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 Salem
Salem WWTP
0.25 miles northwest of Adelman Lane and Hwy 19
Salem, MO 65560

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 13, 2025
Effective Date

February 12, 2027
Expiration Date

John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Improvements to an existing Oxidation Ditch wastewater treatment facility. Replacement of pumps and the macerator-grinder in the influent lift station; replacement of aeration equipment in the oxidation ditch, a chemical feed process for the addition of alum to the treatment process for the removal of phosphorous; removal of the current outfall #002 from the peak flow storage basin; flows from the basin will be routed to the intermediate lift station and blended with flow from the secondary treatment train prior to UV disinfection; improvements to the intermediate lift station; addition of treatment capacity to the UV disinfection system for the accommodation of excess wet-weather flows from the peak flow storage basin; removal of existing sludge drying bed to allow space for the UV disinfection expansion; conversion of two of the eight existing sludge reed beds to space for a sludge bag dewatering system.

Together with all the necessary appurtenances to make a complete and usable wastewater system to treat the waste from a population equivalent of 10,000 with an average daily discharge of 1,250,000 gallons (1.25 MGD). The design flow will remain the same and the existing outfall will remain. Discharge is to Spring Creek in Sec.12, T34N, R06W, Dent County.

A closure plan will need to be submitted to the Southeast Regional Office for review and approval prior to any closure activities. This includes closure of the sludge drying bed and the two sludge reed beds.

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 publically-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 **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 Kenneth Campbell, P.E.: Steven Stack, P.E.; and Richard Palmer, P.E.; all with Archer-Elgin 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. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.

   10 CSR 20-8.130 Pumping Stations (please note that this rule has changed effective Jan. 30, 2025; much of the language is the same but may have different citations)

   - Electrical equipment. Electrical equipment shall be provided with the following requirements:
     - 10 CSR 20-8.130(4)(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(4) (B)2.B.
     - Provide a watertight seal and separate strain relief for all flexible cable; 10 CSR 20-8.130(4)(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(4)(B)2.D.
     - When such equipment is exposed to weather, it shall comply with the requirements of weather proof equipment; enclosure NEMA 4; NEMA 4X where necessary; and *NEMA Standard 250-2014*, published December 15, 2014. 10 CSR 20-8.130(4)(B)2.E.
     - Install lightning and surge protection systems; 10 CSR 20-8.130(4)(B)2.F.
     - Install a 110 volt (V) power receptacle inside the control panel located outdoors to facilitate maintenance; 10 CSR 20-8.130(4)(B)2.G.
     - Provide Ground Fault Circuit Interruption (GFCI) protection for all outdoor receptacles. 10 CSR 20-8.130(4)(B)2.H.

   - Water level controls must be accessible without entering the wet well. 10 CSR 20-8.130(4)(C)

   - Valves shall not be located in the wet well unless integral to a pump or its housing. 10 CSR 20-8.130(4)(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(4)(E)

- Submersible pump stations shall meet the applicable requirements under section (4) of this rule, except as modified in this section. 10 CSR 20-8.130(6)
  - 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(6)(A)
  - 10 CSR 20-8.130(6)(B) Valve Chamber and Valves. Valves required under subsection (4)(D) of this rule shall be located in a separate valve chamber.
- A minimum access hatch dimensions of 24 inches by 36 inches shall be provided. 10 CSR 20-8.130(6)(B)1.

- Alarm systems with an uninterrupted power source shall be provided for pumping stations. 10 CSR 20-8.130(7)

10 CSR 20-8.140 Wastewater Treatment Facilities

- 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 three hundred feet

- 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 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)

- 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.

- 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 (4') 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 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 ten feet and with at least two 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 3 inches per 10 feet 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 four tenths gallons per minute per square foot (0.4 gpm/ft^2) 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 two chemicals that can react to form a toxic gas in separate housing facilities; 10 CSR 20-8.140(9)(B)16.
- 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 two 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.
  - 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 to 30 minutes. Provide independent controls for each tank or channel; 10 CSR 20-8.140(9)(C)11.

