

**STATE OF MISSOURI**  
**DEPARTMENT OF NATURAL RESOURCES**

MISSOURI CLEAN WATER COMMISSION



**CONSTRUCTION PERMIT**

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

Scott Brothers Construction  
52651 Norwoods Place  
Hannibal, MO 63401

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.

October 10, 2014  
Effective Date

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

October 9, 2016  
Expiration Date

John Madras  
John Madras, Director, Water Protection Program

## **CONSTRUCTION PERMIT**

### **I. CONSTRUCTION DESCRIPTION**

This project includes construction and installation of one ultraviolet disinfection module, Model AT 1500 by Norweco or equivalent, capable of providing continuous disinfection for a peak effluent flow of six gallons per minute (8,640 gallons per day) from the facility's existing recirculating sand filter. The proposed closed chamber UV unit will have one bulb; a spare module (including spare bulb and ballast) will be kept on hand. The UV system will be checked weekly when in operation to ensure proper operation. Provisions will be made to connect a portable generator to run the UV equipment in the event of a power outage. The UV system will be installed in the existing outfall line, which discharges to a tributary to Bear Creek.

### **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 Klingner and Associates, P.C. on July 22, 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 Northeast 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 ten 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 ten 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 ten 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 ten 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](http://www.dnr.mo.gov/env/wpp/epermit/help.htm). See [www.dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm](http://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 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/](http://www.dnr.mo.gov/env/wpp/401/) for more information.

10. Upon completion of construction;
  - A. Public Water Supply District #1 of Ralls County 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 if the project was not constructed in accordance with previously submitted plans and specifications; and
  - D. 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. 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>.

Outfall #001 is a no-discharge lagoon and therefore does not have to meet ammonia effluent limits. The existing operating permit includes a schedule of compliance for Outfall #002, the recirculating sand filter, to meet final ammonia effluent limits by September 1, 2014.

This project addresses the existing schedule of compliance for *E. coli* while the owner determines options for a no-discharge treatment system to handle the ammonia compliance schedule at the facility.

##### **2. CONSTRUCTION PURPOSE**

The existing operating permit includes a schedule of compliance for Outfall #002, the recirculating sand filter, to meet final *E. coli* effluent limits of 206 #/100 mL monthly average and 1030 #/100 mL daily maximum by January 1, 2014.

##### **3. FACILITY DESCRIPTION**

This is an existing facility with two outfalls and a STEP pressure collection system. Outfall #001 is a single-cell no discharge lagoon with spray irrigation to a golf course driving range for a design flow of 6,512 gallons per day (actual flow given in the existing operating permit is 2,065 gpd). Outfall #002 is a recirculating sand filter to treat a design flow of 4,856 gallons per day (actual flow given in the existing operating permit is 186 gpd). This project will include installation of a new ultraviolet disinfection system for Outfall #002 to meet seasonal *E. coli* effluent limits.

#### **4. COMPLIANCE PARAMETERS**

This project will enable the facility to meet final seasonal *E. coli* effluent limits of 206 #/100 mL monthly average and 1030 #/100 mL daily maximum which became effective January 1, 2014.

#### **5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA**

The peak hourly design flow of 8,640 gpd (6 gpm) is based on 20% of the recirculation pump capacity being discharged.

The UV radiation dosage at peak hourly flow after adjustments for energy absorption losses is 40,000 micro-watt seconds/cm<sup>2</sup> at 254 nanometers. The design UV transmittance is 65%. Five UV transmittance tests were completed between August 27, 2014 and September 24, 2014 and range from 66% to 74% with an average of 71%.

The UV system will have an alarm that triggers if the unit loses power or the lamp burns out. The bulb will be replaced after every disinfection season to prevent the possibility of it burning out in the middle of the disinfection season. Also, the UV system will be checked weekly when in operation to ensure that it is operating properly.

Although it is not a requirement today, the Water Protection Program is currently working on a rulemaking which would require an alarm system that would activate if the relative UV intensity of the original lamp output of the system were reduced to less than forty-five percent (45%) (See the "Rulemaking Developments" section at <http://dnr.mo.gov/env/wpp/cwforum/chapter8workgroup.htm> for a copy of the 10 CSR 20-8.190 Disinfection Draft Rule). Therefore, we continue to encourage installation of a UV disinfection system which is capable of measuring and displaying UV intensity and activating an alarm if necessary in order to avoid a potential increase in effluent monitoring frequency.

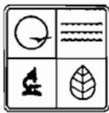
Since it is not a requirement today, and the equipment proposed cannot provide the above mentioned UV intensity alarming, the owner has decided to pass on installing it at this time. They believe that since this is a temporary solution, they should not spend money on trying to add equipment for something that is not a specific requirement at this time. They plan on getting rid of this system and going with a no-discharge system by the time the above mentioned rule passes.

