

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Pike Creek Reorganized Common Sewer District
Pike Creek Wastewater Treatment Plant
4550 Highway PP
Poplar Bluff, MO 63901

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.

February 27, 2024

Effective Date

February 26, 2026

Expiration Date

John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The Pike Creek Reorganized Common Sewer District is constructing a new 1.36 MGD mechanical plant to replace their existing aerated lagoon system. Construction will include collection system work, including the installation of 8-inch and 24-inch lines, plus 1.25-inch through 2-inch force main, and 11 grinder pumps. The terminal lift station will be upgraded to include 4 new pumps, and piping from the terminal lift station to the new headworks will be installed. At the treatment plant, an automatic mechanical fine screen, with manual backup screen, will be installed followed by an Orbal oxidation ditch, 2 secondary clarifiers, RAS/WAS pump stations, closed-vessel UV disinfection system, and aerobic sludge digester. The outfall will be relocated approximately 0.15 miles upstream of the existing discharge.

Peak wet weather flows greater than 2.70 MGD will be directed to the existing lagoon cell #002 for storage and then reintroduced back into the plant for treatment.

A closure plan for Cell #3 has been submitted to the Southeast Regional Office for review and approval prior to any closure activities. Sludge was removed under previous activities. Additional sludge removal from Cells #1 and #2 will occur if necessary for the piping modifications to convert to wet weather storage.

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 required to determine “findings of affordability” because the permit applies to a combined or separate sanitary sewer system for a publicly-owned treatment works.

Cost Analysis for Compliance - The department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3. See draft operating permit modification **APPENDIX – COST ANALYSIS FOR COMPLIANCE**.

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 Robert Summers, P.E., with Heartland Engineering, 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 Southeast 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 one 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 Southeast 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- 0124427. Closure shall not commence until the submitted closure plan is approved by the department.
8. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
 - Vacuum testing, if specified for concrete sewer manholes, shall conform to the test procedures in ASTM C1244 – 11(2017) *Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill*, as approved and published April 1, 2017, or the manufacturer's recommendation. 10 CSR 20-8.120(4)(F)1.
 - Exfiltration testing, if specified for concrete sewer manholes, shall conform to the test procedures in ASTM C969 – 17 *Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines*, as approved and published April 1, 2017. 10 CSR 20-8.120(4)(F)2.
 - 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). 10 CSR 20-8.130 (2) (A)
 - Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140 (2) (D). 10 CSR 20-8.130 (2) (B)
 - The distance between wastewater pumping stations and all potable water sources shall be at least 50 feet in accordance with 10 CSR 23-3.010(1)(B). 10 CSR 20-8.130 (2) (D)
 - Multiple pumps shall be provided except for design average flows of less than 1,500 gallons per day. 10 CSR 20-8.130 (3) (B) 1.
 - Electrical equipment. Electrical equipment shall be provided with the following requirements:
 - 10 CSR 20-8.130 (3) (B) 2. A. Electrical equipment must comply with 10 CSR 20-8.140(7)(B);
 - Utilize corrosive resistant equipment located in the wet well; 10 CSR 20-8.130 (3) (B) 2. B.
 - Provide a watertight seal and separate strain relief for all flexible cable; 10 CSR 20-8.130(3) (B) 2. C.
 - Install a fused disconnect switch located above ground for the main power feed for all pumping stations. 10 CSR 20-8.130 (3) (B) 2. D.
 - When such equipment is exposed to weather, it shall comply with the requirements of weatherproof equipment; enclosure NEMA 4; NEMA 4X

- where necessary; and *NEMA Standard 250-2014*, published December 15, 2014. 10 CSR 20-8.130 (3) (B) 2. E.
- Install lightning and surge protection systems; 10 CSR 20-8.130 (3) (B) 2. F.
 - Install a 110-volt (V) power receptacle inside the control panel located outdoors to facilitate maintenance; 10 CSR 20-8.130 (3) (B) 2. G.
 - Provide Ground Fault Circuit Interruption (GFCI) protection for all outdoor receptacles. 10 CSR 20-8.130 (3) (B) 2. H.
 - Water level controls must be accessible without entering the wet well. 10 CSR 20-8.130 (3) (C)
 - Valves shall not be located in the wet well unless integral to a pump or its housing. 10 CSR 20-8.130 (3) (D)
 - Covered wet wells shall have provisions for air displacement to the atmosphere, such as an inverted and screened “j” tube or other means. 10 CSR 20-8.130 (3) (E)
 - There shall be no physical connection between any potable water supply and a wastewater pumping station, which under any conditions, might cause contamination of the potable water supply. If a potable water supply is brought to the station, 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 20-8.130 (3) (G)
 - 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.
 - Submersible pump stations shall meet the applicable requirements under section (3) of this rule, except as modified in this section. 10 CSR 20-8.130 (5)
 - Pump Removal. Submersible pumps shall be readily removable and replaceable without personnel entering, dewatering, or disconnecting any piping in the wet well. 10 CSR 20-8.130 (5) (A)
 - 10 CSR 20-8.130 (5) (B) Valve Chamber and Valves. Valves required under subsection (3)(D) of this rule shall be located in a separate valve chamber.
 - A minimum access hatch dimensions of twenty-four inches by thirty-six inches (24" x 36") shall be provided. 10 CSR 20-8.130 (5) (B) 1.
 - A portable pump connection on the discharge line with rapid connection capabilities shall be provided. 10 CSR 20-8.130 (5) (B) 2.