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 degrees to 90 degrees Fahrenheit (F°), suitable to provide 15 to30 minutes of continuous irrigation of the eyes; 10 CSR 20-8.140(9) (D)2.A.
  - Emergency showers capable of discharging 20 gallons per minute (gpm) of water of moderate temperature, 50 degrees to 90 degrees F°, and at pressures of 30 to 50 pounds per square inch (psi); 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)

10 CSR 20-8.150 Preliminary Treatment.

- 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)

- 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)

- Provisions for location and safety of comminutors shall be in accordance with screening devices,

- 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)

10 CSR 20-8.170 Solids Handling and Disposal.

- 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)

10 CSR 20-8.190 Disinfection.

- Emergency Power. Disinfection and dechlorination processes, when used, shall be provided during all power outages. 10 CSR 20-8.190(2)(A)

- 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.

- 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 microwatt seconds per centimeters squared ($\mu W \bullet s/cm^2$). 10 CSR 20-8.190(5)(A)4.

- Open channel UV systems. The combination of the total number of banks 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)1.

- 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.

8. Upon completion of construction:

A. The City of Salem will become the continuing authority for operation and maintenance of these facilities;

B. Submit an electronic copy of the as-builts if the project was not constructed in accordance with previously submitted plans and specifications; 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), and request the operating permit modification public noticed on December 20, 2024, be issued. Operating permit modification fee has been waived.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

Continuation of planned upgrades to the City's WWTP. This phase 2A includes improvements to the influent lift station, eliminates Outfall #002, which discharges the overflow from the peak flow holding basin, replaces aeration equipment in the oxidation ditch, increases disinfection treatment capacity, adds flow blending, and provides for the addition of alum to aid in phosphorous removal.

2. FACILITY DESCRIPTION

The existing facility is an Oxidation Ditch treatment facility; including an influent lift station with a macerator-grinder, a peak flow basin that has a high-flow events discharge through outfall #002, mechanical bar screen, oxidation ditch, three final clarifiers, intermediate pumping, ultraviolet disinfection; sludge is processed in two aerobic digestors, sludge drying bed and eight sludge reed beds; biosolids are land applied. The existing facility has a design average flow of 1.25 MGD.

Following this Phase 2A upgrade the facility will have an influent lift station with a macerator-grinder, peak flow basin, mechanical bar screen, oxidation ditch, three final clarifiers, flow blending, alum addition for phosphorous removal, intermediate lift station, ultraviolet disinfection, two aerobic sludge digestors, six sludge reed beds, sludge bag-dewatering pads, biosolids are land applied.

Salem Wastewater Treatment Plant is located 0.25 miles northwest of Adelman Ln. and Hwy 19 intersection, Salem, in Dent County, Missouri. The location of Outfall #001 will remain the same, the design flow of 1.25 MGD will remain the same.

3. COMPLIANCE PARAMETERS

The City of Salem was under an Abatement Order on Consent (No. 2022-WPCB-1687) to remove Outfall #002; and a schedule in Operating Permit MO-0021768 to meet effluent limits associated with the 2020 Spring Creek Total Maximum Daily Load (TMDL). The Abatement Order has expired and currently any discharges from Outfall #002 are considered permit violations. The current Operating Permit (MO-0021768) requires compliance with a phosphorous (P) limit of 1,128 lbs P/year by April 1, 2034. With the installation of alum addition for the removal of P, an interim limit of 3,805 lbs P/year is being placed in the modified Operating Permit. Blending is also being allowed with the modified Operating Permit; influent and effluent analysis for BOD, and TSS, will be required every day a blending event occurs. Effluent limits and 85% percent removal of BOD and TSS is required at all times.

The upgraded treatment plant is required to meet the following effluent limitations.