#### **6. OPERATING PERMIT MODIFICATION**

It is expected that the facility owner will include a new facility description in their next operating permit renewal application to reflect the installation of an ultraviolet disinfection system.

Review Engineer: Cailie Carlile, E.I.  
Unit Chief Approval: Cindy LePage, P.E.  
Date: 09/26/2014  
[Cailie.Carlile@dnr.mo.gov](mailto:Cailie.Carlile@dnr.mo.gov)

JUL 22 2014



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM, WATER POLLUTION BRANCH  
**FORM B – APPLICATION FOR CONSTRUCTION OR OPERATING PERMIT FOR FACILITIES WHICH RECEIVE PRIMARILY DOMESTIC WASTE (≤100,000 gallons per day) UNDER MISSOURI CLEAN WATER LAW**

FOR AGENCY USE ONLY	
CHECK NUMBER	5613
DATE RECEIVED	7/22/14
FEE SUBMITTED	\$750.00

SB

**NOTE ▶ PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM**

1. This application is for:

- An operating permit and antidegradation review public notice.
- A construction permit following an appropriate operating permit and antidegradation review public notice.
- A construction permit and a concurrent operating permit and antidegradation review public notice.
- A construction permit (submitted before Aug. 30, 2008 or antidegradation review is not required).
- An operating permit for a new or unpermitted facility. Construction Permit # \_\_\_\_\_
- An operating permit renewal: Permit #MO-\_\_\_\_\_. Expiration Date \_\_\_\_\_
- An operating permit modification: Permit #MO-\_\_\_\_\_. Reason: \_\_\_\_\_

1.1 Is this a Federal/State Funded Project?  YES  NO Funding Agency/Project #: \_\_\_\_\_

1.2 Is the appropriate fee included with the application (See instructions for appropriate fee)?  YES  NO

**2. FACILITY (Outfall 002 of 002 )**

NAME Norwoods Subdivision Wastewater Treatment Facility		TELEPHONE WITH AREA CODE (573) 221-6615	
ADDRESS (PHYSICAL) 52608 Norwoods Place	CITY Hannibal	STATE MO	ZIP CODE 63401

2.1 LEGAL DESCRIPTION: NE ¼, NW ¼, NE ¼, Sec. 5, T 56, R 5W Ralls County

2.2 UTM Coordinates Easting (X): +39684 Northing (Y): -091478  
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Unnamed Tributary to Bear Creek

**3. OWNER**

NAME Scott Brothers Construction		E-MAIL ADDRESS	TELEPHONE WITH AREA CODE (573) 221-1240
ADDRESS 52651 Norwoods Place	CITY Hannibal	STATE MO	ZIP CODE 63401

3.1 Request review of draft permit prior to Public Notice?  YES  NO

**4. CONTINUING AUTHORITY: Permanent organization which will serve as the continuing authority for the operation, maintenance and modernization of the facility.**

NAME Same as above		TELEPHONE WITH AREA CODE	
ADDRESS Same as above	CITY	STATE	ZIP CODE

**5. OPERATOR**

NAME Steve McDowell	CERTIFICATE NUMBER	TELEPHONE WITH AREA CODE (573) 221-6615
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**6. FACILITY CONTACT**

NAME Steve McDowell	TITLE Local Manager	TELEPHONE WITH AREA CODE (573) 221-6615
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**7.0 ADDITIONAL FACILITY INFORMATION**

7.1 Description of facilities (Attach additional sheet if required). Attach a 1" = 2,000' scale U.S. Geological Survey topographic map showing location of all outfalls and downstream landowners. (See Item 9.)

7.2 Facility SIC code: 4952 ; Discharge SIC code: 4952 ; Facility NAICS code: \_\_\_\_\_ ; Discharge NAICS code: \_\_\_\_\_.

7.3 Number of people presently connected or population equivalent (P.E.) 59.8 Design P.E. 129.  
Number of units presently connected: Homes 26 Trailers \_\_\_\_\_ Apartments 0 Other 0  
Design flow for this outfall: 6512 Total design flow for the facility: 6512 Actual flow for this outfall: 2065  
Commercial Establishment: Daily number of employees working 0 Daily number of customers/guests 0

7.4 Length of pipe in the sewer collection system? 1 feet/miles (Please denote which unit is appropriate.)

7.5 Does any bypassing occur in the collection system or at the treatment facility?  Yes  No (If yes, attach explanation.)

7.6 Does significant infiltration occur in the collection system?  Yes  No (If yes, attach explanation and proposed repair.)