- Alarm systems with an uninterrupted power source shall be provided for pumping stations. 10 CSR 20-8.130 (6)
- Where independent substations are used for emergency power, each separate substation and its associated distribution lines shall be capable of starting and operating the pump station at its rated capacity. 10 CSR 20-8.130 (7) (B)
- Force main system shall be designed to withstand all pressures (including water hammer and associated cyclic reversal of stresses) and maintain a velocity of at least two feet per second. 10 CSR 20-8.130 (8) (A)
- 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.
- The outfall shall be so constructed and protected against the effects of flood water, ice, or other hazards as to reasonably ensure its structural stability and freedom from stoppage. 10 CSR 20-8.140 (6) (A)
- All sampling points shall be designed so that a representative and discrete 24 hour automatic composite sample or grab sample of the effluent discharge can be obtained at a point after the final treatment process and before discharge to or mixing with the receiving waters. 10 CSR 20-8.140 (6) (B)
- All outfalls shall be posted with a permanent sign indicating the outfall number (i.e., Outfall #002). 10 CSR 20-8.140 (6) (C)
- 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 and 10 CSR 20-8.190 (2) (A)
- 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 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)
- The materials utilized for storage, piping, valves, pumping, metering, and splash guards, etc., for chemical handling, shall be specially selected considering the physical and chemical characteristics of each hazardous or corrosive chemical. 10 CSR 20-8.140 (9) (A) 1.
- Secondary containment storage areas contain the stored volume of chemical until it can be safely transferred to alternate storage or released to the wastewater treatment plant at controlled rates that will not damage the facilities, inhibit the treatment processes, or contribute to stream pollution. Secondary containment shall be designed as follows:
 - A minimum volume of 125 percent of the volume of the largest storage container located within the containment area plus the space occupied by any other tanks located within the containment area when not protected from precipitation; 10 CSR 20-8.140 (9) (A) 2. A.

- A minimum volume of one hundred 110 percent of the volume of the largest storage container located within the containment area plus the space occupied by any other tanks located within the containment area when protected from precipitation; 10 CSR 20-8.140 (9) (A) 2. B.
 - Walls and floors of the secondary containment structure constructed of suitable material that is compatible with the specifications of the product being stored. 10 CSR 20-8.140 (9) (A) 2. C.
- All pumps or feeders for hazardous or corrosive chemicals shall have guards that will effectively prevent spray of chemicals into space occupied by facility personnel. 10 CSR 20-8.140 (9) (A) 3.
- All piping containing or transporting corrosive or hazardous chemicals shall be identified with labels every 10 feet and with at least 2 labels in each room, closet, or pipe chase. 10 CSR 20-8.140 (9) (A) 4. A.
- All connections (flanged or other type), except those adjacent to storage or feeder areas, shall have guards that will direct any chemical leakage away from space occupied by facility personnel. 10 CSR 20-8.140 (9) (A) 4. B.
- Facilities shall be provided for automatic shutdown of pumps and sounding of alarms when failure occurs in a pressurized chemical discharge line. 10 CSR 20-8.140 (9) (A) 5.
- Dust collection equipment shall be provided to protect facility personnel from dusts injurious to the lungs or skin and to prevent polymer dust from settling on walkways that become slick when wet. 10 CSR 20-8.140 (9) (A) 6.
- The following shall be provided to fulfill the particular needs of each chemical housing facility:
 - Provide storage for a minimum of 30 days' supply, unless local suppliers and conditions indicate that such storage can be reduced without limiting the supply; 10 CSR 20-8.140 (9) (B) 1.
 - Construct the chemical storage room of fire and corrosion resistant material; 10 CSR 20-8.140 (9) (B) 2.
 - Equip doors with panic hardware. To prevent unauthorized access, doors lock but do not need a key to exit the locked room using the panic hardware; 10 CSR 20-8.140 (9) (B) 3.
 - Provide chemical storage areas with drains, sumps, finished water plumbing, and the hose bibs and hoses necessary to clean up spills and to wash equipment; 10 CSR 20-8.140 (9) (B) 4.
 - Construct chemical storage area floors and walls of material that is suitable to the chemicals being stored and that is capable of being cleaned; 10 CSR 20-8.140 (9) (B) 5.
 - Install floor surfaces to be smooth, chemical resistant, slip resistant, and well drained with three inches per ten feet (3"/10') minimum slope; 10 CSR 20-8.140 (9) (B) 6.
 - Provide adequate lighting; 10 CSR 20-8.140 (9) (B) 7.
 - Comply with the NEC recommendation for lighting and electrical equipment based on the chemicals stored. 10 CSR 20-8.140 (9) (B) 8.
 - Store chemical containers in a cool, dry, and well-ventilated area; 10 CSR 20-8.140 (9) (B) 9.

