



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

www.dnr.mo.gov

August 12, 2016

Mr. Sam Burt, City Administrator
City of Seymour
123 Market Street
P.O. Box 247
Seymour, MO 65746

RE: S-502-15 City of Seymour, MO – UV Disinfection Conversion, Seymour Wastewater Treatment Facility, MO-0022985, Construction Permit No. CP0001855

Dear Mr. Burt:

The Department of Natural Resources' Water Protection Program has reviewed and approved the plans and specifications submitted by Ottmar & Associates Engineer Firm for the city of Seymour, MO. Please find enclosed Construction Permit No. CP0001855 and one set of approved plans and specifications. You must maintain these with your official project file for a minimum of four years following completion of the project.

This permit will terminate 12 months from the date of issuance. In accordance with 10 CSR 20-6.010(4)(G), the department may grant an extension only one time. If you believe that an extension is necessary, you must submit a request and a justification in writing for the extension at least 30 days prior to the permit expiration date.

Nothing in this permit removes any obligations to comply with county or other local ordinances or restrictions.

If you were adversely affected by this decision, you may appeal to have the matter heard by the Administrative Hearing Commission. To appeal, you must file a petition with the Administrative Hearing Commission 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 Administrative Hearing Commission.

Mr. Sam Burt, City Administrator
August 12, 2016
Page 2

If you have any questions concerning this matter, please contact Mr. Kyle Te, of the Water Protection Program, at (573) 526-5631 or Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102-0176.

Thank you for your efforts to help ensure clean water in Missouri.

Sincerely,

WATER PROTECTION PROGRAM



 Shawn Muenks P.E., SRF Engineering Unit Chief
Financial Assistance Center

SM:ktc

Enclosures

- c: Mr. Duane D. Ottmar, P.E., Ottmar & Associates, Inc.
Southwest Regional Office
Mr. Kyle Te, Water Protection Program, Financial Assistance Center
Mr. Jeremy Payne, Water Protection Program, Financial Assistance Center

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

City of Seymour
123 Market Street
P.O. Box 247
Seymour, MO 65746

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.

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.

August 12, 2016

Effective Date

August 11, 2017

Expiration Date

Handwritten signature of Sara Parker Pauley in cursive.

Sara Parker Pauley, Director, Department of Natural Resources

Handwritten signature of John Madros in cursive.

Director, Water Protection Program

CONSTRUCTION PERMIT

WASTEWATER TREATMENT FACILITY:

The proposed wastewater treatment facility improvements will consist of converting a chlorination ditch into an ultraviolet disinfection (UV) treatment process. This facility will meet the water quality standards for the Finley Creek (P) (2352) and the effluent requirements of the Seymour Wastewater Treatment Facility, Missouri State Operating Permit No. MO-0022985 after construction.

The UV system shall be capable of providing continuous disinfection and treating an average daily flow of .375 mgd and a peak flow of 3.0 mgd. A method for level control and monitoring system shall be provided as well.

The project also includes the construction and installation of all necessary appurtenances to make a complete and usable wastewater treatment facility. The project will also include general site work appropriate to the scope and purpose of the project.

PERMIT CONDITIONS:

The permittee is authorized to construct subject to the following conditions:

1. All construction shall be in accordance with the plans and specifications submitted by Ottmar & Associates, Inc. on July 16, 2016 and signed and sealed by Mr. Duane D. Ottmar, P.E. on June 14, 2016 and approved by the department on August 12, 2016.
2. 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).
3. This construction permit does not authorize discharge.
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 Southwest Regional Office per 10 CSR 20-7.015(9)(E)2.

5. 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.”
- A. 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.
 - B. 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.
 - C. Manholes should be located at least ten feet horizontally from any existing or proposed water main.
 - D. 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:
 - 1) 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
 - 2) 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.

6. 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 may 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.

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 www.dnr.mo.gov/env/wpp/401/ for more information.

8. Upon completion of construction:
 - A. The city of Seymour 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); and
 - C. Submit an electronic copy of the as built.

