STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

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

Robert Brake
JRB Holdings, LLC
3514 Gratoit Street
St. Louis, MO 63103

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 31, 2020
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

July 30, 2022
Expiration Date

Chris Wieberg, Director, Water Protection Program
CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Modification to an existing wastewater treatment facility by the replacement of chlorine disinfection with ultraviolet disinfection. Installation of an Aquaazul Model PVC-2R, enclosed ultraviolet disinfection unit, having a peak capacity of 25 gpm (36,000 GPD), and all the necessary appurtenances to make the facilities complete and usable to treat the effluent from an existing three cell lagoon wastewater treatment plant, with a design average daily discharge of 12,040 gallons. The existing outfall will remain in use. This facility discharges to Antire Creek, Jefferson County, Missouri.

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, P.E.; Phillips Engineering, LLC and as described in this permit.
3. The Department must be contacted in writing prior to making any changes to the plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(11).

4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the Department’s St. Louis Regional Office per 10 CSR 20-7.015(9)(G).

5. 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.

6. 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.

7. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the Department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of jurisdictional waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the Department’s Water Protection Program at 573-751-1300 for more information. See dnr.mo.gov/env/wpp/401/ for more information.

8. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.

- 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.

- Closed Vessel systems. The combination of the total number of closed vessels shall be capable of treating the design peak hourly flow, maximum rate of pumpage, or peak batch flow. 10 CSR 20-8.190 (5) (B) 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.
  - 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.

- 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)
  - Appropriate personal protective equipment (PPE); 10 CSR 20-8.140 (8) (E)
  - 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)

9. Upon completion of construction:

A. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications; and

B. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N). When the facility applies for their next operating permit renewal, they will be expected to include an updated facility description on their application.
IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The owner of this facility has opted to replace the existing tablet chorination disinfection system with an Ultraviolet disinfection system.

2. FACILITY DESCRIPTION

The existing wastewater treatment facility consists of a three cell lagoon, tablet chlorination, and tablet dechlorination. This project will replace the chlorination system with UV disinfection, the design flow will not change.

The JRB Holdings, LLC Wastewater Treatment Facility is located at Laurel Drive, High Ridge, in Jefferson County, Missouri. The facility has a design average flow of 12,120 gpd and serves an organic population equivalent of approximately 162 people.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits of 206 #/100 ml. of E. Coli as established in Operating Permit MO-0086347.

The following limits are applicable to the facility:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Monthly average limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemical Oxygen Demand</td>
<td>mg/L</td>
<td>45</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>mg/L</td>
<td>80</td>
</tr>
<tr>
<td>Ammonia as N-summer *</td>
<td>mg/L</td>
<td>1.4</td>
</tr>
<tr>
<td>Ammonia as N-winter *</td>
<td>mg/L</td>
<td>2.9</td>
</tr>
<tr>
<td>pH</td>
<td>SU</td>
<td>min 6.5</td>
</tr>
<tr>
<td>Total Residual Chlorine</td>
<td>µg/L</td>
<td>8 (130 ML)</td>
</tr>
<tr>
<td>E. Coli</td>
<td>#/100mL</td>
<td>206</td>
</tr>
</tbody>
</table>

*Ammonia limits become effective April 1, 2022

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Construction is only intended to change the method of disinfection. It is not intended to aid in the treatment of ammonia.

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

- The existing facility is three cell lagoon. The system is designed to treat a flow of 12,120 GPD and an organic population equivalent of 162.
Construction will cover the following items:

- **Disinfection** – Disinfection is the process of removal, deactivation, or killing or pathogenic microorganisms.
- **Closed Vessel Ultraviolet (UV)** – A closed vessel, gravity flow, low pressure high output UV disinfection system capable of treating a peak flow of 36,000 gpd while delivering a minimum UV intensity of 30 mJ/cm² with an expected ultraviolet transmissivity of 85% or greater. The closed vessel UV system consists of one lamp per reactor. One closed vessel UV reactor will be provided. The effluent flows by gravity through ultraviolet disinfection, disinfected flow goes by gravity to Outfall No. 001. Aquaazul Model PVC-2R.
- An emergency electrical generator is available at existing treatment plant.

5. **OPERATING PERMIT**

These construction activities do not require a modification to the operating permit. It is expected that the facility owner will include a new facility description and process flow diagram in their next operating permit renewal application to reflect the installation of a UV Disinfection system.

