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 Ozark Public Works Director
Elk Valley WWTF
205 N 1st St.
Ozark, MO 65721

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.

March 25, 2024
Effective Date

March 24, 2026
Expiration Date

John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Construction of a non-uniform earthen basin of approximately 600 ft by 150 ft for the purpose of wet weather flow equalization and the necessary manhole and piping required to connect to the Elk Valley WWTF headworks. The basin will be constructed adjacent to the existing treatment plant and will drain by gravity into the headworks lift station at Elk Valley. The City of Ozark has recently begun construction on the Finley River Force Main which will replace existing collection system force mains and connect directly to the Elk Valley plant. In times of wet weather, the collection system experiences heavy inflow and infiltration (I&I). To prevent washing the treatment plant out during heavy rainfall events, this basin will retain the flows until the plant has had time to process the wastewater.

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

II. COST ANALYSIS FOR COMPLIANCE

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

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

III. CONSTRUCTION PERMIT CONDITIONS

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

1. This construction permit does not authorize discharge.

2. All construction shall be consistent with plans and specifications signed and sealed by Tim Schowe, P.E. with Cochran 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 Southwest 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.

- 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).

- Facilities shall be readily accessible by authorized personnel from a public right–of-way at all times. 10 CSR 20-8.140 (2) (D).

- The wastewater treatment facility shall be located at least 50 feet from any dwelling or establishment. Lagoons-200 ft to residence and 50 ft to property line, Open RMFs- 200 ft to residence, Other discharging-50 ft to residence per 10 CSR 20-8.140(C)(2)

- 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)

- Lagoon berms shall be constructed of relatively impervious material and compacted to at least 95 percent maximum dry density test method to form a stable structure. 10 CSR 20-8.200(4)(A)1.

- The minimum berm width shall be eight feet to permit access of maintenance vehicles. 10 CSR 20-8.200(4)(A)2.

- Minimum freeboard shall be two feet. 10 CSR 20-8.200(4)(A)3.

- An emergency spillway shall be provided that—
    - Prevents the overtopping and cutting of berms; 10 CSR 20-8.200(4)(A)4.A.
    - Is compacted and vegetated or otherwise constructed to prevent erosion; 10 CSR 20-8.200(4)(A)4.B. and
    - Has the ability for a representative sample to be collected, if discharging. 10 CSR 20-8.200(4)(A)4.C.

- The soil of the lagoon bottom shall be compacted with the moisture content between 2 percent below and 4 percent above the optimum water content and compacted to at least ninety-five percent 95 percent maximum dry density test method. 10 CSR 20-8.200(4)(B)

- The lagoon shall be sealed to ensure that seepage loss is as low as possible and has a design permeability not exceeding 1.0 x 10^{-7} cm/sec. 10 CSR 20-8.200(4)(C)1.

- The minimum thickness of the compacted clay liner must be 12 inches. For permeability coefficients greater than 1.0 × 10^{-7} cm/sec or for heads over 5 feet such as an aerated lagoon system, the following formula shall be used to determine minimum seal thickness, Equation 200-1 per 10 CSR 20-8.200(4)(C)2.:

  Equation 200-1

$$t = \frac{H \times K}{5.4 \times 10^{-7\ \text{cm/sec}}}$$

  where:
  K = the permeability coefficient of the soil in question;
  H = the head of water in the lagoon; and
  t = the thickness of the soil seal.

- Seep collars shall be provided on drainpipes where they pass through the lagoon seal. 10 CSR 20-8.200(4)(C)4.

- Unlined corrugated metal pipe shall not be used for influent lines due to corrosion problems. 10 CSR 20-8.200 (4) (D) 1.

- A manhole shall be installed with its invert at least 6 inches above the maximum operating level of the lagoon, prior to the entrance into the primary cell, and provide sufficient hydraulic head without surcharging the manhole. 10 CSR 20-8.200 (4) (D) 2.

- The influent line(s) shall be located along the bottom of the lagoon so that the top of the pipe is just below the average elevation of the lagoon seal; however, there shall be an adequate seal below the pipe. 10 CSR 20-8.200 (4) (D) 3.

8. Upon completion of construction:

   A. The City of Ozark 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 enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the modified operating permit be issued. The facility has paid for their modification.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The Ozark City collection system experiences considerable flow spikes during wet weather, resulting in sanitary sewer overflows (SSOs) and plant overloading. This flow equalization basin will retain excess water collected from I&I during storm events until it can be properly treated by the Elk Valley WWTF.

2. FACILITY DESCRIPTION

Currently, there are several lift stations in Ozark that surcharge during times of heavy rainfall. By replacing these with the single Finley River Force main, the bulk of this surcharging will now be felt on the treatment plant at the end of the collection system. This earthen basin is to receive the spikes in wet weather flow and prevent the treatment plant from getting washed out due to high I&I. Wet weather flows can exceed 2.27 MGD currently, with higher expected in the future as the collection system is expanded. The plant is rated for a design flow of 1 MGD.

The Elk Valley WWTF is located at 205 N 1st St., City of Ozark, in Christian County, Missouri. The facility has a design average flow of 1 MGD and serves a hydraulic population equivalent of approximately 21,100 people based on their dry weather flows. The earthen basin will be constructed adjacent of the treatment plant and connect directly to the plant headworks. The Elk Valley influent lift station is at the low end of the basin so that water will drain by gravity black into the plant when capacity opens, and the basin can be filled by routing water via a valve box located along the forcemain that feeds into the plant headworks.

3. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

- Wet Weather Equalization Basin – Influent is pumped into the earthen basin by an existing pump station through an eighteen-inch force main. The influent lift station is rated for a maximum of 6,000,000 gpd. The lagoon surface is irregularly shaped, with an estimate area of ~2 acres and a total volume of 7,166,700 gallons (7.1667 MGD). The size was determined based on a 2020 flows study that estimated a maximum of 4 MG during the 1-in-100-year storm, plus additional capacity to ensure the basin is sized for future collection system expansion. The floor of the basin is not level to allow quick draining of the wet weather flows back into the plant, with the shallow end being 7 ft and the deep end being 16 ft from the top of berm. All sides meet the maximum 4:1 inner-berm side slope and the berm width is 12 feet across. The lagoon seal will be bentonite clay compacted to 95 percent proctor density with grass kept overtop to prevent weathering and cracking. In times of dry weather, the basin will be watered to keep grass alive and seal wetted. Water from the basin flows via gravity to an existing pump station that moves wastewater to the adjacent treatment plant. The bentonite seal is based on the depth of the basin with a maximum thickness of 2.4 feet and a minimum of 1 foot.

4. OPERATING PERMIT

These construction activities do not change the effluent limits or conditions of the current operating permit. The Department will conduct an internal modification to reflect the current facility description upon receipt of the Statement of Work Completed form. The operating permit modification fee of $200 was paid to the department.

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

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