

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Show Me Christian Youth Home
24302 Mahin Road
LaMonte, MO 65337

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.

November 6, 2018
Effective Date

November 5, 2020
Revised Date


Edward B. Galbraith, Director, Division of Environmental Quality

November 5, 2021
Expiration Date


Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Conversion of an existing three cell lagoon to a no-discharge wastewater treatment system. Minor lagoon modifications to include raising berms and reestablishing slopes. A lift station (lagoon to absorption field), two 1.0 HP submersible effluent pumps (Orenco Model PF501012, or equal) for dosing absorption field, each with a capacity of approximately 50 GPM at a TDH of 75 feet, coarse screen filter pump vault, two supply force mains each approximately 180 feet of 1.5 inch PVC force main, LPP (low-pressure pipe) soil absorption system with an absorption area of 27,800 square feet, separated into ten zones; and all the necessary appurtenances to make the facilities complete and usable to treat the waste from a population equivalent of 70 with an average daily dry weather flow of 3,500 gallons, and wet weather flow of 4,000 gpd. This is a non-discharging facility to be located in the SW1/4, of the NW 1/4, of Section 23, T46N, R23W, Pettis 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.

approximate locations:

Drainfield location	UTM (zone 15)	X=461385, Y=4286950
Lagoon location	UTM (zone 15)	X=461400, Y=4287030
Emergency outfall location:	UTM (zone 15)	X=461422, Y=4287002

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 in accordance with the plans and specifications submitted by Phillips Engineering, LLC on May 16, 2018, and October 25, 2018.
3. 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 0.15 gallons per square foot per day.
4. The Department must be contacted in writing prior to making any changes to the approved 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(8).
5. 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 Kansas City Regional Office per 10 CSR 20-7.015(9)(E)2.
6. Wastewater treatment facility shall not be located within one hundred feet (100'), and preferably three hundred feet (300') of any water well or water supply structure.
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 (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.

9. Upon completion of construction:
 - A. Submit an electronic copy of the as built's if the project was not constructed in accordance with previously submitted plans and specifications;
 - B. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(D); and
 - C. Submit a Form B - Application for an Operating Permit for Domestic or Municipal Wastewater ($\leq 100,000$ gallons per day) to the Engineering Section of the Water Protection Program 90 days prior to operation. Identify that the application is for a General permit for land application of domestic wastewater, MO-G823. This will be for the transfer of the Operating Permit from MO-0122823 to a General Permit. There is no fee associated with the submission of this application for this purpose. Annual fees will continue to be assessed.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

Current lagoon discharge frequently exceeds ammonia limits in operating permit. Proposed upgrade will eliminate the discharge.

2. FACILITY DESCRIPTION

Existing facility is a three cell lagoon with a design flow of 4000 gpd. Proposed facility will include a lift station with timed dosing and a LPP (low pressure pipe) soil absorption system. The improvements will eliminate the discharge. The design flow will remain at 4000 gpd.

The Show-Me Christian Youth Home WWTF is located at 24302 Mahin Road, City of LaMonte, in Pettis County, Missouri. The facility has a design average flow of 4000 gpd and serves an organic population equivalent of approximately 40.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet the requirements of MOG823xxx Table B and Table C, and all applicable conditions, with an expiration date of August 24, 2022. Table B reporting parameters are: lagoon freeboard once/month; and precipitation daily. Table C sampling and reporting parameters are required if there is a discharge from the emergency overflow outfall; parameters are: flow, Biochemical Oxygen Demand, Total Suspended Solids, Total Ammonia, pH, and E-Coli.

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

The design flow is based on serving future youth home population of 70 persons. Based on historic water use the design flow is set at approximately 50 gallons per person. The first lagoon cell has a surface area of approximately 9523 sq. ft., the second cell has a surface area of approximately 8257 sq. ft.; the third cell has a surface area of approximately 1620 sq. ft.; annual precipitation from the wettest 1 in 10 year (54 inches) minus evaporation (38 inches) is assumed to be 16 inches. The amount of extra water from the 1 in 10 wettest year is approximately 193,500 gallons (or 530 gpd). Dry weather design flow is 3500 gpd; wet weather design flow is 4000 gpd.

The lagoon berms of cells two and three will be raised approximately 1.5 feet and generally reworked. Water level will be increased by 1.0 foot in all cells, additional capacity will be approximately 145,000 gallons; this will provide more time for treatment and volume for flow equalization if needed. The top of the new lift station wet well will be at the same level as the top of the lagoon berm. The emergency overflow pipe will be the existing outfall pipe in the third cell adjusted to discharge at an elevation one foot below the top of the reworked berm.

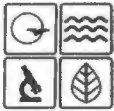
The lift station will be fitted with an Orenco pump vault with a course screen, Model PVU84-2419; and two effluent pumps, Orenco Model PF501012, each pump with a capacity of approximately 50 gpm at a TDH of 75 feet. A separate force main from each pump, approximately 180 feet of 1.5-inch pvc force main connected to a 5-outlet distribution valve. Manifold pipe from the distribution valve to the distribution laterals will be 1.5 inch pvc. Each zone to have laterals, spaced 5 feet on center. Distribution laterals will be 1.0 inch pvc placed inside EZflow bundles. Bundles are 12 inch diameter with a 4 inch perforated pipe inside offset above the center; to be installed in trenches approximately 18 inches deep. Timer will control dosing of water to the field. Each zone to be dosed approximately 4 minutes, 2 times per day.