- Design vents from feeders, storage facilities, and equipment exhaust to discharge to the outside atmosphere above grade and remote from air intakes; 10 CSR 20-8.140 (9) (B) 10.
- Locate storage area for chemical containers out of direct sunlight; 10 CSR 20-8.140 (9) (B) 11.
- Maintain storage temperatures in accordance with relevant Material Safety Data Sheets (MSDS). 10 CSR 20-8.140 (9) (B) 12.
- Control humidity as necessary when storing dry chemicals; 10 CSR 20-8.140 (9) (B) 13.
- Design the storage area with designated areas for “full” and “empty” chemical containers; 10 CSR 20-8.140 (9) (B) 14.
- Provide storage rooms housing flammable chemicals with an automatic sprinkler system designed for 0.4 gallons per minute per square foot (0.4 gpm/ft²) and a minimum duration of 20 minutes; 10 CSR 20-8.140 (9) (B) 15.
- Store incompatible chemicals separately to ensure the safety of facility personnel and the wastewater treatment system. Store any 2 chemicals that can react to form a toxic gas in separate housing facilities; 10 CSR 20-8.140 (9) (B) 16.
- Design and isolate areas intended for storage and handling of chlorine and sulfur dioxide and other hazardous gases. 10 CSR 20-8.140 (9) (B) 17.
- Design an isolated fireproof storage area and explosion proof electrical outlets, lights, and motors for all powdered activated carbon storage and handling areas in accordance with federal, state, and local requirements; 10 CSR 20-8.140 (9) (B) 18.
- Vent acid storage tanks to the outside atmosphere, but not through vents in common with day tanks; 10 CSR 20-8.140 (9) (B) 19.
- Keep concentrated acid solutions or dry powder in closed, acid-resistant shipping containers or storage units; 10 CSR 20-8.140 (9) (B) 20.
- Pump concentrated liquid acids in undiluted form from the original container to the point of treatment or to a covered storage tank. Do not handle in open vessels. 10 CSR 20-8.140 (9) (B) 21.
- The following shall be provided, where applicable, for the design of chemical handling:
 - Make provisions for measuring quantities of chemicals used for treatment or to prepare feed solutions over the range of design application rates; 10 CSR 20-8.140 (9) (C) 1.
 - Select storage tanks, piping, and equipment for liquid chemicals specific to the chemicals; 10 CSR 20-8.140 (9) (C) 2.
 - Install all liquid chemical mixing and feed installations on corrosion resistant pedestals; 10 CSR 20-8.140 (9) (C) 3.
 - Provide sufficient capacity of solution storage or day tanks feeding directly for 24- hour operation at design average flow; 10 CSR 20-8.140 (9) (C) 4.
 - Provide a minimum of 2 chemical feeders for continuous operability. Provide a standby unit or combination of units of sufficient capacity to replace the largest unit out-of-service; 10 CSR 20-8.140 (9) (C) 5.

- Chemical feeders shall—
 - Be designed with chemical feed equipment to meet the maximum dosage requirements for the design average flow conditions; 10 CSR 20-8.140 (9) (C) 6. A.
 - Be able to supply, at all times, the necessary amounts of chemicals at an accurate rate throughout the range of feed; 10 CSR 20-8.140 (9) (C) 6. B.
 - Provide proportioning of chemical feed to the rate of flow where the flow rate is not constant; 10 CSR 20-8.140 (9) (C) 6. C.
 - Be designed to be readily accessible for servicing, repair, and observation; 10 CSR 20-8.140 (9) (C) 6. D.
 - Protect the entire feeder system against freezing; 10 CSR 20-8.140 (9) (C) 6. E.
 - Be located adjacent to points of application to minimize length of feed lines; 10 CSR 20-8.140 (9) (C) 6. F.
 - Provide for both automatic and manual operation for chemical feed control systems; 10 CSR 20-8.140 (9) (C) 6. G.
 - Utilize automatic chemical dose or residual analyzers, and where provided, include alarms for critical values and recording charts; 10 CSR 20-8.140 (9) (C) 6. H.
 - Provide screens and valves on the chemical feed pump suction lines; 10 CSR 20-8.140 (9) (C) 6. I.
 - Provide an air break or anti-siphon device where the chemical solution enters the water stream; 10 CSR 20-8.140 (9) (C) 6. J.
 - Dry chemical feed system shall—
 - Be equipped with a dissolver capable of providing a minimum retention period of five minutes at the maximum feed rate; 10 CSR 20-8.140 (9) (C) 7. A.
 - Be equipped with two solution vessels and transfer piping for polyelectrolyte feed installations; 10 CSR 20-8.140 (9) (C) 7. B.
 - Have an eductor funnel or other appropriate arrangement for wetting the polymer during the preparation of the stock feed solution on the makeup tanks; 10 CSR 20-8.140 (9) (C) 7. C.
 - Provide adequate mixing by means of a large diameter, low-speed mixer; 10 CSR 20-8.140 (9) (C) 7. D.
 - Make provisions to measure the dry chemical volumetrically or gravimetrically; 10 CSR 20-8.140 (9) (C) 7. E.
 - Completely enclose chemicals and prevent emission of dust; 10 CSR 20-8.140 (9) (C) 7. F.
- Provide for uniform strength of solution consistent with the nature of the chemical solution for solution tank dosing; 10 CSR 20-8.140 (9) (C) 8.
- Use solution feed pumps to feed chemical slurries that are not diaphragm or piston type positive displacement types; 10 CSR 20-8.140 (9) (C) 9.