Parameter	Units	Monthly average limit, until March 31, 2029
Biochemical Oxygen Demand$_5$	mg/L	20
Total Suspended Solids	mg/L	30
Ammonia as N-summer	mg/L	1.5
pH	SU	6.5-9.0
Oil and Grease	mg/L	10
E. coli	#/100mL	206
Total Phosphorus	lbs./year	3,805
Cadmium, Total Recoverable	µg/L	0.6
Copper, Total Recoverable	µg/L	11.4
Lead, Total Recoverable	µg/L	4.0

Parameters with “monitoring only” requirement not shown.

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Improvements to an existing Oxidation Ditch wastewater treatment facility. Replacement of pumps and the macerator-grinder in the influent lift station; a chemical feed process for the addition of alum to the treatment process for the removal of phosphorous; removal of the current outfall #002 from the peak flow storage basin; flows from the basin will be routed to the intermediate lift station and blended with flow from the secondary treatment train prior to UV disinfection; improvements to the interim lift station; addition of treatment capacity to the UV disinfection system for the accommodation of excess wet-weather flows from the peak flow storage basin; replacement of aeration equipment in the existing oxidation ditch; removal of existing sludge drying bed to allow space for the UV disinfection expansion; conversion of two of the eight existing sludge reed beds to space for a sludge bag dewatering system.

Design flow of the Salem WWTP will remain at 1.25 MGD. Peak flow capacity through secondary treatment is 3.62 MGD. Peak flow capacity including wet weather flows from the peak flow storage basin is 7.0 MGD. Only flows in excess of the peak flow storage basin volume will be blended with secondary flows. The remaining contents of the basin will return to the influent lift station when peak flows subside and treatment capacity allows.

New Facilities

- Influent Pump Station – Replace two of the four existing pumps with two new 10 HP submersible pumps each capable of operating at 950 gpm at 19 feet of TDH. Existing peak flow pumps to remain, each have a capacity of 2,000 gpm at a TDH of 21 feet. Three pumps operating have a capacity of 4,950 gpm (7.12 MGD). All pumps to be controlled by VFD's.

- Macerator-grinder – Replace existing macerator-grinder with new; located in the wet well at the influent pipe. Macerator-grinder cuts and shreds coarse solid organic and inorganic materials into smaller sizes but does not remove them from the wastewater stream. Equipped with a 5 HP motor; peak capacity of 7.0 MGD.

- Chemical feed process for phosphorous removal – Utilize existing Headworks Building; a double walled chemical storage tank with a capacity of at least 1,500 gallons, to store 30 to 50 percent polyaluminum hydroxychloride liquid solution. Two chemical metering skids including peristaltic metering pumps with a variable dosing capacity between 0 and 5.86 gallons per hour; controls to dose chemical proportionally to flow rate. Primary alum injection point to be into the oxidation ditch effluent line. A secondary injection point will be on the intermediate pump station force main. Future plans call for a tertiary filter following the intermediate pump station.

- Oxidation Ditch aeration - All existing aeration to be removed and replaced. New equipment will be four, disc-style horizontal axis mechanical aerators;

maximum aeration requirement is 243 lbs O_2 /hr. Discs to have a diameter of 66 inches and have a variable submergence from 12 to 24 inches. Each rotor shaft to have 19 discs and be operated by a variable speed 40 HP motor.

- Intermediate Lift Station - modification to increase capacity, existing three 13.1 HP submersible pumps to be rebuilt with new larger impellers, provide a new submersible 13.1 HP pump to be kept in storage. Each pump to have a capacity of 1,500 gpm at a TDH of 19 ft.; three pumps in parallel to operate at 5,200 gpm at a TDH of 15 ft. Pumps are controlled by VFD's. Intermediate lift station pumps secondary effluent and any blended effluent through flow measurement equipment to UV disinfection.