7.7 Is industrial waste discharged to the facility identified in Item 2?  Yes  No (If yes, see instructions.)

7.8 Will the discharge be continuous through the year?  Yes  No  
a. Discharge will occur during the following months: all  
b. How many days of the week will the discharge occur? all

7.9 Is wastewater land applied?  Yes  No (If yes, attach Form I.)

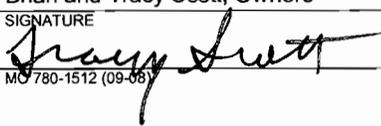
7.10 Will chlorine be added to the effluent?  Yes  No  
a. If chlorine is added, what is the resulting residual? \_\_\_\_\_ µg/l (micrograms per liter)

7.11 Does this facility discharge to a losing stream or sinkhole?  Yes  No

7.12 Attach a flow chart showing all influents, treatment facilities and outfalls.

7.13 Has a waste load allocation study been completed for this facility?  Yes  No

7.14 List all permit violations, including effluent limit exceedances in the last five years. Attach a separate sheet if necessary.  
If none, write none. None

<b>8. SLUDGE HANDLING, USE AND DISPOSAL</b>			
8.1	Is the sludge a hazardous waste as defined by 10 CSR 25? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
8.2	Sludge Production, including sludge received from others: 0 Design Dry Tons/Year 0 Actual Dry Tons/Year		
8.3	Capacity of sludge holding structures: Sludge storage provided: _____ cubic feet; _____ days of storage; _____ average percent solids of sludge; <input checked="" type="checkbox"/> No sludge storage is provided.		
8.4	Type of Storage:	<input type="checkbox"/> Holding tank <input type="checkbox"/> Basin <input type="checkbox"/> Concrete Pad	<input type="checkbox"/> Building <input checked="" type="checkbox"/> Other (Please describe) <u>septic tanks</u>
8.5	Sludge Treatment:	<input type="checkbox"/> Anaerobic Digester <input type="checkbox"/> Storage Tank <input type="checkbox"/> Lime Stabilization	<input type="checkbox"/> Lagoon <input type="checkbox"/> Aerobic Digester <input type="checkbox"/> Air or Heat Drying <input type="checkbox"/> Composting <input type="checkbox"/> Other (Attach description)
8.6	Sludge Use or Disposal:	<input type="checkbox"/> Land Application <input type="checkbox"/> Contract Hauler <input checked="" type="checkbox"/> Hauled to Another Treatment Facility <input type="checkbox"/> Solid Waste Landfill	
		<input type="checkbox"/> Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years) <input type="checkbox"/> Incineration <input type="checkbox"/> Sludge Retained in Wastewater treatment lagoon <input type="checkbox"/> Other _____ Attach explanation sheet.	
8.7	<b>PERSON RESPONSIBLE FOR HAULING SLUDGE TO DISPOSAL FACILITY</b>		
	<input type="checkbox"/> By Applicant <input checked="" type="checkbox"/> By Others (complete below)		
NAME Individual home owners are responsible for getting sludge out of septic tanks by use of a contract hauler			
ADDRESS		CITY	STATE    ZIP CODE
CONTACT PERSON		TELEPHONE WITH AREA CODE	PERMIT NO. MO-
<b>8.8 SLUDGE USE OR DISPOSAL FACILITY</b>			
	<input type="checkbox"/> By Applicant <input checked="" type="checkbox"/> By Others (Please complete below.)		
NAME City of Hannibal WWTP			
ADDRESS 700 S. Arch Street		CITY Hannibal	STATE    ZIP CODE MO        63401
CONTACT PERSON Heath Hall		TELEPHONE WITH AREA CODE 573-221-8050	PERMIT NO. MO- 0093512
8.9	Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Please attach explanation)		
<b>9. DOWNSTREAM LANDOWNER (S). ATTACH ADDITIONAL SHEETS AS NECESSARY. SEE INSTRUCTIONS.</b>			
NAME Donald Atkins			
ADDRESS 8141 Co. Rd 418		CITY Hannibal	STATE    ZIP CODE MO        63401
<b>10. DRINKING WATER SUPPLY INFORMATION</b>			
10.1	WHAT IS THE SOURCE OF YOUR DRINKING WATER SUPPLY: A. Public supply (municipal or water district water) <u>water dist.</u> If public, please give name of the public supply <u>Ralls PWSD</u> B. Private well _____ C. Surface water (lake, pond or stream) _____		
10.2	Does your drinking water source serve at least 25 people at least 60 days per year (not necessarily consecutive days)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
10.3	Does your supply serve housing which is occupied year round by the same people? This does not include housing which is occupied seasonally? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
11.	I certify that I am familiar with the information contained in the application, that 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 the Missouri Clean Water Law.		
NAME AND OFFICIAL TITLE (TYPE OR PRINT) Brian and Tracy Scott, Owners		TELEPHONE WITH AREA CODE (573) 248-5906	
SIGNATURE 		DATE SIGNED	