- Provide continuous agitation to maintain slurries in suspension; 10 CSR 20-8.140 (9) (C) 10.
 - Provide a minimum of 2 flocculation tanks or channels having a combined detention period of 20-30 minutes. Provide independent controls for each tank or channel; 10 CSR 20-8.140 (9) (C) 11.
 - Insulate pipelines carrying soda ash at concentrations greater than 20 percent solution to prevent crystallization; 10 CSR 20-8.140 (9) (C) 12.
 - Prohibit bagging soda ash in a damp or humid place. 10 CSR 20-8.140 (9) (C) 13.
- The following chemical safety items shall be provided in addition to the safety provisions in section (8) of this rule:
 - Appropriate personal protective equipment (PPE). 10 CSR 20-8.140 (9) (D) 1.
 - Eye wash fountains and safety showers utilizing potable water shall be provided in the laboratory and on each level or work location involving hazardous or corrosive chemical storage, mixing (or slaking), pumping, metering, or transportation unloading. The design of eye wash fountains and safety showers shall include the following:
 - Eye wash fountains with water of moderate temperature, 50°–90°F (degrees Fahrenheit), suitable to provide 15–30 minutes of continuous irrigation of the eyes; 10 CSR 20-8.140 (9) (D) 2. A.
 - Emergency showers capable of discharging 20 gpm (gallons per minute) of water of moderate temperature, 50°–90°F, and at pressures of 30-50 psi (pounds per square inch); 10 CSR 20-8.140 (9) (D) 2. B.
 - Eye wash fountains and emergency showers located no more than 25 feet from points of hazardous chemical exposure; CSR 20-8.140 (9) (D) 2. C.
 - Eye wash fountains and showers that are to be fully operable during all weather conditions; 10 CSR 20-8.140 (9) (D) 2. D.
 - Warning signs requiring use of goggles shall be located near chemical stations, pumps, and other points of frequent hazard. 10 CSR 20-8.140 (9) (D) 3.
- The identification and hazard warning data included on chemical shipping containers, when received, shall appear on all containers (regardless of size or type) used to store, carry, or use a hazardous substance. 10 CSR 20-8.140 (9) (E)
- All wastewater treatment facilities must have a screening device, comminutor, or septic tank for the purpose of removing debris and nuisance materials from the influent wastewater. 10 CSR 20-8.150 (2)
- All screening devices and screening storage areas shall be protected from freezing. 10 CSR 20-8.150 (4) (A) 1.
- Provisions shall be made for isolating or removing screening devices from their location for servicing. 10 CSR 20-8.150 (4) (A) 2.
- Manually cleaned screen channels shall be protected by guard railings and deck gratings with adequate provisions for removal or opening to facilitate raking. 10 CSR 20-8.150 (4) (A) 3. A. (I)

- Mechanically cleaned screen channels shall be protected by guard railings and deck gratings. 10 CSR 20-8.150 (4) (A) 3. A. (II)
- Mechanical screening equipment shall have adequate removal enclosures to protect facility personnel against accidental contact with moving parts and to prevent dripping in multi-level installations. 10 CSR 20-8.150 (4) (A) 3. B. (I)
- A positive means of locking out each mechanical screening device shall be provided. 10 CSR 20-8.150 (4) (A) 3. B. (II)
- An emergency stop button with an automatic reverse function shall be located in close proximity to the mechanical screening device. 10 CSR 20-8.150 (4) (A) 3. B. (III)
- 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)
- Where 2 or more mechanically cleaned bar screens are used, the design shall provide for taking the largest unit out-of-service without sacrificing the capability to handle the average design flow. Where only one mechanically cleaned screen is used, it shall be sized to handle the design peak instantaneous flow. 10 CSR 20-8.150 (4) (B)
- Provisions for location and safety of comminutors shall be in accordance with screening devices,
 - Manually cleaned channels shall be protected by guard railings and deck gratings with adequate provisions for removal or opening to facilitate raking. 10 CSR 20-8.150 (4) (A) 3. A. (I)
 - Mechanically cleaned channels shall be protected by guard railings and deck gratings. 10 CSR 20-8.150 (4) (A) 3. A. (II)
 - Mechanical equipment shall have adequate removal enclosures to protect facility personnel against accidental contact with moving parts and to prevent dripping in multi-level installations. 10 CSR 20-8.150 (4) (A) 3. B. (I)
 - A positive means of locking out each mechanical device shall be provided. 10 CSR 20-8.150 (4) (A) 3. B. (II)
 - An emergency stop button with an automatic reverse function shall be located in close proximity to the mechanical device. 10 CSR 20-8.150 (4) (A) 3. B. (III)
 - 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)
- 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).
- The UV dosage shall be based on the design peak hourly flow, maximum rate of pumpage, or peak batch flow. 10 CSR 20-8.190 (5) (A) 1.
- If no flow equalization is provided for a batch discharger, the UV dosage shall be based on the peak batch flow. 10 CSR 20-8.190 (5) (A) 2.
- The UV system shall deliver the target dosage based on equipment derating factors and, if needed, have the UV equipment manufacturer verify that the scale up or scale down factor utilized in the design is appropriate for the specific application under consideration. 10 CSR 20-8.190 (5) (A) 3.
- The UV system shall deliver a minimum UV dosage of 30,000 ($\mu\text{W} \cdot \text{s}/\text{cm}^2$). 10 CSR 20-8.190 (5) (A) 4.
- Closed vessel UV systems. The combination of the total number of closed vessels shall be capable of treating the design peak hourly flow, maximum rate of pumpage, or peak batch flow. 10 CSR 20-8.190 (5) (B) 2.
- Closed vessel UV systems utilizing medium-pressure lamps shall be provided with an automatic cleaning system in order to prevent algae growth. 10 CSR 20-8.190 (5) (B) 3.

- The UV system must continuously monitor and display at the UV system control panel the following minimum conditions:
 - The relative intensity of each bank or closed vessel system; 10 CSR 20-8.190 (5) (C) 1. A.
 - The operational status and condition of each bank or closed vessel system; 10 CSR 20-8.190 (5) (C) 1. B.
 - The ON/OFF status of each lamp in the system; 10 CSR 20-8.190 (5) (C) 1. C. and
 - The total number of operating hours of each bank or each closed vessel system. 10 CSR 20-8.190 (5) (C) 1. D.
 - The UV system shall include an alarm system. Alarm systems shall comply with 10 CSR 20-8.140(7)(C). 10 CSR 20-8.190 (5) (C) 2.
9. Upon completion of construction:
- A. Pike Creek Reorganized Common Sewer District will become the continuing authority for operation and maintenance of these facilities;
 - B. Submit an electronic copy of the as-builts; and
 - 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>), with a request that the operating permit modification be issued. The operating permit modification fee has been paid.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

Construction of a new treatment plant to handle flows from the area served by the Pike Creek Reorganized Common Sewer District. The new treatment plant will replace the existing system with an increase in design flow from 0.85 MGD to 1.36 MGD.