- Disinfection – Disinfection is the process of removal, deactivation, or killing of pathogenic microorganisms.
  - Open Channel Ultraviolet (UV) upgrades – provide additional capacity to the existing UV disinfection system. Add an open channel, gravity flow, low pressure high intensity UV disinfection system capable of treating a peak flow of 3.62 MGD while delivering a minimum UV intensity of 30,000 $\mu W \cdot s/cm^2$ with an expected ultraviolet transmissivity of 65 percent or greater. The single open channel UV system consists of two banks in series with three modules per bank and eight lamps in each module. The new system to be adjacent to and integrated with the existing UV system. Final UV facility to have two channels with two banks each channel and provide a total peak flow capacity of 7.0 MGD. The disinfected effluent will flow by gravity to Outfall No. 001.

- Sludge Handling Modifications - removal of 2 of the 8 existing reed beds to accommodate space for a new sludge bag dewatering system. Sludge bag dewatering system will have four pads.

5. OPERATING PERMIT

Operating permit MO-0021768 will require a modification to reflect the construction activities. The modified Salem Wastewater Treatment Plant operating permit, MO-0021768, was successfully public noticed from December 20, 2024, to January 21, 2025, 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 is covered by the ARPA program.

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:

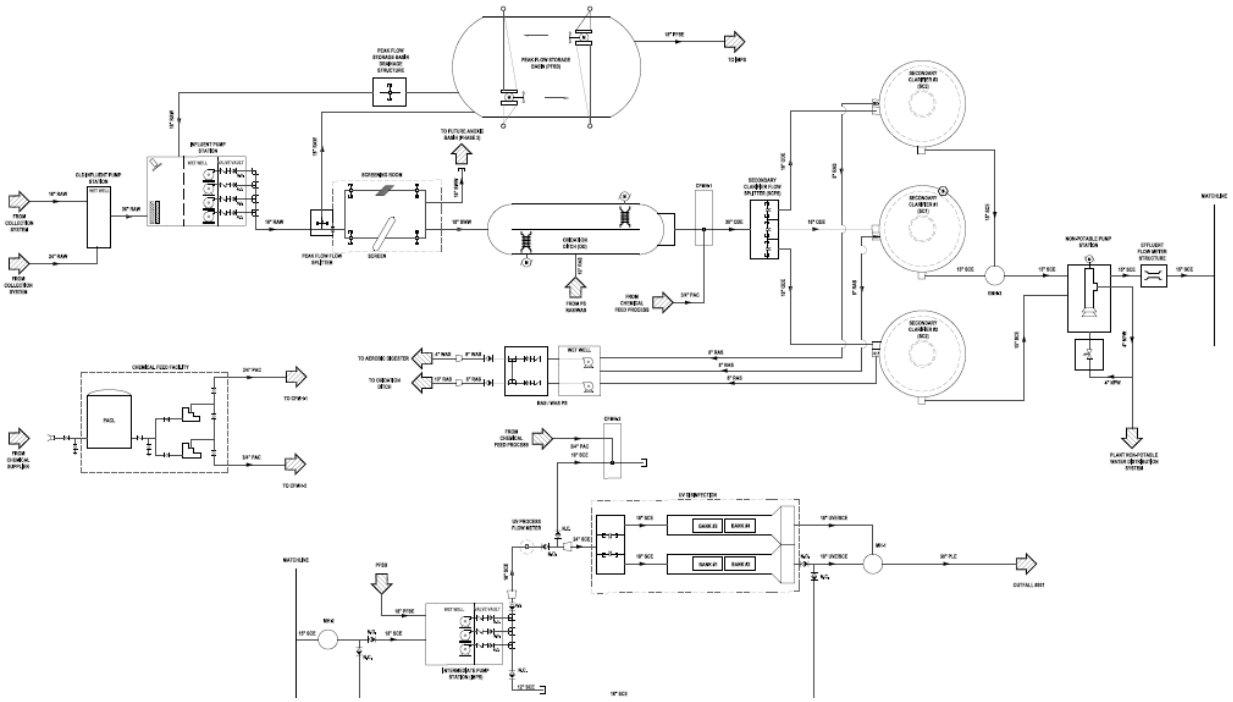
Administrative Hearing Commission
U.S. Post Office Building, Third Floor
131 West High Street, P.O. Box 1557
Jefferson City, MO 65102-1557
Phone: 573-751-2422
Fax: 573-751-5018
Website: https://ahc.mo.gov

