STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

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

Colin Franklin, Pastor
Our Lady Help of Christians Catholic Church, Frankenstein
1665 Highway C
Bonnots Mill, MO 65016-2106

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.

September 20, 2022
Effective Date

September 19, 2024
Expiration Date

Chris Wieberg, Director, Water Protection Program
CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Construction shall include approximately 90 feet of 4-in Schedule 40 PVC pipe, a dual compartment septic/pump tank, a disc filter/flow meter assembly, and a drip dispersal system, to supplement an existing 6,000-gal septic tank.

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

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 Thomas Gredell, P.E., with GREDELL Engineering Resources, 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 Central Field Operations Regional Office per 10 CSR 20-7.015(9)(G).

5. The completed project shall be field tested to verify actual pumped volume of each dose. The timer controls shall be set to ensure a dosing rate not to exceed the allowable rate of 0.1 gallons per square foot per day.

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.

7. 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.

8. 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 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.

- No treatment unit with a capacity of twenty-two thousand five hundred gallons per day (22,500 gpd) or less shall be located closer than the minimum distance of 50 ft to a neighboring residence for all other discharging facilities. See 10 CSR 20-2.010(68) for the definition of a residence. 10 CSR 20-8.140(2)(C)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)

- 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.

- 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.
• 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:
  o 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)
  o Appropriate personal protective equipment (PPE); 10 CSR 20-8.140(8)(E)

• All wastewater treatment facilities must have a screening device, comminutor, or septic tank for the purpose of removing debris and nuisance materials from the influent wastewater. 10 CSR 20-8.150(2)

• Grease interceptors shall be provided on kitchen drain lines from institutions, hospitals, hotels, restaurants, schools, bars, cafeterias, clubs, and other establishments from which relatively large amounts of grease may be discharged to a wastewater treatment facility owned by the grease producing entity. Grease interceptors are typically constructed from fiberglass reinforced polyester, high density polyethylene (HDPE), or concrete. For corrugated HDPE grease interceptors, follow ASTM F2649 – 14 *Standard Specification for Corrugated High Density Polyethylene (HDPE) Grease Interceptor Tanks*, as approved and published September 1, 2014. For precast concrete grease interceptor tanks, follow ASTM C1613 – 17 *Standard Specification for Precast Concrete Grease Interceptor Tanks*, as approved and published September 1, 2017. 10 CSR 20-8.150(3)

• Subsurface systems shall—
  o Exclude unstabilized fill and soils that have been highly compacted and/or disturbed, such as old road beds, foundations, or similar things; 10 CSR 20-8.200(7)(A)1.A.
  o Provide adequate surface drainage where slopes are less than two percent (2%); 10 CSR 20-8.200(7)(A)1.B.
  o Provide surface and subsurface water diversion where necessary, such as a curtain or perimeter drain; 10 CSR 20-8.200(7)(A)1.C. and
  o Have a ten foot (10') buffer from the property line. 10 CSR 20-8.200(7)(A)1.D.

• The vertical separation between the bottom of the drip lines and/or the trench and a limiting layer, including but not limited to, bedrock; restrictive horizon; or seasonal high water table, shall be no less than:
  o Twenty-four inches (24’’); 10 CSR 20-8.200(7)(A)2.A. or
  o Twelve inches (12’’) for systems dispersing secondary or higher quality effluent; 10 CSR 20-8.200(7)(A)2.B. or
  o Forty-eight inches (48’’) where karst features are present unless the site can be reclassified. 10 CSR 20-8.200(7)(A)2.C.

• Subsurface systems shall be, at a minimum, preceded by preliminary treatment. 10 CSR 20-8.200(7)(B)

• Loading rates shall not exceed the values assigned by the site and soil evaluation. 10 CSR 20-8.200(7)(C)

• The location and size of the drains and buffers must be factored into the total area required for the drip dispersal system. 10 CSR 20-8.200(9)(A)1.
• The drip dispersal lines shall be placed at a minimum depth of six inches (6") below the surface. 10 CSR 20-8.200(9)(B)1.
• Emitters and drip dispersal lines shall be placed at a minimum on a two foot (2') spacing to achieve even distribution of the wastewater and maximum utilization of the soil. 10 CSR 20-8.200(9)(B)2.
• Filtration systems shall have:
  o Convenient access to all components and the media surface for inspection and maintenance without taking other units out of service; 10 CSR 20-8.210(3)(B)1.A.
  o Enclosed controls and heating and ventilation equipment to control humidity; 10 CSR 20-8.210(3)(B)1.B. and
  o The capacity to process the design average flow to the filters with the largest unit out of service utilizing a minimum of two (2) units. 10 CSR 20-8.210(3)(B)1.C.
• The media for cloth/disc filters shall:
  o Follow the manufacturer’s recommendations; 10 CSR 20-8.210(3)(E)1.B.
  o Be chemical-resistant if the filter will be exposed to chemicals, such as chlorine or disinfectants. 10 CSR 20-8.210(3)(E)1.C.
• Filtration Rates and Hydraulics for cloth/disc filters shall be able to treat the design flow rate with one (1) filter unit in backwash mode. 10 CSR 20-8.210(3)(E)2.B.