2. FACILITY DESCRIPTION

The Pike Creek Sewer District WWTF is located on Country Road 474, Poplar Bluff, in Butler County, Missouri. Pike Creek Sewer District WWTF has an existing three-cell lagoon with a design average flow of 0.85 MGD with disinfection. The proposed construction will close 1 lagoon cell and reutilize the other 2 existing cells for flow equalization and handling wet weather flows. The proposed new treatment plant will include new headworks, oxidation ditch, clarifiers, chemical feed line for total phosphorus removal, ultraviolet disinfection, and solids storage, capable of treating a design average flow of 1.36 MGD, with a hydraulic population equivalent of 13,091.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits as established in the Antidegradation review dated November 2023. The limits following the completion of construction will be applicable to the facility:

EFFLUENT PARAMETER(S)	UNITS	MONTHLY AVERAGE
Flow	MGD	*
Biochemical Oxygen Demand ₅	mg/L	10
Total Suspended Solids	mg/L	15
<i>E. coli</i>	#/100mL	126
Ammonia as N (January)	mg/L	3.9
Ammonia as N (February)	mg/L	3.9
Ammonia as N (March)	mg/L	3.9
Ammonia as N (April)	mg/L	2.8
Ammonia as N (May)	mg/L	2.9
Ammonia as N (June)	mg/L	1.7
Ammonia as N (July)	mg/L	1.4
Ammonia as N (August)	mg/L	1.2
Ammonia as N (September)	mg/L	1.7
Ammonia as N (October)	mg/L	2.0
Ammonia as N (November)	mg/L	3.9
Ammonia as N (December)	mg/L	3.5
Oil & Grease	mg/L	10
Total Phosphorus	mg/L	1.0
Total Kjeldahl Nitrogen	mg/L	*
Nitrite + Nitrate	mg/L	*
Total Nitrogen	mg/L	calculated

* Monitoring requirement only

4. ANTIDEGRADATION

The department has reviewed the antidegradation report for this facility and issued the Water Quality and Antidegradation Review dated October 2022 and then revised in November 2023, due to the increase in design flow to 1.36 MGD and the relocation of the outfall. The preferred treatment technology is oxidation ditch with phosphorus removal and UV disinfection. The receiving waterbody is Tributary to Cane Creek. See the operating permit modification **APPENDIX G – ANTIDEGRADATION**.

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

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

- Lagoon Cell No. 2 has a surface area of 2.65 acres, while Lagoon Cell No. 1 has a surface area of 2.2 acres, at the existing water surface area per MapIt on December 29, 2024. Assuming approximately 2 ft of sludge storage and 2 ft of freeboard, providing each cell with approximately 4 ft of operational volume, the

2 lagoon cells have approximately 6,321,080 gallons of storage capacity for wet weather flows, which is approximately 4.6 days of storage at design average flow of 1.36 MGD.

Construction will cover the following items:

As the construction includes bid alternative projects for the collection system, as-builts will need to be submitted at the conclusion of the project to ensure the department has the appropriate documents on what was constructed.

- Collection system- Approximately 4,934 lf of 24-inch gravity sewer and 13,000 lf of 8-inch gravity sewer, 104 manholes, 1,675 lf of 2-inch SDR 21 force main, 850 lf of 1.5-inch SDR 21 force main, 825 lf of 1.25-inch SDR 21 force main, and 11 simplex grinder pumps.
 - The 11 simplex grinder pumps will serve single residences. The grinder pumps will be model Sulzer S20 Grinder Pump, equivalent Myers Grinder Pump, or approved equal; all pumps shall be capable of operating at between 12 GPM at 97 ft of TDH and 26 GPM at 77 ft of TDH. All grinder pumps will have a volume of 220 gallons or greater.
- Lagoon Cells No. 1 and 2- Cells #1 and #2 will be decanted down to the 2 ft sludge line by slowly pumping the decanted water into the terminal lift station for treatment through the new treatment facility. Stormwater and overflow pipes between the terminal lift station and cell #1 will be removed. A new transfer line between cells #1 and #2 will be installed.
- Terminal Lift Station- Modifications to the existing terminal lift station to include:
 - Installation of approximately 950 lf of 10-inch SDR 21 PVC pipe and 16-inch SDR 21 PVC from the terminal lift station to the headworks screening.
 - Installation of 4 pumps with VFDs in the wet well.
 - Two 20-horsepower (HP) pumps capable of operating at 950 gpm at 38 feet of TDH
 - Two 25-HP pumps capable of operating at 2,000 gpm at 38 feet of TDH.
- Flow Measurement – Installation of accurate flow measurement devices will give the treatment facility a means of improved data analysis. 5 magnetic flow meters will be installed throughout the treatment train.
 - 2 flow meters located prior to the influent screen,
 - 1 flow meter between the influent and oxidation ditch,
 - 1 flow meter located on the discharge of the RAS pumps that will control the VFD on the RAS pump, and
 - 1 flow meter at the WAS pump.
- Screening – Installation of screening devices removes nuisance inorganic materials from raw wastewater. The automatic screen has been designed to handle 5 MGD, for the ability to screen flows into the treatment plant at normal and peak