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](https://ahc.mo.gov)

Andrew Appelbaum, P.E.  
Engineering Section  
andy.appelbaum@dnr.mo.gov
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER FACILITY

APPLICATION OVERVIEW
The Application for Construction Permit – Wastewater Facility form is for construction pertaining to domestic wastewater treatment facilities, agrichemical facilities, and components thereof. This 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.)

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>N/A</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Is this a Federal/State funded project?</td>
<td>☑</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1.2 Is this an application for an agrichemical?</td>
<td>☑</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1.3 Has the Missouri Department of Natural Resources approved the proposed project’s antidegradation review?</td>
<td>☑</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1.4 Has the department approved the proposed project’s facility plan*?</td>
<td>☑</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1.5 Is a copy of the engineering report* for wastewater treatment facilities with a design flow less than 22,500 gpd included with this application?</td>
<td>☑</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1.6 Is a copy of the appropriate plans* and specifications* included with this application?</td>
<td>☑</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1.7 Is a summary of design* included with this application?</td>
<td>☑</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1.8 Is a general operating permit applicable?</td>
<td>☑</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1.9 Is the facility currently under enforcement with the department or the Environmental Protection Agency?</td>
<td>☑</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

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

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT
Laurel Acres Mobile Home Park

2.2 PROJECT DESCRIPTION
Addition of Ultraviolet disinfection treatment system to the existing facility.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
N/A

2.4 DESIGN INFORMATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current population:</td>
<td>50 sites</td>
</tr>
<tr>
<td>Design population:</td>
<td>162</td>
</tr>
<tr>
<td>Actual Flow:</td>
<td>8,100 gpd</td>
</tr>
<tr>
<td>Design Average Flow:</td>
<td>12,120 gpd</td>
</tr>
<tr>
<td>Design Maximum Daily Flow:</td>
<td></td>
</tr>
<tr>
<td>Design Wet Weather Event:</td>
<td></td>
</tr>
</tbody>
</table>

2.5 ADDITIONAL INFORMATION

A. Is a topographic map attached? ☑ YES ☑ NO

B. Is a process flow diagram attached? ☑ YES ☑ NO

2.6 ESTIMATED PROJECT CONSTRUCTION COST
$ 8,000.00
3.0 WASTEWATER TREATMENT FACILITY

NAME: Laurel Acres Mobile Home Park WWTF
TELEPHONE NUMBER WITH AREA CODE: (314) 581-7933
EMAIL ADDRESS: rbrake@brakelandscaping.com

ADDRESS (PHYSICAL):
Laurel Drive
CITY: High Ridge
STATE: MO
ZIP CODE: 63049
COUNTY: Jefferson

Wastewater Treatment Facility: Mo-0086347 (Outfall 1 Of 1)

3.1 Legal Description: ¼, ¼, ¼, Sec. 10, T 43, R 4E
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates
Easting (X): 712423
Northing (Y): 4262397
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: Tributary to Antire Creek

4.0 PROJECT OWNER

NAME: Robert Brake
TELEPHONE NUMBER WITH AREA CODE: (314) 581-7933
EMAIL ADDRESS: rbrake@brakelandscaping.com

ADDRESS:
3514 Gratoit Street
CITY: St. Louis
STATE: MO
ZIP CODE: 63103

5.0 CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system.

NAME: JRB Holdings LLC, Robert Brake
TELEPHONE NUMBER WITH AREA CODE: (314) 581-7933
EMAIL ADDRESS: rbrake@brakelandscaping.com

ADDRESS:
3514 Gratoit Street
CITY: St. Louis
STATE: MO
ZIP CODE: 63103

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 V. Phillips / Phillips Engineering LLC
TELEPHONE NUMBER WITH AREA CODE: (660) 351-1910
EMAIL ADDRESS: gphillips@wcieng.com

ADDRESS: 2300 West Osage Street, Suite 1
CITY: Pacific
STATE: MO
ZIP CODE: 63069

7.0 PROJECT OWNER: I hereby certify that I am familiar with the information contained in this application and to the best of my knowledge and belief such information is true, complete, and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders, and decisions, subject to any legitimate appeal available to applicant under Missouri Clean Water Law. I also understand the issuance of the construction permit does not guarantee the proposed wastewater treatment will meet the required effluent limitations of the Issued Missouri State Operating Permit for this facility.

PROJECT OWNER SIGNATURE: [Signature]

PRINTED NAME: Robert Brake
TITLE OR CORPORATE POSITION: Managing Member
TELEPHONE NUMBER WITH AREA CODE: 314-581-7933
EMAIL ADDRESS: Manager@JRB- Holdings.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.

MO 780-2189 (12-15)