	
<b>2. OWNER</b>			
NAME City of Warrenton			
ADDRESS 200 W Boonslick	CITY Warrenton	STATE MO	ZIP CODE 63383
EMAIL ADDRESS wwtp@warrenton-mo.org		TELEPHONE NUMBER WITH AREA CODE 636-456-3535	
<b>3. CONTINUING AUTHORITY</b> The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(2).			
NAME same		SECRETARY OF STATE CHARTER NUMBER	
ADDRESS	CITY	STATE	ZIP CODE
EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
<b>4. CONSULTANT</b>			
PREPARER NAME Jeffrey Huck		COMPANY NAME Gonzalez Cos.	
ADDRESS 1750 South Brentwood, Suite 700	CITY St. Louis	STATE MO	ZIP CODE 63144
EMAIL ADDRESS jhuck@gocos.net		TELEPHONE NUMBER WITH AREA CODE 314-966-1888	
<b>5. RECEIVING WATER BODY SEGMENT #1</b>			
NAME			
5.1 Upper end of segment – Location of discharge UTM: X= _____, Y= _____ OR Lat <u>38d50'48"</u> , Long <u>91d07'30"</u>			
5.2 Lower end of segment – UTM: X= _____, Y= _____ OR Lat <u>38d50'49"</u> , Long <u>91d07'15"</u>			
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."			
<b>6. WATER BODY SEGMENT #2 (IF APPLICABLE, Use another form if a third segment is needed)</b>			
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 _____			
<b>7. DECHLORINATION</b>			
If chlorination and dechlorination is the existing or proposed method of disinfection treatment, will the effluent discharged be equal to or less than the Water Quality Standards for Total Residual Chlorine stated in Table A1 of 10 CSR 20-7.031? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No – What is the proposed method of disinfection? _____			
Based on the disinfection treatment system being designed for total removal of Total Residual Chlorine, minimal degradation for Total Residual Chlorine is assumed and the facility will be required to meet the water quality based effluent limits. These compliance limits for Total Residual Chlorine are much less than the method detection limit of 0.13 mg/L.			

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

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

A no-discharge option is restricted due to the population and growth of the area. Due to the size of the facility, the area needed to irrigate is not available nearby.

This facility is also currently a regional facility as it exists because the city of Truesdale is also connected to it.

**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 | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| Path B: Tier 2 – Minimal Degradation          | <input type="checkbox"/> Yes            | <input type="checkbox"/> No |
| Path C: Tier 2 – Significant Degradation      | <input type="checkbox"/> Yes            | <input type="checkbox"/> No |
| Path D: Tier 1 – Preliminary Review Request   | <input type="checkbox"/> Yes            | <input type="checkbox"/> No |
| Path E: Temporary Degradation                 | <input type="checkbox"/> Yes            | <input type="checkbox"/> No |

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

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

Applicable Pollutants of Concern	Concentration*		Path / Tier Review Attachment Used for POC Evaluation	Average Monthly Limit	Daily Maximum Limit or Average Weekly Limit
	mg/L	µg/L			
BOD <sub>5</sub>	X				
TSS	X				
Ammonia (Summer)	X				
Ammonia (Winter)	X				
Total Phosphorus	X				