- flows, plus I&I wet weather flows. Flows above the peak flow of 2.70 MGD will be directed through the overflow outlet to the existing lagoon cell #2
- Mechanical Fine Screen – One mechanically-cleaned fine screen in a 2 ft wide by 6 ft deep channel with a maximum perforated plate spacing of ¼-inch with screen spray wash operating at 28 gpm between 50-60 psi. The screening devices shall be capable of treating a design average flow of 1.36 MGD and a peak flow of 5.0 MGD.
 - The rotating screen shall consist of perforated panels intermittently rotating through the wastewater flow.
 - The spray wash assembly shall consist of a spray wash manifold, solenoid operated valve, manually operated ball valve, and Y strainer.
 - Manual Coarse Bar Screen-The manual coarse bar screen will have clear bar spacings of ⅛-inch and be positioned at an angle of 45 degrees from the horizontal to allow for manual raking of the screen.
 - During construction, the two screening plates will be set manually to direct flows, with the first plate allowing flows up to 2.7 MGD to the Orbal oxidation ditch and the second screen plate sending flows to lagoon cell #2 for holding.
 - All above ground screening and compacting auger non-potable water piping will be fitted with self-regulating heat trace tape to prevent freezing of the incoming screen and auger wash water.
 - Oxidation Ditch – Construction of a three-ring Orbal process oxidation ditch, with an overall length of 137 feet and width of 113 feet.
 - Long axis straight length of 24 ft with a center island radius of 5 ft.
 - The sidewater depth throughout the ditch is 14 feet, with a total depth of 16 ft and a volume of 1,194,116 gallons. Flows will enter the outer ring moving inward.
 - All rings will be approximately 16 ft wide with 2 sets of disc rotors per ring. Each disc aerator rotor will have 14 discs each.
 - Return activated sludge is returned to the outer ring.
 - The design SRT is 12.5 days for nitrification, with a design MLSS of 4,200 mg/L.
 - The F:M ratio at design in
 - The outer channel is 0.21
 - The middle channel is 0.13
 - The inner channel is 0.10
 - The hydraulic retention time is 21 hrs at design flow of 1.36 MGD and 10 hrs at peak flow of 2.70 MGD.
 - Actual oxygen requirement (AOR) for the system is 177.03 lbs O₂/hr; the standard oxygen rate is 211.35 lbs O₂/hr.
 - Chemical phosphorus removal line – As the oxidation ditch system is designed for nutrient removal, the facility hopes to utilize that for phosphorus removal. However, in the event that there are challenges in achieving the 1.0 mg/L total phosphorus in the effluent, the facility is constructing a 2-inch SDR-21 PVC

- chemical phosphorus removal line. At this time, the dosing pump for aluminum sulfate will not be included.
- The chemical feed storage area will be located within the plant control/lab building.
 - If the facility must add chemical dosing, up to 295 lbs of aluminum sulfate would be required at the design average flow per day. While dosing calculations were provided for aluminum sulfate, the facility may decide to use ferric or ferrous sulfate.
 - Chemical addition injection points include either the outer or middle rings of the oxidation ditch, allowing for the disc rotors to provide a fully mixed environment.
 - If the facility does need to add the dosing pump, they will need to inform the Operating Permit Section to have the operating permit modified to add monitoring for alum. The addition of common metal salts for phosphorus removal is exempt from construction permitting requirements per 10 CSR 20-6.010(5)(B)9.
- Secondary Clarifier – Two secondary clarifiers, each with a 50-ft inside tank diameter, with the inside scum baffle diameter of approximately 45.1 ft and a sidewater depth of 14 ft.
 - Surface area of each clarifier is approximately 1,963.5 ft² with an approximate volume of 27,489 ft³ or 205,632 gallons.
 - Overall surface area for the 2 clarifiers: 3,927 sq ft.
 - Overall volume of the 2 clarifiers: 54,978 ft³ or 411,264 gallons
 - Hydraulic retention time is 3.6 hours at design average flow of 1.36 MGD and 2.1 hours at peak hourly flow of 2.38 MGD, per clarifier.
 - Both clarifiers working provides 7.25 hrs of HRT at design average flow and 4.14 hrs of HRT at peak hourly flow.
 - The surface overflow rate is 692.6 gpd/ft² for 1 clarifier or 346.3 gpd/ft² for 2 clarifiers at design average flow of 1.36 MGD.
 - Surface overflow rate at peak hourly flow for 1 clarifier is 1,212 gpd/ft² at peak hourly flow or 606 gpd/ft² for 2 clarifiers.
 - 2 clarifiers meet the surface overflow rate of 900 gpd/ft² required for activated sludge system with chemical addition for phosphorus removal per 10 CSR 20-8.160(3)(B)3.
 - The weir loading rate is 9,598 gpd/ft for 1 clarifier or 4,799 gpd/ft for 2 clarifiers at design average flow of 1.36 MGD.
 - Weir overflow rate is 16,797.7 gpd/ft with 1 clarifier at peak hourly flow or 8,398.9 gpd/ft for 2 clarifiers.
 - 16,797.7 gpd/ft is lower than the maximum loading rate requirement of 30,000 gpd/ft in 10 CSR 20-8.160(3)(C)2.
 - The solids loading rate is 36.4 lbs/day/ft² with 1 clarifier or 18.2 lbs/day/ft² with 2 clarifiers at design average flow.
 - The solids loading rate is 63.73 lbs/day/ft² with 1 clarifier or 31.86 lbs/day/ft² with 2 clarifiers at peak hourly flow.
 - The solids loading rate of 31.86 lbs/day/ft² meets the requirements of 10 CSR 20-8.160(3)(B)3 of less than 35 lbs/day/ft² at peak flow.