Andrew Appelbaum, P.E.
Engineering Section
andy.appelbaum@dnr.mo.gov

APPENDICES

- **Process Flow Diagram**
- **COST ANALYSIS FOR COMPLIANCE**

APPENDIX A- PROCESS FLOW DIAGRAM/SITE MAP



APPENDIX B - COST ANALYSIS FOR COMPLIANCE

Missouri Department of Natural Resources
Water Protection Program
Cost Analysis for Compliance
(In accordance with RSMo 644.145)

Salem WWTP, Permit Modification
City of Salem
Missouri State Operating Permit #MO-0021768

Section 644.145 RSMo requires the Department of Natural Resources (department) to make a "finding of affordability" when "issuing permits under" or "enforcing provisions of" state or federal clean water laws "pertaining to any portion of a combined or separate sanitary sewer system for publicly-owned treatment works." This cost analysis does not dictate how the permittee will comply with new permit requirements.

New Permit Requirements

The permit requires compliance with new monitoring requirements for Total Recoverable Aluminum; BOD influent and effluent daily when blending; TSS influent and effluent daily when blending.

Connections
The number of connections was reported by the permittee on the permit modification application Form B2.

Connection Type	Number
Residential	2188
Commercial	
Industrial	
Total	

Data Collection for this Analysis
This cost analysis is based on data available to the department as provided by the permittee and data obtained from readily available sources. For the most accurate analysis, it is essential that the permittee provides the department with current information about the City's financial and socioeconomic situation. The financial questionnaire available to permittees on the department's website (https://dnr.mo.gov/document-search/financial-questionnaire-mo-780-2511) is a required attachment to the Form B2 permit application. If the financial questionnaire is not submitted with the application, the department sends a request to complete the form. Though the department has made attempts to gather financial information from the City of Salem; no information has been provided. The department has relied heavily on readily available data to complete this analysis. If certain data was not provided by the permittee to the department and the data is not obtainable through readily available sources, this analysis will state that the information is "unknown".

Eight Criteria of 644.145 RSMo
The department must consider the eight criteria presented in subsection 644.145 RSMo to evaluate the cost associated with new permit requirements.

(1) A community's financial capability and ability to raise or secure necessary funding;

Criterion 1 Table. Current Financial Information for the City of Salem	
Current Monthly User Rates per 5,000 gallons*	$48.40
Median Household Income (MHI)[1]	$
Current Annual Operating Costs (excludes depreciation)	NA

*User Rates were obtained from the 2024 Missouri Public Utility Alliance Water and Wastewater Rate Survey.

(2) Affordability of pollution control options for the individuals or households at or below the median household income level of the community;

The following tables outline the estimated costs of the new permit requirements:

Criterion 2A Table. Estimated Cost Breakdown of New Permit Requirements			
New Requirement	Frequency	Estimated Cost	Estimated Annual Cost
Aluminum, Total Recoverable	Monthly	$22	$264
BOD- Influent, when blending**	Quarterly	$44	$660
TSS - Influent, when blending**	Quarterly	$17	$255
BOD – Effluent, when blending**	Quarterly	$44	$660
TSS - Effluent, when blending**	Quarterly	$17	$225
Total Estimated Annual Cost of New Permit Requirements			$2094

** An assumption was made there will be 15 blending events per year.

Criterion 2B Table. Estimated Costs for New Permit Requirements		
(1)	Total Estimated Annual Cost of New Permit Requirements	$2094
(2)	Estimated Monthly User Cost for New Requirements [2]	$0.08
	Estimated Monthly User Cost for New Requirements as a Percent of MHI [3]	0.003%
(3)	Total Monthly User Cost***	$48.48
	Total Monthly User Cost as a Percent of MHI [4]	1.578%