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

<b>12. PROPOSED PROJECT SUMMARY</b>	
<p>The proposed project will consist of the Phase 1 and Phase 2 recommendations in the attached facility plan in order to increase the capacity of the WWTP from 3.2 MGD to 4.0 MGD and improve efficiency and maintenance issues. These upgrades include the addition of 2 final clarifiers to obtain the proposed capacity increase. Launder covers will be placed on all 4 final clarifiers to address algae issues. Changes to the flow splitter will be completed to distribute flow to all 4 final clarifiers while allowing for alternating the shutdown of the 4 units for maintenance. This project will upgrade the grit removal system to address the current maintenance and grit issues at the WWTP. The existing system has adequate capacity, but is not able to de-grit flow from the overflow basin. Replacing this system will help to protect the downstream plant equipment by more effectively removing grit, and it will also reduce operation and maintenance costs and minimize odors. Also included in this project are the Phase 2 improvements, which consist of reconfiguring the sludge system. This will include updates to the digestion and the addition of a screw press for dewatering. This work will also not increase the capacity of the plant, but will replace a system that is difficult to operate. The new system will be an improved technology that will lower energy usage.</p> <p>Phase 3 as discussed in the facility plan is not being completed at this time. If population projections are correct, these upgrades will need to be done in the future, sometime around 2035.</p> <p>Geohydrologic evaluation not performed as the facility is currently used as a WWTP</p>	
<p>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 <i>New Technology Definitions and Requirements fact sheet</i>.</p>	
<b>13. CONTINUING AUTHORITY WAIVER (For New Discharges)</b>	
<p>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? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, provide a copy.</p>	
<b>14. APPLICATION FEE</b>	
<input type="checkbox"/> CHECK NUMBER	<input checked="" type="checkbox"/> JETPAY CONFIRMATION NUMBER 20050864
<b>15. SIGNATURE</b>	
<p>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.</p>	
SIGNATURE	DATE
	2-5-24
PRINT NAME	TITLE
Jeff Huck	Project Manager
<p>PLEASE IDENTIFY YOUR STATUS FOR THIS PROJECT: <input type="checkbox"/> OWNER <input type="checkbox"/> CONTINUING AUTHORITY <input checked="" type="checkbox"/> CONSULTANT</p>	

## 2) Antidegradation Review Summary Path A: Tier 2 – Non-Degradation Mass Balance



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**ANTIDEGRADATION REVIEW SUMMARY**  
**PATH A: TIER 2 – NON-DEGRADATION MASS BALANCE**

1. FACILITY							
NAME Warrenton WWTF						COUNTY Warren	
2. EXISTING LOAD SUMMARY – NET CHANGE							
Pollutant of Concern	Type of Limit	Current Permit Limit*	Current Design Flow	Current Load	New Load	New Expanded Design Flow	No-Degradation Expansion Concentration
		mg/L	MGD	lbs/day	lbs/day	MGD	mg/L
Biochemical Oxygen Demand (BODs)	AWL	45	3.2	1200.96	1000.8	4.0	30
	AML	30		800.64	800.64		24
Total Suspended Solids (TSS)	AWL	45		1200.96	1008		30
	AML	30		800.64	800.64		24
Ammonia (Summer)	MDL	1.3		34.7	34.7		1.04
	AML						
Ammonia (Winter)	MDL	2.8		74.7	74.7		2.24
	AML						
* If current facility discharges the pollutant of concern and does not have a current permit limit for this pollutant of concern, the water quality standard should be used in the calculation.							
AWL – Average Weekly Limit			MDL – Maximum Daily Limit		AML – Average Monthly Limit		
Equation: Load = Limit (mg/L) * Conversion Factor (8.34 (LBS/MG)/(mg/L)) * Design Flow (MGD). Note: New Load must be less than or equal to the Current Load.							
Is mass balance non-degradation proposed for all pollutants of concern?						<input checked="checked" type="checkbox"/> Yes <input type="checkbox"/> No	
If no, the appropriate additional forms must be used for those pollutants which are degrading.							

### 3. PROPOSED PROJECT SUMMARY

The proposed project will consist of the Phase 1 and Phase 2 recommendations in the attached facility plan in order to increase the capacity of the WWTP from 3.2 MGD to 4.0 MGD and improve efficiency and maintenance issues. These upgrades include the addition of 2 final clarifiers to obtain the proposed capacity increase. Launder covers will be placed on all 4 final clarifiers to address algae issues. Changes to the flow splitter will be completed to distribute flow to all 4 final clarifiers while allowing for alternating the shutdown of the 4 units for maintenance. This project will upgrade the grit removal system to address the current maintenance and grit issues at the WWTP. The existing system has adequate capacity, but is not able to de-grit flow from the overflow basin. Replacing this system will help to protect the downstream plant equipment by more effectively removing grit, and it will also reduce operation and maintenance costs and minimize odors. Also included in this project are the Phase 2 improvements, which consist of reconfiguring the sludge system. This will include updates to the digestion and the addition of a screw press for dewatering. This work will also not increase the capacity of the plant, but will replace a system that is difficult to operate. The new system will be an improved technology that will lower energy usage.