- Waste Activated Sludge (WAS) Pump Station – Construction of a duplex WAS pump station and associated valves.
 - The WAS non-clog submersible pump will be capable of pumping 420 gpm at 32 ft of TDH with a 7.5 HP motor.
 - The WAS pumps are utilized to pump WAS from the secondary clarifiers to the aerated sludge holding basin.
 - WAS pumps will be 1 operational and 1 standby.
- Return Activated Sludge (RAS). The RAS rate is 100 percent of the design average flow, 1.36 MGD, and a peak RAS flow of 150 percent.
 - The design RAS flow per clarifier is 0.68 MGD, and the peak RAS flow per clarifier is 1.02 MGD.
 - The RAS non-clog submersible pump is designed for 1,200 gpm at 17 ft TDH.
 - There will be one operational pump; however, the owner will have a spare pump in storage.
- Disinfection – Disinfection is the process of removal, deactivation, or killing of pathogenic microorganisms.
 - Closed Vessel Ultraviolet (UV) – A closed vessel, gravity flow, low pressure, high intensity UV disinfection system capable of treating a peak flow of 2.72 MGD while delivering a minimum UV intensity of 30 mJ/cm² with an expected ultraviolet transmissivity of 65 percent or greater. The closed vessel UV system consists of 2 banks per reactor, with 5 modules per bank and 7 lamps per module, totaling 35 lamps per bank and 70 lamps overall lamps per reactor. The disinfected effluent will flow by gravity to Outfall No. 002.
- Nonpotable wash water pump station – Water can be pulled from the effluent line to wash equipment. Wash water will be pumped from the cleaning area back to the headworks. Installation of one 1 HP non-clog pump capable of operating at the duty point of 47 gpm at 89-ft TDH.
- Sludge Holding Basins – Construction of two sludge holding basins with top dimensions of 38-ft by 38-ft, an 18-ft sidewater depth, and a volume of 0.19 MG at 2 percent solids. Installation of one 30 HP Aqua-Jet aerator per basin to provide the required 49 lbs O₂/hr to provide aeration and mixing of the sludge to prevent anaerobic conditions. The sludge will be received from the secondary clarifiers.
 - 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, as the facility plans to land apply the biosolids.
 - Sludge loading station – construction of a sludge hauling station with 4-inch quick couplings and plug valves to remove sludge from the holding structure for land application.
 - 6-inch PVC line for collected water from the sludge loading station to be sent to lagoon cell 2, with a 6-inch clean out.

- Emergency Power – A 400 kW standby diesel generator and automatic transfer switch will be provided to operate the treatment facility in event of power failure.
- Relocated Outfall – The new outfall, Outfall #002's location is approximately 0.15 miles upstream of the current outfall location, due to the construction and layout of the new treatment plant. Outfall #001 will be closed. The new outfall, Outfall #002, is labeled as Outfall #002 to provide consistency in the operating permit in regard to location.

6. OPERATING PERMIT

Operating permit MO-0124427 will require a modification to reflect the construction activities. The modified Pike Creek Sewer District WWTF was successfully public noticed from November 9, 2023, to December 11, 2023, with no comments received. 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. The operating permit modification fee has been paid.

V. NOTICE OF RIGHT TO APPEAL

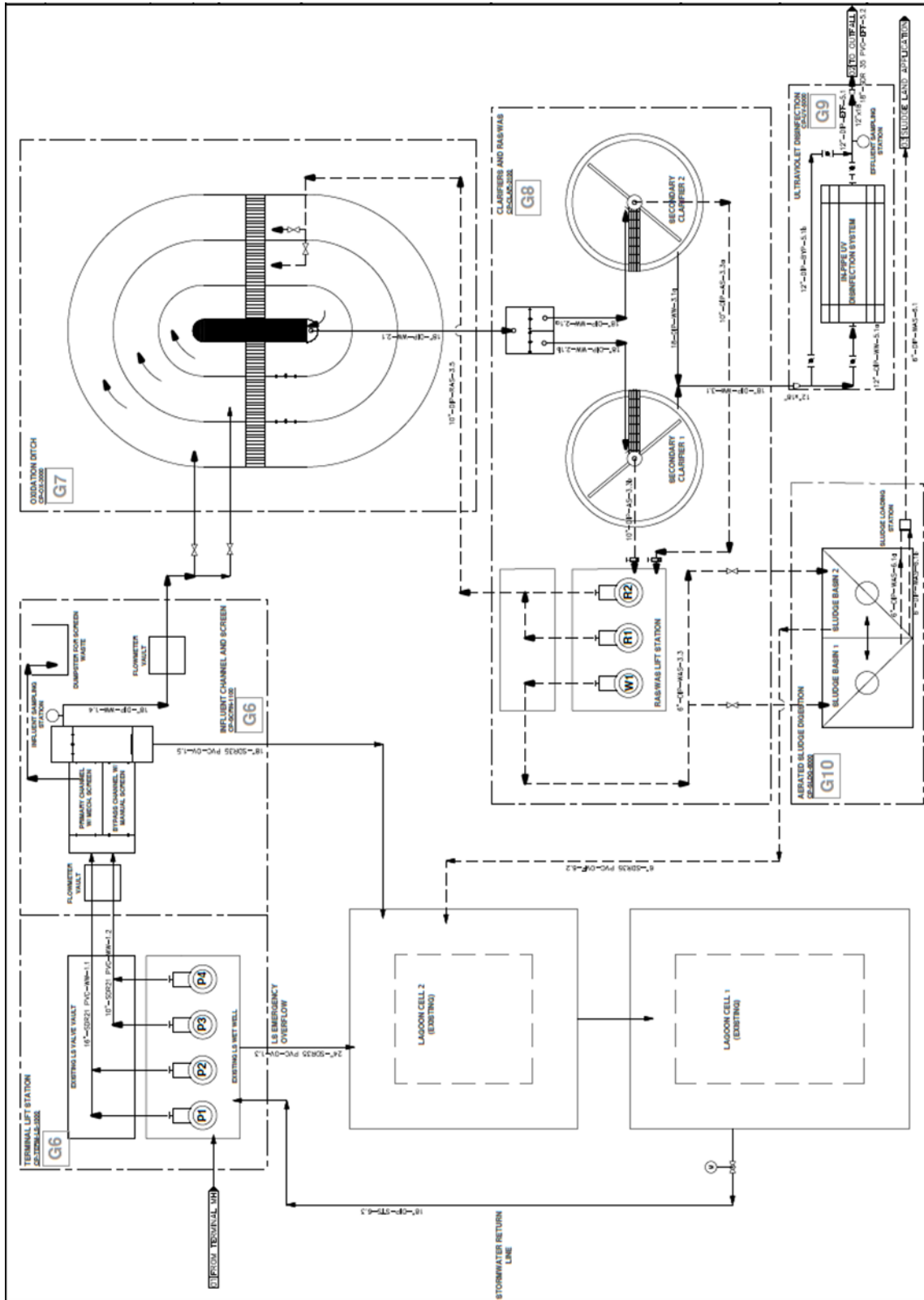
If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to Section 621.250 RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, 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>