*** Current User Rate + Estimated Monthly Costs of New Sampling Requirements

(3) An evaluation of the overall costs and environmental benefits of the control technologies;

This analysis is being conducted based on new requirements in the permit, which will not require the addition of new control technologies at the facility. However, the new sampling requirements are being established in order to provide data regarding the health of the receiving stream's aquatic life and to ensure that the existing permit limits are providing adequate protection of aquatic life. Improved wastewater provides benefits such as avoided health costs due to water-related illness, enhanced environmental ecosystem quality, and improved natural resources. The preservation of natural resources has been proven to increase the economic value and sustainability of the surrounding communities. Maintaining Missouri's water quality standards fulfills the goal of restoring and maintaining the chemical, physical, and biological integrity of the receiving stream; and, where attainable, it achieves a level of water quality that provides for the protection and propagation of fish, shellfish, wildlife, and recreation in and on the water.

(4) Inclusion of ongoing costs of operating and maintaining the existing wastewater collection and treatment system, including payments on outstanding debts for wastewater collection and treatment systems when calculating projected rates:

The community did not provide the department with this information, nor could it be found through readily available data.

(5) An inclusion of ways to reduce economic impacts on distressed populations in the community, including but not limited to low and fixed income populations. This requirement includes but is not limited to:

(a) Allowing adequate time in implementation schedules to mitigate potential adverse impacts on distressed populations resulting from the costs of the improvements and taking into consideration local community economic considerations.
(b) Allowing for reasonable accommodations for regulated entities when inflexible standards and fines would impose a disproportionate financial hardship in light of the environmental benefits to be gained.

The following table characterizes the current overall socioeconomic condition of the community as compared to the overall socioeconomic condition of Missouri. The following information was compiled using the latest U.S. Census data.

Criterion 5 Table. Socioeconomic Data [1, 5-9] for the City of Salem

›.	Administrative Unit	Salem City	Missouri State	United States
1	Population (2022)	4,673	6,154,422	331,097,593
2	Percent Change in Population (2000-2022)	-3.7%	10.0%	17.7%
3	2022 Median Household Income (in 2023 Dollars)	$36,871	$68,634	$78,242
4	Percent Change in Median Household Income (2000-2022)	-6.9%	-1.1%	1.9%
5	Median Age (2022)	42.4	38.8	38.8
6	Change in Median Age in Years (2000-2022)	3.6	2.7	3.5
7	Unemployment Rate (2022)	7.0%	4.3%	5.3%
8	Percent of Population Below Poverty Level (2022)	17.6%	12.8%	12.5%
9	Percent of Household Received Food Stamps (2022)	26.2%	10.0%	11.5%
10	(Primary) County Where the Community Is Located	Dent County		

(6) An assessment of other community investments and operating costs relating to environmental improvements and public health protection;

(7) An assessment of factors set forth in the United States Environmental Protection Agency's guidance, including but not limited to the "Combined Sewer Overflow Guidance for Financial Capability Assessment and Schedule Development" that may ease the cost burdens of implementing wet weather control plans, including but not limited to small system considerations, the attainability of water quality standards, and the development of wet weather standards;

The new requirements associated with this permit will not impose a financial burden on the community, nor will they require the City of Salem to seek funding from an outside source.

(8) An assessment of any other relevant local community economic conditions.

The community did not report any other relevant local economic conditions.

The department contracted with Wichita State University to complete an assessment tool that would allow for predictions on rural Missouri community populations and future sustainability. The purpose of the study is to use a statistical modeling analysis in order to determine factors associated with each rural Missouri community that would predict the future population changes that could occur in each community. A stepwise regression model was applied to 19 factors which were determined as predictors of rural population change in Missouri. The model established a hierarchy of the predicting factors which allowed the model to place a weighted value on each of the factors. A total of 745 rural towns and villages in Missouri received a weighted value for each of the predicting factors. The weighted values for each town / village were then added together to determine an overall decision score. The overall decision scores were then divided into five categories and each town was assigned to a different categorical group based on the overall decision score. The categorical groups were developed from the range of overall scores across all rural towns and villages within Missouri.

