

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Kingston K-14 School District
10047 Diamond Road
Cadet, MO 63630

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (Department).

As the department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

March 23, 2015
Effective Date

Sara Parker Pauley
Sara Parker Pauley, Director, Department of Natural Resources

March 22, 2017
Expiration Date

John Madras
John Madras, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The Kingston K-14 School District (SD) proposes to upgrade its wastewater treatment facility number one (WWTF no. 1) so that it will “treat the sewage and produce effluent that will meet the current permit requirements.” This is to be accomplished by converting septic tanks currently used as dosing tanks to conventional flow through septic tanks (two tanks in parallel) with effluent filters (Zabel Polylok Septic Tank Filters). The existing flow through sand filter will be converted to a recirculating sand filter (RSF). A third tank (i.e., 5,000 gallons) will be used as the recirculating tank. The pumping and dosing package will be a Clarus/Zoeler system with two submersible turbine effluent pumps. The sand filter will consist of two 560 square foot cells. An AquaPoint Bioclere treatment system will be installed to treat the effluent from the RSF. The Bioclere unit is intended to enhance nitrification in the facility. A tablet chlorinator currently used will be replaced with an ultraviolet (UV) system (Aquaazul model PVC-4R-HO-MW).

The Kingston K-14 SD wastewater treatment facility number 2 (WWTF no. 2) will not undergo an upgrade at this time that constitutes construction. Repairs have been made to the existing system and the school district intends to enter into a contract for operations, maintenance, and monitoring of WWTF no. 2.

II. FINDING OF AFFORDABILITY

The Finding of Affordability is not applicable. The permittee is not a combined or separate sanitary sewer system or a publicly 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 McCaul/McCaul & Associates received on December 23, 2014.
3. 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).
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 SE Regional Office per 10 CSR 20-7.015(9)(E)2.
5. This construction permit is invalid for projects required to comply with the requirements contained in 10 CSR 20-4, “Grants and Loans”

6. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(10). “There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole.”
7. Sewers in relation to water works structures shall meet the requirements of 10 CSR 23-3.010 with respect to minimum distances from public water supply wells or other water supply sources and structures.
 - A. Sewer mains shall be laid at least 10 feet horizontally from any existing or proposed water main. The distances shall be measured edge-to-edge. In cases where it is not practical to maintain a 10 foot separation, the department may allow a deviation on a case-by-case basis, if supported by data from the design engineer. Such a deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on either side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer. If it is impossible to obtain proper horizontal and vertical separation as described above for sewers, the sewer must be constructed of slip-on or mechanical joint pipe or continuously encased and be pressure tested to 150 pounds per square inch to assure water tightness.
 - B. Manholes should be located at least 10 feet horizontally from any existing or proposed water main.
 - C. Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade. When it is impossible to obtain proper vertical separation as stipulated above, one of the following methods must be specified:
 - a. The sewer shall be designed and constructed equal to the water pipe and shall be pressure tested to assure water tightness prior to backfilling; or
 - b. Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the department for use in water main construction.
8. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the department’s ePermitting system available online at www.dnr.mo.gov/env/wpp/epermit/help.htm. See www.dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.

9. 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
10. 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 www.dnr.mo.gov/env/wpp/401/ for more information.
11. A full closure plan shall be submitted to the department's SE Regional Office for review and approval of any permitted wastewater treatment system being replaced. In accordance with 10 CSR 20-6.010(12), the closure plan must meet the requirements outlined in Standard Conditions Part III of the Missouri State Operating Permit No. MO- 0087921. Closure shall not commence until the submitted closure plan is approved by the department. Form J – Request for Termination of a State Operating Permit, shall be submitted to the Water Protection Program for termination of any existing Missouri state operating permit, once closure is completed in accordance with the approved closure plan.
12. Upon completion of construction;
 - A. The Kingston K-14 School District will become the continuing authority for operation, maintenance, and modernization of these facilities;
 - B. Submit the enclosed form Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(D);
 - C. Submit an electronic copy of the “as built” drawings if the project was not constructed in accordance with previously submitted plans and specifications; and
 - D. Form B - Application for an Operating Permit for Domestic or Municipal Wastewater along with the modification fee.

IV. REVIEW SUMMARY

1. AMMONIA

The Water Protection Program is providing this notice to inform permittees that EPA's published ammonia criteria for aquatic life protection is lower than the current Missouri criteria. The department has initiated stakeholder discussions on this topic and at this time, there is no firm target date for starting the rulemaking to adopt new standards. More information can be found at <http://dnr.mo.gov/pubs/pub2481.pdf> .

The permittee's consulting engineer is aware of EPA's published ammonia criteria and provided a commentary in the engineering report submitted with the construction permit application on the additional treatment that will be required when EPA's standard is adopted.

2. CONSTRUCTION PURPOSE

The purpose of the proposed construction is to improve nitrification in the WWTF to enable the facility to meet the ammonia effluent limitations specified in the Missouri state operating permit. This was required with a schedule of compliance in the operating permit.

3. FACILITY DESCRIPTION

The existing WWTF No. 1 will be upgraded to improve treatment efficiency and enhance nitrification. This will be accomplished by converting septic tanks currently used as dosing tanks to conventional flow through septic tanks (two tanks in parallel) with effluent filters (Zabel Polylok Septic Tank Filters). A third tank (i.e., 5,000 gallons) will be used as the recirculating tank. The existing flow through sand filter will be converted to a recirculating sand filter (RSF). The pumping and dosing package will be a Clarus/Zoeler system with two submersible turbine effluent pumps. The sand filter will consist of two 560 square foot cells. An AquaPoint Bioclere treatment system will be installed to treat the effluent from the RSF. The Bioclere unit is intended to enhance nitrification in the facility. A tablet chlorinator currently used will be replaced with an ultraviolet (UV) system (Aquaazul model PVC-4R-HO-MW).