Absorption field to be in excess of 27,000 sq. ft. with 10 zones; 8 of the zones will have eight laterals, 70 feet in length, spaced five feet on center; 2 of the zones will have nine laterals 60 feet in length, spaced five feet on center; the irrigation pipe will be 1.0 inch pvc with a 5/32-inch hole every eight feet. Absorption field size is based on a soil loading rate of 0.15 gallons per square foot per day. A perimeter drain will be installed along the upslope portion of the absorption field; set back will be at least 10 feet away from the absorption field. Detailed soil analysis was performed by Mr. Timothy O. Knoernschild, Soil Scientist. The loading rate is in accordance with the recommended rates in the soil report.

5. OPERATING PERMIT

After completion of construction project submit: statement of work completed, as-built, and Application Form B. Missouri State Operating Permit MO-0107298 will be terminated and replaced with MSOP General Permit MO-G823xxx, after receipt of the above documents.

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



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

RECEIVED

APPLICATION FOR CONSTRUCTION PERMIT –
WASTEWATER FACILITY

Water Protection Program

AP 29909
CP0001996

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED \$1000	CHECK NO. 1414
DATE RECEIVED 5-15-18	28.

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.)

- 1.1 Is this a Federal/State funded project? ☐ YES ☒ N/A Funding Agency: _____ Project #: _____
- 1.2 Is this an application for an agrichemical? ☐ YES (See instructions.) ☒ N/A
- 1.3 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
☐ YES Date of Approval: N/A
- 1.4 Has the department approved the proposed project's facility plan*?
☐ YES Date of Approval: _____ ☐ NO ☒ N/A (If Not Applicable, complete No. 1.5.)
- 1.5 [Complete only if answered Not Applicable on No. 1.4] Is a copy of the engineering report* for wastewater treatment facilities with a design flow less than 22,500 gpd included with this application?
☒ YES ☐ NO
- 1.6 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
- 1.7 Is a summary of design* included with this application? ☐ YES ☒ NO
- 1.8 Is a general operating permit applicable?
☐ YES Submit the appropriate operating permit application to the Regional Office at least 60 days prior to operation.
☒ NO Enclose the appropriate operating permit application and fee submittal. Denote which form: ☐ B ☐ B2
- 1.9 Is the facility currently under enforcement with the department or the Environmental Protection Agency? ☐ YES ☒ NO
- 1.10 Is the appropriate fee included with this application? ☒ YES ☐ NO (See instructions for appropriate fee.)

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

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT

Show Me Christian Youth Home

2.2 PROJECT DESCRIPTION

Conversion of a point discharge from a 3-cell lagoon treatment facility to a LPP subsurface effluent disposal system.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

Sludge is treated and stored in the lagoon cells and hauled off when required.

2.4 DESIGN INFORMATION

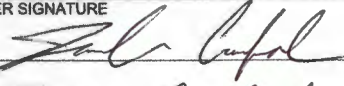
- A. Current population: 28; Design population: 38
- B. Actual Flow: _____ gpd; Design Average Flow: _____ gpd;
Actual Peak Daily Flow: _____ gpd; Design Maximum Daily Flow: 3,828 gpd;
Design Wet Weather Event: 10 year

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

\$ 135,000.00

3.0 WASTEWATER TREATMENT FACILITY				
NAME Show-Me Christian Youth Home		TELEPHONE NUMBER WITH AREA CODE (660) 347-5982		EMAIL ADDRESS jacob.crawford@showmekids.org
ADDRESS (PHYSICAL) 243024 Mahin Road		CITY LaMonte	STATE MO	ZIP CODE 65337 COUNTY Pettis
Wastewater Treatment Facility: Mo- (Outfall 1 Of 1)				
3.1 Legal Description: 1/4, SW 1/4, NW 1/4, Sec. 34, T 46 N, R 23 W (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): 461422 Northing (Y): 4286998 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: Tributary to Long Branch				
4.0 PROJECT OWNER				
NAME Show-Me Christian Youth Home		TELEPHONE NUMBER WITH AREA CODE (660) 347-5982		EMAIL ADDRESS jacob.crawford@showmekids.org
ADDRESS 24302 Mahin Road		CITY LaMonte	STATE MO	ZIP CODE 65337
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 Owner		TELEPHONE NUMBER WITH AREA CODE		EMAIL ADDRESS
ADDRESS		CITY	STATE	ZIP CODE
5.1 A letter from the continuing authority, if different than the owner, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> 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? <input type="checkbox"/> YES <input type="checkbox"/> 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? <input type="checkbox"/> YES <input type="checkbox"/> 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? <input type="checkbox"/> YES <input type="checkbox"/> 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? <input type="checkbox"/> YES <input type="checkbox"/> NO				
D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? <input type="checkbox"/> YES <input type="checkbox"/> 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 				
PRINTED NAME Jacob Crawford			DATE 10 May 2018	
TITLE OR CORPORATE POSITION Facility Manager		TELEPHONE NUMBER WITH AREA CODE 660 347 5982		EMAIL ADDRESS Jacob.Crawford@showmekids.org
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.				