Based on the assessment tool, the City of Salem has been determined to be a category 5 community. This means that the City of Salem is predicted to be stable over time.

Conclusion and Finding

As a result of new regulations, the department is proposing modifications to the current operating permit that may require the permittee to increase monitoring. The department has considered the eight criteria presented in subsection 644.145 RSMo to evaluate the cost associated with the new permit requirements.

This analysis examined whether the new sampling requirements affect the ability of an individual customer or household to pay a utility bill without undue hardship or unreasonable sacrifice in the essential lifestyle or spending patterns of the individual or household. After reviewing the above criteria, the department finds that the new sampling requirements may result in a low burden with regard to the community's overall financial capability and a low financial impact for most individual customers/households; therefore, the new permit requirements are affordable.

References

1. (A) 2022 MHI in 2022 Dollar: United States Census Bureau. 2018-2022 American Community Survey 5-Year Estimates, Table B19013: Median Household Income in the Past 12 Months (in 2022 Inflation-Adjusted Dollars). https://data.census.gov/cedsci/table?q=B19013&tid=ACSDT5Y2022.B19013.
   (B) 2000 MHI in 1999 Dollar: (1)For United States, United States Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-1 Part 1. United States Summary, Table 5. Work Status and Income in 1999: 2000, Washington, DC. https://www.census.gov/content/dam/Census/library/publications/2003/dec/phc-2-1-pt1.pdf.
   (2) For Missouri State, United States Census Bureau (2003) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-2-27, Missouri, Table 10. Work Status and Income in 1999: 2000, Washington, DC. https://www.census.gov/content/dam/Census/library/publications/2003/dec/phc-2-1-pt1.pdf.
   (C) 2023 CPI and 1999 CPI: U.S. Department of Labor Bureau of Labor Statistics (2023) Consumer Price Index - All Urban Consumers, U.S. City Average. All Items. 1982-84=100 (unadjusted) - CUUR0000SAO. https://data.bls.gov/cgi-bin/surveymost?bls.
   (D) 2022 MHI in 2023 Dollar = 2022 MHI in 2022 Dollar x 2023 CPI /2023 CPI; 2000 MHI in 2023 Dollar = 2000 MHI in 1999 Dollar x 2023 CPI /1999 CPI.
   (E) Percent Change in Median Household Income (2000-2022) = (2022 MHI in 2023 Dollar - 2000 MHI in 2023 Dollar) / (2000 MHI in 2023 Dollar).
2. ($2094/2188)/12 = $0.08 (Estimated Monthly User Cost for New Requirements)
3. ($0.08/($36,871/12))100% = 0.003% (New Sampling Only)
4. ($48.48/($36,871/12))100% = 1.578% (Total User Cost)
5. (A) Total Population in 2022: United States Census Bureau. 2018-2022 American Community Survey 5-Year Estimates, Table B01003: Total Population - Universe: Total Population. https://data.census.gov/cedsci/table?q=B01003&tid=ACSDT5Y2022.B01003.
   (B) For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC. https://www.census.gov/content/dam/Census/library/publications/2003/dec/phc-2-1-pt1.pdf.
   (2) For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC. https://www2.census.gov/library/publications/2003/dec/phc-2-1-pt2.pdf.
   (C) Percent Change in Population (2000-2022) = (Total Population in 2022 - Total Population in 2000) / (Total Population in 2000).
6. Median Age in 2022: United States Census Bureau. 2018-2022 American Community Survey 5-Year Estimates, Table B01002: Median Age by Sex - Universe: Total population. https://data.census.gov/cedsci/table?q=B01002&tid=ACSDT5Y2022.B01002.
   (B) For United States, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Social, Economic, and Housing Characteristics, PHC-1-1 Part 1. United States Summary, Table 1. Age and Sex: 2000, Washington, DC., Page 2. https://www.census.gov/content/dam/Census/library/publications/2003/dec/phc-2-1-pt1.pdf.
   (2) For Missouri State, United States Census Bureau (2002) 2000 Census of Population and Housing, Summary Population and Housing Characteristics, PHC-1-27, Missouri, Table 2. Age and Sex: 2000, Washington, DC., Pages 64-92. https://www2.census.gov/library/publications/2003/dec/phc-2-1-pt2.pdf.
   (C) Change in Median Age in Years (2000-2022) = (Median Age in 2022 - Median Age in 2000).
7. United States Census Bureau. 2018-2022 American Community Survey 5-Year Estimates, S2301: Employment Status for the Population 16 Years and Over - Universe: Population 16 years and Over. https://data.census.gov/cedsci/table?q=unemployment&tid=ACSST5Y2022.S2301.
8. United States Census Bureau. 2018-2022 American Community Survey 5-Year Estimates, Table S1701: Poverty Status in the Past 12 Months. https://data.census.gov/cedsci/table?q=S1701&tid=ACSST5Y2022.S1701.
9. United States Census Bureau. 2018-2022 American Community Survey 5-Year Estimates, Table S2201: Food Stamps/Supplemental Nutrition Assistance Program (SNAP) - Universe: Households. https://data.census.gov/cedsci/table?q=S2201&tid=ACSST5Y2022.S2201.

