

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Whispering Woods Subdivision
Gateway Drive and Reddings Road
Saginaw, MO 64804

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.

July 16, 2021
Effective Date


Edward B. Galbraith, Director, Division of Environmental Quality

July 15, 2023
Expiration Date


Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The Whispering Woods WWTF is located at the northeast corner of Gateway Drive and Reddings Road, Saginaw, in Newton County, Missouri. The facility has a design average flow of 27,010 gpd and serves a hydraulic population equivalent of approximately 270 people. The collection system for the facility will be a STEP system with each house having a 1500 gallon septic tank with pump and there will be approximately 7,000 lf of 2 or 3 inch PVC SDR26 forcemain to relay wastewater to the treatment facility. The recirculation tank has a water level depth of 7 ft for a wastewater volume of approximately 22,881 gallons. The concrete lined recirculating media filter is split into three filter beds with a common wall. Each filter bed is approximately 49 ft x 54ft x 4.5 ft deep each for a total surface area of 7,938 ft² which gives a total hydraulic loading of 3.4 gpd/ft² at design average flow. A low pressure high intensity UV non-contact disinfection system capable of treating a peak flow of 57,600 gpd per reactor.

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 complete a cost analysis for compliance because the facility is not a combined or separate sanitary sewer system for a publically-owned treatment works.

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 Gary Phillips of Phillips Engineering, LLC and Zachary Winters of Civen, Inc. 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. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.
6. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the one hundred- (100-) year flood elevation per 10 CSR 20-8.140(2)(B). The minimum distance between wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300') per 10 CSR 20-8.140(2)(C)1.
7. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of 1 acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the Department's ePermitting system available online at dnr.mo.gov/env/wpp/epermit/help.htm. See dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.
8. 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 dnr.mo.gov/env/wpp/401/ for more information.
9. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
 - Rain water from roofs, streets, and other areas and groundwater from foundation drains shall be excluded from all new sewers. 10 CSR 20-8.120 (2)

- Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140 (2) (D)
- Enclose the facility site with a fence designed to discourage the entrance of unauthorized persons and animals. 10 CSR 20-8.140 (8) (A)
- There shall be no physical connections between a public or private potable water supply system and a sewer or appurtenance that would permit the passage of any wastewater or polluted water into the potable supply. Sewers shall be laid at least fifty feet (50') in a horizontal direction from any existing or proposed public water supply well or other water supply sources or structures. Sewers must also comply with 10 CSR 23-3.010. 10 CSR 20-8.120 (5)
- Service connections to the sewer main shall be watertight and cannot protrude into the sewer. 10 CSR 20-8.120 (3) (C) 1.
- Locator wire must be utilized when sewer lines are installed within the public right-of-way in accordance with 319.033, RSMo. 10 CSR 20-8.125 (5) (A) 5.
- Appurtenances shall be compatible with the piping system and full bore with smooth interior surfaces to eliminate obstruction and keep friction loss to a minimum. 10 CSR 20-8.125 (5) (B)
 - Isolation valves shall be—
 - Comprised of resilient seated gate valve or ball valve with a position indicator;
 - Constructed from corrosion resistant materials; and
 - Enclosed in a watertight and lockable valve box.
 - Isolation valves shall be installed on—
 - The upstream side of major pipe intersections;
 - Both sides of stream, bridge, and railroad crossings, and unstable soil; and
 - The terminal end of the system to facilitate future extensions.
 - Proper support (e.g., crushed stone, concrete pads, or a well compacted trench bottom) shall be provided for valves so the weight of the valve not carried by the pipe.
- The minimum diameter service line pipe shall be one and one quarter inches (1.25"). 10 CSR 20-8.125 (5) (C)
- Water level controls must be accessible without entering the wet well. 10 CSR 20-8.130 (3) (C)
- 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)
- Electrical Equipment shall utilize corrosive resistant equipment located in the wet well. 10 CSR 20-8.130 (3) (B) 2. B.
- Electrical Equipment shall 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 electrical 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 (3) (B) 2. E.
- Install lightning and surge protection systems. 10 CSR 20-8.130 (3) (B) 2. F.
- Install a one hundred ten volt (110 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.
- The septic tank shall be baffled. 10 CSR 20-8.180 (2) (B)
- Septic tank design shall provide at least one (1) septic tank to serve each EDU. 10 CSR 20-8.125 (6) (D) 1.
- Septic tank design shall provide at least one thousand (1,000) gallons capacity. 10 CSR 20-8.125 (6) (D) 2.
- 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)
- Water level controls must be accessible without entering the wet well. 10 CSR 20-8.130 (3) (C)
- 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)
- Electrical Equipment shall utilize corrosive resistant equipment located in the wet well. 10 CSR 20-8.130 (3) (B) 2. B.
- Electrical Equipment shall 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 electrical 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 (3) (B) 2. E.
- Provisions must be made for periods of mechanical or power failure. 10 CSR 20-8.125 (6) (F) 6.
- The minimum diameter for Septic Tank Effluent Gravity (STEG) sewer main pipe shall not be less than four inches (4"). 10 CSR 20-8.125 (7) (A) 1.
- When manholes are utilized at major junctions of sewer mains,
 - Manholes shall be installed—10 CSR 20-8.120 (4) (A)
 - At the end of each line;
 - At all changes in grade, size, or alignment;
 - At all sewer pipe intersections; and
 - At distances appropriate to allow for sufficient cleaning and maintenance of sewer lines.