9. Upon completion of construction:

A. Our Lady Help of Christians Catholic Church, Frankinstein will become the continuing authority for operation and maintenance of these facilities;

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

C. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and submit a Form B - Application for an Operating Permit for Domestic or Municipal Wastewater (≤100,000 gallons per day) and $150 fee to the Engineering Section of the Water Protection Program 60 days prior to operation. Identify that the application is for a General permit for land application of domestic wastewater, MO-G823. [https://dnr.mo.gov/document-search/form-b-application-operating-permit-facilities-receive-primarily-domestic-waste-have-design-flow-less-or-equal-100000-gallons-day-mo-780-1512](https://dnr.mo.gov/document-search/form-b-application-operating-permit-facilities-receive-primarily-domestic-waste-have-design-flow-less-or-equal-100000-gallons-day-mo-780-1512) and [https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155](https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155).

IV. REVIEW SUMMARY

1. **CONSTRUCTION PURPOSE**

The permittee wants to replace their wastewater treatment system to improve treatment and allow for two large annual events that would potentially generate flows up to 5,060 gallons per event.
2. **FACILITY DESCRIPTION**

This facility currently includes a 6,000-gallon septic tank that discharges. Construction shall include routing the existing discharge pipe to a new dual compartment tank (500-gal septic, 1,000-gal pump tank), followed by a disc filter assembly, then a 4,000-square foot drip distribution area with 2,000 feet of drip line.

The Our Lady Help of Christians Catholic Church, Frankenstein WWTF is located at 1665 Highway C, Bonnots Mill (in unincorporated Frankenstein), in Osage County, Missouri. The facility has a design average flow of 400 gpd, a design peak of 6,000 gpd, and serves a hydraulic population equivalent of approximately 40 people.

3. **COMPLIANCE PARAMETERS**

The permittee must register as a Class V injection well. See https://dnr.mo.gov/document-search/class-v-well-inventory-form-mo-780-1774.

Sludge removal must be reported to the regional office on the Form S:
Form S, Section 4 - https://dnr.mo.gov/document-search/form-s-section-4-sludge-hauling-mo-780-2900

4. **REVIEW of MAJOR TREATMENT DESIGN CRITERIA**

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

- Septic tank – 6,000-gallon capacity. The existing septic tank will be pumped out prior to large annual events, in order to provide flow equalization capacity.

Construction will cover the following items:

- Rerouting the existing discharge pipe using approximately 90 feet of 4-inch Schedule 40 PVC.

- Dual 1,500-gal septic-pump tank – A concrete tank with 500-gal septic chamber with effluent filter and 1,000-gal pump tank with a single pump capable of at least 15 gpm against a TDH of 210 ft. The concrete tank is approximately 12 ft by 4 ft and 59” tall.

- Subsurface Soil Dispersal System – The soils at this site are rated for 0.1 gpd/ft². Soil morphology review was conducted during the facility plan review, and onsite soils were determined to be acceptable for this system. The soil investigation was completed by Travis Doll, Certified Soil Scientist with GREDELL Engineering Resources, on August 11, 2020.
  - Soils Report. In the soils investigation, there were two pits dug over the proposed site. Soil test pit #2 had a surface soil that was described as silt loam
with an application rating of 0.10 gpd/ft² between 17 and 37 inches. However, the report described a shallow irregular sandstone bedrock as a limiting layer on a portion of the proposed application site. The soils report recommended a minimum 12 in of loamy soil be added to the original, scarified ground surface to maintain a 1-ft vertical separation from an irregular sandstone bedrock. The construction specifications stated that a minimum 24 inches of vertical separation must be maintained between the drip tubing and the limiting layer.