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: MDNR Project #: 6f009797b8fo

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: 3-27-23 ☐ 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
Salem WWTF PH2a Improvments

2.2 ESTIMATED PROJECT CONSTRUCTION COST
$ 5,050,000

2.3 PROJECT DESCRIPTION
Upgrades to existing Influent Pump Station, Oxidation Ditch aeration, Intermediate Pump Station, UV Disinfection and Sludge Dewatering processes. Construction of new chemical feed system for TP removal.

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
Accumulated biomass is stabilized via aerobic digestion and dewatered utilizing sludge reed beds/sludge bag dewatering system. Dewatered biosolids are land applied as a solid.

2.5 DESIGN INFORMATION

A. Current population: 4608 ; Design population: 1250

B. Actual Flow: 1.055 gpd; Design Average Flow: 1.25 gpd;
Actual Peak Daily Flow: 7.0 gpd; Design Maximum Daily Flow: _____ gpd; Design Wet Weather Event: 7.0

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	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Salem WWTF	573-729-6308	wwtp@salemmo.com

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
1/4 MI NW intersection Adelmann & Hwy19	Salem	MO	65560	Dent

Wastewater Treatment Facility: Mo- 0021768 (Outfall 1 Of 1)

3.1 Legal Description: _____ ¼, _____ ¼, _____ ¼, Sec. 12, T 43, R 6W
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): 628874 Northing (Y): 4168633
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: Spring Creek

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
City of Salem	573-729-4811	cityadministrator@salemmo.com

ADDRESS	CITY	STATE	ZIP CODE
400 N Iron St	Salem	MO	65560

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	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
City of Salem	573-729-4811	cityadministrator@salemmo.com

ADDRESS	CITY	STATE	ZIP CODE
400 N Iron St	Salem	MO	65560

5.1 A letter from the continuing authority, if different than the owner, is included with this application. ☐ YES ☐ NO ☑ 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? ☐ YES ☐ 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? ☐ YES ☐ 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? ☐ YES ☐ 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? ☐ YES ☐ NO

D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? ☐ YES ☐ NO

6.0 ENGINEER

ENGINEER NAME / COMPANY NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Kenneth Campbell / Archer-Elgin	573-364-6362	kcampbell@cmarcher.com

ADDRESS	CITY	STATE	ZIP CODE
310 E 6th St	Rolla	MO	65401

7.0 APPLICATION FEE

☐ CHECK NUMBER ☐ 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: Sally Burbridge

PRINTED NAME: Sally Burbridge

DATE: July 23, 24

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
City Administrator	573-729-4811	cityadministrator@salemmo.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.