- A drop pipe shall be provided for a sewer entering a manhole at an elevation of twenty-four inches (24") or more above the manhole invert. 10 CSR 20-8.120 (4) (B) 1.
- When using precast manholes, drop connections must not enter the manhole at a joint. 10 CSR 20-8.120 (4) (B) 2.
- The minimum diameter of manholes shall be forty-two inches (42") on eight-inch (8") diameter gravity sewer lines and forty-eight inches (48") on all sewer lines larger than eight inches (8") in diameter. A minimum access diameter of twenty-two inches (22") (56 cm) shall be provided. Cleanouts shall be a minimum of eight inches (8") for pipes eight inches (8") in diameter or larger and equal to the diameter for pipes less than eight inches (8"). 10 CSR 20-8.120 (4) (C)
- No sewer, service connection, or drop manhole pipe shall discharge onto the surface of the manhole bench. 10 CSR 20-8.120 (4) (D)
- Manholes shall be watertight, constructed, and installed in accordance with the manufacturer's recommendations and procedures. 10 CSR 20-8.120 (4) (E)
- 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.
- The minimum diameter service line pipe shall be one and one quarter inches (1.25") for pressure sewers. 10 CSR 20-8.125 (7) (C) and 10 CSR 20-8.125 (5) (C)
- The diameter of STEG service line pipe shall not be less than four inches (4"). 10 CSR 20-8.125 (7) (C) 1.
- When existing on-site septic tanks are proposed for reuse in an alternative sewer system, they must be inspected and verified watertight prior to acceptance. 10 CSR 20-8.125 (6) (E)
- A pressure sewer system discharging to a downstream STEP or STEG sewer system shall not be permitted, as effluent sewers are not designed to carry settleable solids and grease. 10 CSR 20-8.125 (8)
- Multiple pumps shall be provided except for design average flows of less than fifteen hundred (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
 - 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 weather proof 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 one hundred ten volt (110 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)
- Interconnection between the wet well and dry well ventilation systems is not acceptable 10 CSR 20-8.130 (3) (F)
- 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)
- 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).
- 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.
- 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 (2') per second. 10 CSR 20-8.130 (8) (A)

- 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 one hundred- (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 (300'). 10 CSR 20-8.140 (2) (C) 1.
- Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140 (2) (D)
- 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 twenty-four (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 #001). 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.
- 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 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)

- 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)
 - 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)
- All connections (flanged or other type), except those adjacent to storage or feeder areas, shall have guards that will direct any leakage away from space occupied by facility personnel. 10 CSR 20-8.140 (9) (A) 4. B.
- 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)
- 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)
- A septic tank must have a minimum capacity of at least one thousand (1,000) gallons. 10 CSR 20-8.180 (2) (A)
- The septic tank shall be baffled. 10 CSR 20-8.180 (2) (B)
- A minimum of two (2) recirculating media filter beds and a diversion box are required for all design flows. 10 CSR 20-8.180 (3) (B)

- Dosing. Both timer and float switch controls are required; timers are the primary method of operation and the float switch control is a back-up. 10 CSR 20-8.180 (3) (C)
- The media is any of a number of physical structures whose sole purpose is to provide a surface to support biological growth. Commonly used media includes rock, gravel, and sand of various sizes, textile media, and peat. Finely crushed limestone, dolomite, slag, any clay, limestone, or appreciable amounts of organic material is not acceptable. 10 CSR 20-8.180 (3) (E)
- 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.
- 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 thirty thousand microwatt seconds per centimeters squared ($30,000 \mu\text{W} \cdot \text{s}/\text{cm}^2$). 10 CSR 20-8.190 (5) (A) 4.
- 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.