4. COMPLIANCE PARAMETERS

This project is intended to help the facility meet ammonia limits.

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Rules developed by the department, Chapter 8 – Design Guides, do not provide specific design criteria for ammonia removal (i.e., nitrification) in wastewater treatment facilities. Attached growth biological treatment systems have historically been used for wastewater treatment and can achieve nitrification when operated and managed properly. These systems work best when most of the BOD has been removed because heterotrophic populations compete for oxygen and space on the media. The addition of the Bioclere unit should enhance nitrification by mirroring a biological aerated filter (BAF) with BOD removal taking place in the RSF and oxidation of ammonia taking place at the Bioclere unit.

The UV disinfection unit is designed to insure the contact chamber UV dose is at least 30,000 $\mu\text{W}\cdot\text{s}/\text{cm}^2$ as specified in *Recommend Standards for Wastewater Facilities* (i.e., “10 States Standards”). The existing treatment facility is capable of pretreating wastewater so that the UV Unit will provide at least 65% ultraviolet radiation transmittance at 254 nanometers wave length. The UV disinfection system is equipped with a visual and audible alarm for lamp failure. There will be two units in parallel (each valved to control flow), each with a peak flow capacity of 50 gallons per minute (each adequate to manage peak flows for the facility).

6. OPERATING PERMIT MODIFICATION

Operating Permit MO-0087921 will require a modification to reflect the construction activities. Upon construction completion, submit a modification fee and Form B - Application for an Operating Permit for Domestic or Municipal Wastewater ($\leq 100,000$ gallons per day).

Stephen P. Busch, P.E.
Engineering Section
steve.busch@dnr.mo.gov

APPENDICES

- **Operating Permit**

RECEIVED

AP19806
CP0001690



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

**APPLICATION FOR CONSTRUCTION PERMIT -
WASTEWATER TREATMENT FACILITY**

OCT 14 2014

WATER PROTECTION PROGRAM

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED	CHECK NO.
DATE RECEIVED	

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: _____
 Attached is the No Degradation Evaluation Conclusion of Antidegradation Review form
 - 1.3 Has the department approved the proposed project's facility plan*?
 YES Date of Approval: _____ NO N/A (If Not Applicable, complete No. 1.4.)
 - 1.4 [Complete only if answered Not Applicable on No. 1.3.] 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
 - 1.5 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: 7/03
 Enclosed is the appropriate operating permit application submittal. Denote which form: A B B2
 N/A Please explain: _____
 - 1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency? YES NO
 - 1.9 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
Kingston K-14 School District WWTF No. 1 - Operating Permit MO-0087921

2.2 PROJECT DESCRIPTION
Two septic tanks (3500 gallon & 5000 Gallon); 1122 sqft recirculating sand filter; 5250 gallon recirculating tank; dual turbine pumps each with a capacity of 58.1 gpm at a TDH of 38.7 ft; a duplex STEP system with multi zone valve and 80/20 splitter; controls; and an ultra violet disinfecting system.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
By certified contract hauler.

2.4 DESIGN INFORMATION
A. Current population: 438; Design population: 500
B. Actual Flow: 3293 gpd; Design Average Flow: 3500 gpd;
Actual Peak Daily Flow: 3000 gpd; Design Maximum Daily Flow: 7000 gpd

2.5 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 Kingston K-14 School District WWTF No. 1		TELEPHONE NUMBER WITH AREA CODE 573-438-4982		E-MAIL ADDRESS	
ADDRESS (PHYSICAL) 10047 Diamond Road	CITY Cadet	STATE MO	ZIP CODE 63630	COUNTY Washington001	
Wastewater Treatment Facility: Mo- (Outfall 001 Of 2)					
3.1 Legal Description: _____ ¼, _____ ¼, _____ ¼, Sec. 31, T 39N, R 3E (Use additional pages if construction of more than one outfall is proposed.)					
3.2 UTM Coordinates Easting (X): ^{15697648E} Northing (Y): ^{4215731N} For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)					
3.3 Name of receiving streams: <u>Old Mines</u>					

4.0 PROJECT OWNER

NAME Kingston K-14 School District		TELEPHONE NUMBER WITH AREA CODE (573) 438-4982		E-MAIL ADDRESS	
ADDRESS 10047 Diamond Road	CITY Cadet	STATE MO	ZIP CODE 63630		

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 SAME		TELEPHONE NUMBER WITH AREA CODE		E-MAIL ADDRESS	
ADDRESS	CITY	STATE	ZIP CODE		

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.

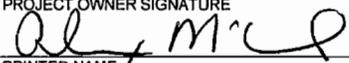
A. Is a copy of the certificate of convenience and necessity included with this application? YES NO

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 NOB. 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 NOC. 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 NOD. 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 James F. McCaul, III / McCaul/McCaul & Associates		TELEPHONE NUMBER WITH AREA CODE (573) 438-5405		E-MAIL ADDRESS mccaulmccaul@centurytel.net	
ADDRESS 104 North Water street	CITY Potosi	STATE MO	ZIP CODE 63664		

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
Alex McCaulDATE
09/29/2014TITLE OR CORPORATE POSITION
Interim SuperintendentTELEPHONE NUMBER WITH AREA CODE
(573) 438-4982E-MAIL ADDRESS
mccaul.alex@kingston.K-12.mo.us

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.**