Phase 3 as discussed in the facility plan is not being completed at this time. If population projections are correct, these upgrades will need to be done in the future, sometime around 2035.





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM  
**APPLICATION FOR CONSTRUCTION PERMIT –  
 WASTEWATER TREATMENT FACILITY**

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

**APPLICATION OVERVIEW**

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

**PART A – BASIC INFORMATION**

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

- 1.1 Is this a Federal/State funded project?  YES  N/A Funding Agency: City of Warrenton Project #: 23-2012
- 1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?  
 YES Date of Approval: \_\_\_\_\_  N/A
- 1.3 Has the department approved the proposed project's facility plan\*?  
 YES Date of Approval: \_\_\_\_\_  NO (If No, complete No. 1.4.)
- 1.4 [Complete only if answered No on No. 1.3.] Is a copy of the facility plan\* for wastewater treatment facilities included with this application?  
 YES  NO  Exempt because \_\_\_\_\_ **being finalized**
- 1.5 Is a copy of the appropriate plans\* and specifications\* included with this application?  
 YES Denote which form is submitted:  Hard copy  Electronic copy (See instructions.)  NO
- 1.6 Is a summary of design\* included with this application?  YES  NO
- 1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?  
 YES Date of submittal: \_\_\_\_\_  
 Enclosed is the appropriate operating permit application and fee submittal. Denote which form:  A  B  B2  
 N/A: However, In the event the department believes that my operating permit requires revision to permit limitation such as changing equivalent to secondary limits to secondary limits or adding total residual chlorine limits, please share a draft copy prior to public notice?  YES  NO
- 1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency?  YES  NO
- 1.9 Is the appropriate fee or JetPay confirmation included with this application?  YES  NO  
 See Section 7.0

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

**2.0 PROJECT INFORMATION**

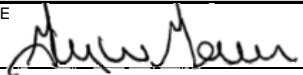
2.1 NAME OF PROJECT <b>Warrenton Wastewater Treatment Plant Upgrades</b>	2.2 ESTIMATED PROJECT CONSTRUCTION COST <b>\$ 12.0 M</b>
---	---

2.3 PROJECT DESCRIPTION  
 This project will increase the capacity of the WWTP from 3.2 to 4.0 MGD and improve efficiency and maintenance issues. These upgrades include the addition of 2 final clarifiers, launder covers on all 4 clarifiers, changes to the flow splitter, upgrade of te grit removal system, and reconfiguration of the sludge system through updates to the digestion and the addition of a screw press for dewatering.

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION  
 Digestion, dewatering with screw press

2.5 DESIGN INFORMATION  
 A. Current population: 8,226; Design population: 31,400  
 B. Actual Flow: 1.8 M gpd; Design Average Flow: 4.0 M gpd;  
 Actual Peak Daily Flow: 2.5 M gpd; Design Maximum Daily Flow: 4.0 M gpd; Design Wet Weather Event: \_\_\_\_\_

2.6 ADDITIONAL INFORMATION  
 A. Is a topographic map attached?  YES  NO  
 B. Is a process flow diagram attached?  YES  NO