Leasue Meyers, E.I.
Engineering Section
Leasue.meyers@dnr.mo.gov

Chia-Wei Young, P.E.
Engineering Section
Chia-wei.young@dnr.mo.gov

Appendix A: Process Diagram





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: USDA-RD Project #: 22001
- 1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
 YES Date of Approval: 10-19-2 N/A
- 1.3 Has the department approved the proposed project's facility plan*?
 YES Date of Approval: 10-19-2 NO (If No, complete No. 1.4.)
- 1.4 [Complete only if answered No on No. 1.3.] Is a copy of the facility plan* for wastewater treatment facilities included with this application?
 YES NO Exempt because _____
- 1.5 Is a copy of the appropriate plans* and specifications* included with this application?
 YES Denote which form is submitted: Hard copy Electronic copy (See instructions.) NO
- 1.6 Is a summary of design* included with this application? YES NO
- 1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?
 YES Date of submittal: _____
 Enclosed is the appropriate operating permit application and fee submittal. Denote which form: A B B2
 N/A: However, In the event the department believes that my operating permit requires revision to permit limitation such as changing equivalent to secondary limits 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 Pike Creek Reorganized Common Sewer District WWTF Improvements Project	2.2 ESTIMATED PROJECT CONSTRUCTION COST \$ 10,300,000
2.3 PROJECT DESCRIPTION The project includes the construction of an oxidation ditch WWTF including the following: terminal lift station, automatic screening, flow measurement, ORP/DO oxidation ditch with SCADA control, dual 50' clarifiers, UV disinfection, and sludge storage basins.	
2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION Two concrete fully aerated sludge holding basins used to hold and digest sludge which can be decanted for additional thickening. Sludge will be land applied by the operator with their use of their existing land application equipment.	
2.5 DESIGN INFORMATION A. Current population: <u>7,050</u> ; Design population: <u>13090</u> B. Actual Flow: _____ gpd; Design Average Flow: _____ gpd; Actual Peak Daily Flow: _____ gpd; Design Maximum Daily Flow: _____ gpd; Design Wet Weather Event: _____	
2.6 ADDITIONAL INFORMATION A. Is a topographic map attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO B. Is a process flow diagram attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	

3.0 WASTEWATER TREATMENT FACILITY				
NAME Pike Creek Reorganized Common Sewer District		TELEPHONE NUMBER WITH AREA CODE 573-778-1321		E-MAIL ADDRESS marissa@pikecreeksewer.com
ADDRESS (PHYSICAL) County Road 474		CITY Poplar Bluff	STATE MO	ZIP CODE 63901
COUNTY Butler				
Wastewater Treatment Facility: Mo- 0124427 (Outfall 001 Of 001)				
3.1 Legal Description: SE <u>1/4</u> , NW <u>1/4</u> , _____ <u>1/4</u> , Sec. <u>24</u> , T <u>24N</u> , R <u>05E</u> (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): <u>72542</u> Northing (Y): <u>4066558</u> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: <u>Tributary to Cane Creek</u>				
4.0 PROJECT OWNER				
NAME Pike Creek Reorganized Common Sewer District		TELEPHONE NUMBER WITH AREA CODE 573-778-1321		E-MAIL ADDRESS marissa@pikecreeksewer.com
ADDRESS 4878 Highway PP		CITY Poplar Bluff	STATE MO	ZIP CODE 63901
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 Pike Creek Reorganized Common Sewer District		TELEPHONE NUMBER WITH AREA CODE 573-778-1321		E-MAIL ADDRESS marissa@pikecreeksewer.com
ADDRESS 4878 Highway PP		CITY Poplar Bluff	STATE MO	ZIP CODE 63901
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 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 Bob Summers / Heartland Engineering, LLC		TELEPHONE NUMBER WITH AREA CODE 573-718-4627		E-MAIL ADDRESS bsummers@heartlandengineering.com
ADDRESS 891 Mockingbird Lane		CITY Poplar Bluff	STATE MO	ZIP CODE 63901
7.0 APPLICATION FEE				
<input checked="" 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 Larry Wells			DATE 05-08-2023	
TITLE OR CORPORATE POSITION District President		TELEPHONE NUMBER WITH AREA CODE 573-778-1321		E-MAIL ADDRESS marissa@pikecreeksewer.com
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM P.O. BOX 176 JEFFERSON CITY, MO 65102-0176				
END OF PART A.				
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.				