10. Upon completion of construction:

- A. Whispering Woods Homeowner's Association will become the continuing authority for operation and maintenance of these facilities;
- B. Submit an electronic copy of the as built's 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) with the operating permit fee of \$1,500 and the request that the operating permit be issued.

IV. REVIEW SUMMARY

1. FACILITY DESCRIPTION

The Whispering Woods WWTF is located at the northeast corner of Gateway Drive and Reddings Road, Saginaw, in Newton County, Missouri. The facility has a design average flow of 27,010 gpd and serves a hydraulic population equivalent of approximately 270 people. The facility will serve approximately 73 houses. The facility proposes to construct a recirculating media filter bed with ultraviolet disinfection.

The facility's collection system includes septic tank effluent pump system with approximately 7,000 lf of forcemain and a 1,500 gallon septic tank per house.

2. COMPLIANCE PARAMETERS

The proposed project is required to meet the requirements of MOGD Table F with an expiration date of June 30, 2024. The limits following the completion of construction will be applicable to the facility:

Parameter	Units	Monthly average limit
Biochemical Oxygen Demand ₅	mg/L	10
Total Suspended Solids	mg/L	10
Ammonia as N-summer	mg/L	0.6
Ammonia as N-winter	mg/L	2.1
pH	SU	6.5-9.0
Total Residual Chlorine	µg/L	8 (130 ML)
<i>E. coli</i>	#/100mL	126

3. ANTIDEGRADATION

The Department has reviewed the antidegradation report for this facility and issued the Water Quality and Antidegradation Review dated March 22, 2021, due to being a new discharging facility. The facility is covered under the General Antidegradation Review,

https://dnr.mo.gov/env/wpp/permits/docs/departments_alternatives_analysis_general_antideg_for_less_than_50000_gpd_20190326.pdf

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Construction will cover the following items:

- STEP system- Septic Tank – A septic tank provides passive primary treatment as the settleable solids in raw wastewater settle onto the bottom of the tank. Raw wastewater will flow from each house into a 1500 gallon septic tank
 - The septic tanks provide approximately 4 days of detention at design average flow, 370 gpd per house.
 - Settled solids in the septic tank shall be removed by a contract hauler.
 - There will be a OSI Effluent Pump P1000311 with a filter cartridge.
 - The effluent pumps to be used in all of the tanks are rated at 5 gpm at 177 ft head
 - The wastewater shall discharge into the collection system.
 - There will be audiovisual alarms on the septic tanks and pumps to notify when service is needed.
- Installation of approximately 6,520 lf of 2 inch and 400 lf of 3 inch PVC SDR-26 forcemain with 8 automatic air release valves.

- Recirculation Tank – Construction of one recirculation tank to pump primary treated wastewater to the recirculating media filter. The recirculation tank is 23.68 ft x 19.34 ft x 8 ft deep with a water level depth of 7 ft for a wastewater volume of approximately 22,881 gallons. The tank has 3 compartments. Effective flow equalization volume of 245 gallons between the low water level and the high water “on” level. The recirculation tank has 6 – 0.75 HP submersible pumps – each capable of 50 gpm at 50 ft TDH.
 - The pumps transfer wastewater to the recirculation splitter valve, Orenco MM4-FRV, which will split flow between the 3 filter beds by means of a 1 ½ -inch PVC distribution manifold which splits the flow into 1-inch PVC laterals
- Recirculating Media Filter – The concrete lined recirculating media filter is split into three filter beds with a common wall. Each filter bed is approximately 49 ft x 54 ft x 4.5 ft deep each for a total surface area of 7,938 ft² which gives a total hydraulic loading of 3.4 gpd/ft² at design average flow.
 - The bottom of the filter bed has 30 mil PVC liner with 2 inches of leveling sand.
 - Each filter bed is served by an automatic distribution valve to serve one of the 6 zones per bed with 4 laterals per zone, for each filter bed having 24 laterals, and a total of 72 laterals overall.
 - The 1-inch PVC laterals spaced 2-ft apart with 26-1/8 -inch shielded orifices per lateral. The laterals are located in the center of the top 6-inch layer of 1/2-inch pea gravel, with 4 inches over the laterals.
 - The filter media layer is 2.5 ft deep containing media with an effective size of 1 mm to 3 mm and a uniformity coefficient less than 3.
 - The underdrain layer has a 4-inch layer of ¼ to 3/8 -inch pea gravel on top of an 12-inch layer of 1-inch to 1 ½ -inch gravel. With uniformity coefficient less than 2.0.
 - Each filter bed contains 5 underdrains comprised of 4-inch slotted PVC piping with approximate 2-ft spacing.
- Disinfection – Disinfection is the process of removal, deactivation, or killing of pathogenic microorganisms.
 - A low pressure high intensity UV disinfection system capable of treating a peak flow of 57,600 gpd per reactor while delivering a minimum UV intensity of 30 mJ/cm² with an expected ultraviolet transmissivity of 85% or greater. The enclosed UV system consists of 1 lamp per reactor. UV reactors are arranged in parallel.
- Emergency Power – A 10 kW Generac standby generator will be provided to operate the treatment facility in event of power failure.