- Hydraulic loading rate used in the design was conservative at 0.1 gpd/ft². A dual disc filtration unit with flow meter will proceed the application area. The manifold shall be 1.25” supply lines and ½” ID GeoFlow lines installed at least 8-in deep.
- Drip distribution system – The facility has selected the NetAFIM subsurface drip dispersal system. The system will dose one zone at 0.1 gpd/ft², which requires up to 12 dosings per day. Two combo air/vacuum release valves will be installed. The drip field area is 4,000 ft² (0.0918 acres) and contains 2,000 linear feet of ½-in tubing fitted with emitters every 2 ft and capable of a loading at peak flow of less than 0.10 gpd/ft².
- Imported Soil - The facility will have to import up to 150 cubic yards of soil, which must be approved by the engineer before placement, and shall be sandy loam, silt loam, loam, or loamy sand as described by the USDA. Soil placement shall meet the requirements of the NetAFIM design recommendations for importing soils.
  - Specifications for placement of the fill during construction require (a) ensuring the soil to be dry and (b) minimizing soil compaction.

- Flow Measurement – Installation of accurate flow measurement devices will give the treatment facility a means of improved data analysis.
  - The ASD15 dual filtration unit kit includes a mechanical flow meter rated for at least 15 gpm, which will be used to document flow as needed.

- Emergency Power –The design includes freeboard capacity for daily flow variations inside the pump tank for normal daily operation. If the facilities do not have power for an extended amount of time, the engineer stated they will not hold events and would cancel school during that time. Therefore, there would be minimal to no flow into the system during power outages. During extended power outages, the permittee will plan to borrow a generator from one of several parishoners to run the system. The minimum generator required will be 240 V, 10 A (minimum 2.4 kW) 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 plans if the project was not constructed in accordance with previously submitted plans and specifications, and ensure that Application Form B, and $150 annual fee has been submitted. Missouri State Operating Permit, General Permit MO-G823xxx, will be issued after receipt of the above documents.
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

Scott Adams, P.E.
Engineering Section
scott.adams@dnr.mo.gov
APPENDIX

- Process Flow Diagram

Notes:
1. Large events potentially produce more than 3000 gpd.
2. Prior to large events, the existing septic tank will be pumped to maximize available storage.
3. Existing septic tank stores large event volume and equalizes system flow to 350 gpd (avg.) or less.
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:  
☑ N/A  

1.3 Has the department approved the proposed project’s facility plan??  
☑ YES  Date of Approval: 4/22/22   ☑ N/A  (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:  
☑ 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**

OWTS for Our Lady of Help Christians Catholic Church, Frankenstein  

2.2 **ESTIMATED PROJECT CONSTRUCTION COST**  
$65,000

2.3 **PROJECT DESCRIPTION**

Subsurface drip irrigation onsite wastewater treatment system for the school and outbuildings at the Our Lady Help of Christians Catholic Church, Frankenstein.

2.4 **SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION**

N/A

2.5 **DESIGN INFORMATION**

A. Current population: N/A;  Design population: N/A

B. Actual Flow: 350 gpd;  Design Average Flow: 400 gpd;  
Actual Peak Daily Flow: 5060 gpd;  Design Maximum Daily Flow: 6000 gpd;  Design Wet Weather Event: N/A

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: Our Lady Help of Christians Catholic Church, Frankenst�in
PHONE NUMBER WITH AREA CODE: (573) 897-2587
E-MAIL ADDRESS: olohc@hotmail.com
ADDRESS (PHYSICAL): 1665 Highway C
CITY: Bonnots Mill
STATE: MO
ZIP CODE: 65016
COUNTY: Osage

Wastewater Treatment Facility: Mo- (Outfall Of )

3.1 Legal Description: ___ ¼, SW ¼, SW ¼, Sec. 12 __ T 44N, R 3W
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): 510519. Northing (Y): 4284444

3.3 Name of receiving streams: N/A

4.0 PROJECT OWNER

NAME: Our Lady Help of Christians Catholic Church, Frankenst�in
PHONE NUMBER WITH AREA CODE: (573) 897-2587
E-MAIL ADDRESS: olohc@hotmail.com
ADDRESS: 1665 Highway C
CITY: Bonnots Mill
STATE: MO
ZIP CODE: 65016

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: Same as above
PHONE NUMBER WITH AREA CODE: 
E-MAIL ADDRESS: olhc@hotmail.com
ADDRESS: 1665 Highway C
CITY: Bonnots Mill
STATE: MO
ZIP CODE: 65016

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: GREDELL Engineering Resources, Inc.
PHONE NUMBER WITH AREA CODE: (573) 659-9078
E-MAIL ADDRESS: tomg@ger-inc.biz
ADDRESS: 1505 East High Street
CITY: Jefferson City
STATE: MO
ZIP CODE: 65101

7.0 APPLICATION FEE

CHECK NUMBER: 10912
PAY CONFIRMATION NUMBERS

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 knowingly violating.

PROJECT OWNER SIGNATURE

PRINTED NAME

DATE

8/11/22

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.