3.0 WASTEWATER TREATMENT FACILITY				
NAME Warrenton Wastewater Treatment Plant		TELEPHONE NUMBER WITH AREA CODE (636) 456-3535		E-MAIL ADDRESS
ADDRESS (PHYSICAL) 255 Willow Road		CITY Warrenton	STATE MO	ZIP CODE 63383
COUNTY Warren				
Wastewater Treatment Facility: Mo- (Outfall Of )				
3.1 Legal Description: _____ ¼, _____ ¼, _____ ¼, Sec. 10, T 47N, R 2W (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): +385048 Northing (Y): -09107297 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: Unnamed tributary to Hickory Lick Creek				
4.0 PROJECT OWNER				
NAME City of Warrenton		TELEPHONE NUMBER WITH AREA CODE (636) 456-3535		E-MAIL ADDRESS
ADDRESS 200 West Booneslick Road		CITY Warrenton	STATE MO	ZIP CODE 63383
5.0 CONTINUING AUTHORITY: A continuing authority is a company, business, entity or person(s) that will be operating the facility and/or ensuring compliance with the permit requirements.				
NAME City of Warrenton		TELEPHONE NUMBER WITH AREA CODE (636) 456-3535		E-MAIL ADDRESS
ADDRESS 200 Booneslick Road		CITY Warrenton	STATE MO	ZIP CODE 63383
5.1 A letter from the continuing authority, if different than the owner, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A				
5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A MISSOURI PUBLIC SERVICE COMMISSION REGULATED ENTITY.				
A. Is a copy of the certificate of convenience and necessity included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.				
A. Is a copy of the as-filed restrictions and covenants included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
B. Is a copy of the as-filed warranty deed, quitclaim deed or other legal instrument which transfers ownership of the land for the wastewater treatment facility to the association included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
C. Is a copy of the as-filed legal instrument (typically the plat) that provides the association with valid easements for all sewers included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? <input type="checkbox"/> YES <input type="checkbox"/> NO				
6.0 ENGINEER				
ENGINEER NAME / COMPANY NAME Gonzalez Companies, LLC		TELEPHONE NUMBER WITH AREA CODE (314) 961-1888		E-MAIL ADDRESS
ADDRESS 1750 Brentwood Blvd., Suite 700		CITY St. Louis	STATE MO	ZIP CODE 63144
7.0 APPLICATION FEE				
<input type="checkbox"/> CHECK NUMBER <input type="checkbox"/> JETPAY CONFIRMATION NUMBER				
8.0 PROJECT OWNER: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.				
PROJECT OWNER SIGNATURE 				
PRINTED NAME Guy Gevers			DATE 7-12-24	
TITLE OR CORPORATE POSITION Public Works Director		TELEPHONE NUMBER WITH AREA CODE 636-456-3535		E-MAIL ADDRESS ggevers@warrenton-mo.org
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM P.O. BOX 176 JEFFERSON CITY, MO 65102-0176				
END OF PART A. REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.				

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

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

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

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

**9.0 STORAGE BASINS**

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

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

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.

Basin #1: Length _____	Width _____	Depth _____	Freeboard _____	Depth _____	Safety _____	% Slope _____
Basin #2: Length _____	Width _____	Depth _____	Freeboard _____	Depth _____	Safety _____	% Slope _____
Basin #3: Length _____	Width _____	Depth _____	Freeboard _____	Depth _____	Safety _____	% Slope _____

9.4 Storage Basin operating levels (report as feet below emergency overflow level).

Basin #1: Maximum operating water level _____ ft	Minimum operating water level _____ ft
Basin #2: Maximum operating water level _____ ft	Minimum operating water level _____ ft
Basin #3: Maximum operating water level _____ ft	Minimum operating water level _____ ft

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

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

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

**10.0 LAND APPLICATION SYSTEM**

10.1 Number of irrigation sites \_\_\_\_\_ Total Acres \_\_\_\_\_ Maximum % field slopes \_\_\_\_\_

Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres

(Use additional pages if greater than three irrigation sites.)

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

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

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

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

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

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

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

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

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

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

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

### Part A – Basic Application Information

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

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

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

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

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

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

## Part B – Land Application

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

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

Mail the completed form and applicable fee to the department.

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