5. OPERATING PERMIT

After completion of construction project submit: statement of work completed, as-built if the project was not constructed in accordance with previously submitted plans and specifications, and ensure that Application Form B, and fee has been submitted. Missouri State Operating Permit, General Permit MO-GD, will be issued after receipt

of the above documents. The facility must submit their initial operating permit fee of \$1,500.

The Whispering Woods Homeowners Association must be registered and in good standing with the Missouri Secretary of State's Office prior to issuance of the operating permit, if it will be operating as the continuing authority.

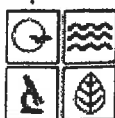
V. NOTICE OF RIGHT TO APPEAL

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, EI
Engineering Section
leasue.meyers@dnr.mo.gov

Cailie Carlile, P.E.
Engineering Section
cailie.carlile@dnr.mo.gov



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

RECEIVED

APR 07 2021

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
\$1000.00	CHECK NO. 3887
DATE RECEIVED	4-7-21

Water Protection Program

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: _____ Project #: _____
- 1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
 YES Date of Approval: MARCH 22, 2021 N/A
- 1.3 Has the department approved the proposed project's facility plan*?
 YES Date of Approval: _____ NO (If No, complete No. 1.4.)
- 1.4 [Complete only if answered No on No. 1.3.] Is a copy of the facility plan* for wastewater treatment facilities included with this application?
 YES NO Exempt because _____
- 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 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 <u>WHISPERING WOODS, SUB-DIVISION</u>	2.2 ESTIMATED PROJECT CONSTRUCTION COST \$
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2.3 PROJECT DESCRIPTION
RECIRCULATING SAND FILTER SYSTEM.

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
TANK HANDLED AS SOLID.

2.5 DESIGN INFORMATION

A. Current population: 270; Design population: 270

B. Actual Flow: 27,010 gpd; Design Average Flow: 27,010 gpd;
 Actual Peak Daily Flow: 151,000 gpd; Design Maximum Daily Flow: 151,000 gpd; Design Wet Weather Event: 105 GPH

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 WHISPERING WOODS SUB-DIVISION		TELEPHONE NUMBER WITH AREA CODE 417-206-2400	E-MAIL ADDRESS MOLANDCO@JOPLIN.COM	
ADDRESS (PHYSICAL) 2300 E. 7TH ST. (GATEWAY 4 REDDING)		CITY JOPLIN (SABINAW)	STATE MO	ZIP CODE 64804
Wastewater Treatment Facility: Mo- (Outfall Of)				
3.1 Legal Description: _____ 1/4, _____ 1/4, _____ 1/4, Sec. _____, T _____, R _____ SEE MAP ATTACHED. (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): _____ Northing (Y): _____ For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: _____				

4.0 PROJECT OWNER

NAME MOLANDCO INC.		TELEPHONE NUMBER WITH AREA CODE 417-206-2400	E-MAIL ADDRESS MOLANDCO@JOPLIN.COM	
ADDRESS 2300 E. 7TH ST.		CITY JOPLIN	STATE MO	ZIP CODE 64801

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 WHISPERING WOODS HOMEOWNERS ASSO.		TELEPHONE NUMBER WITH AREA CODE 417-782-1234	E-MAIL ADDRESS	
ADDRESS 2300 E. 7TH ST.		CITY JOPLIN	STATE MO	ZIP CODE 64801

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 GARY PHILLIPS (DESEASED) ZAC WINTERS		TELEPHONE NUMBER WITH AREA CODE DESEASED	E-MAIL ADDRESS	
ADDRESS _____		CITY _____	STATE _____	ZIP CODE _____

7.0 APPLICATION FEE

CHECK NUMBER **3887** 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
CHARLES ALLYN BURT

TITLE OR CORPORATE POSITION
PRESIDENT (MOLANDCO INC.)

TELEPHONE NUMBER WITH AREA CODE
417-437-3185

E-MAIL ADDRESS
ALLYN BURT@CHARLES BURT.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.