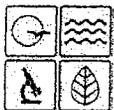
24385

CP0001855

Folder Tracking # COR16657

RECEIVED

JUL 18 2016



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
APPLICATION FOR CONSTRUCTION PERMIT -
WASTEWATER FACILITY
Water Protection Program

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEES RECEIVED \$1000.00	CHECK NO. 2715
DATE RECEIVED 7-18-16	

SB

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: Rural Sewer Grant Project #: S-493-14
- 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: Not Applicable
- 1.4 Has the department approved the proposed project's facility plan*?
 YES Date of Approval: July 23, 2015 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? No. The Plant has an existing MSOP MO 0022985
 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
Wastewater Treatment Facility Modifications and Improvements for the City of Seymour, Missouri

2.2 PROJECT DESCRIPTION
Retire the existing Chlorine disinfection system and replace it with a new Ultraviolet disinfection system.

Note: The effort to design a new Flow Equalization Basin has ceased due to concerns with the geology of the available sites, which became apparent during the intermediate stages of design.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
No changes to the existing sludge management system at the plant were contemplated and none are proposed for this project.

2.4 DESIGN INFORMATION
A. Current population: 1928 + *; Design population: 3,780 * Plus 930 Students
B. Actual Flow: 0.177-mgd Dry gpd; Design Average Flow: 375,000 gpd;
Actual Peak Daily Flow: < 260,000 gpd; Design Maximum Daily Flow: 750,000 gpd; See Design Summary
Design Wet Weather Event: 3-mqd

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
\$ 200,000.00

3.0 WASTEWATER TREATMENT FACILITY				
NAME Seymour Wastewater Treatment Facility		TELEPHONE NUMBER WITH AREA CODE (417) 935-4401		EMAIL ADDRESS sam@seymourmissouri.org
ADDRESS (PHYSICAL) 714 South C Street		CITY Springfield	STATE MO	ZIP CODE 65746
COUNTY Webster				
Wastewater Treatment Facility: Mo- 0022985 (Outfall 1 Of 1)				
3.1 Legal Description: SW ¼, NE ¼, ¼, Sec. 11, T 28N, R 17W (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): 521158 Northing (Y): 411005 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: Unnamed Tributary to the Finley Creek (U) Losing				
4.0 PROJECT OWNER				
NAME The City of Seymour		TELEPHONE NUMBER WITH AREA CODE (417) 935-4401		EMAIL ADDRESS sam@seymourmissouri.org
ADDRESS 123 Market Street		CITY Seymour	STATE MO	ZIP CODE 65746
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 as Owner described in Section 4.0		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 Duane D. Ottmar, PE / Ottmar & Associates, Inc.		TELEPHONE NUMBER WITH AREA CODE (417) 833-9700		EMAIL ADDRESS ottmar19@yahoo.com
ADDRESS 1165 W. Beverly Hills Drive		CITY Springfield	STATE MO	ZIP CODE 65803
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 Mr. Ken Owens			DATE 07/14/16	
TITLE OR CORPORATE POSITION Mayor of Seymour		TELEPHONE NUMBER WITH AREA CODE (417) 935-4401		EMAIL ADDRESS sam@seymourmissouri.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.				

DESIGN SUMMARY

UV DISINFECTION CONVERSION

CITY OF SEYMOUR, MISSOURI

1.01 BACKGROUND

- A. The City of Seymour's existing chlorine disinfection system is aging, in poor condition, too small for the flows it must disinfect, does not have a de-chlorination system, and is a chemical hazard for plant maintenance personnel. Therefore, it has been determined that it is impractical to make the necessary modifications and repairs to this existing chemical disinfection system.
- B. The City of Seymour has an existing chlorine contact basin, which can be converted to house a new UV disinfection system. This conversion was deemed to be the most cost effective way to create a new UV disinfection works, given the elevation restraints and other practical considerations that must be taken into account at this plant site.
- C. The new disinfection system needed to be configured to accomplish three basic goals. First, the flows out of the existing effluent filters cannot be restricted. The flows, which may accumulate inside Clearwell #1 cannot exceed the 0.8-depth of the existing tertiary filter effluent piping. Secondly, the liquid level in Clearwell #2 must keep the proposed magnetic flow meter submerged at all times so that it will read accurately. And last, the UV system must have the capability to be flow paced to accommodate flows between 0.175-mgd and 3.0-mgd.

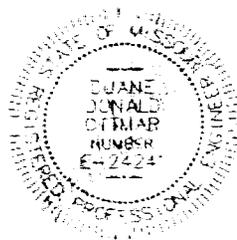
1.02 DESIGN SUMMARY

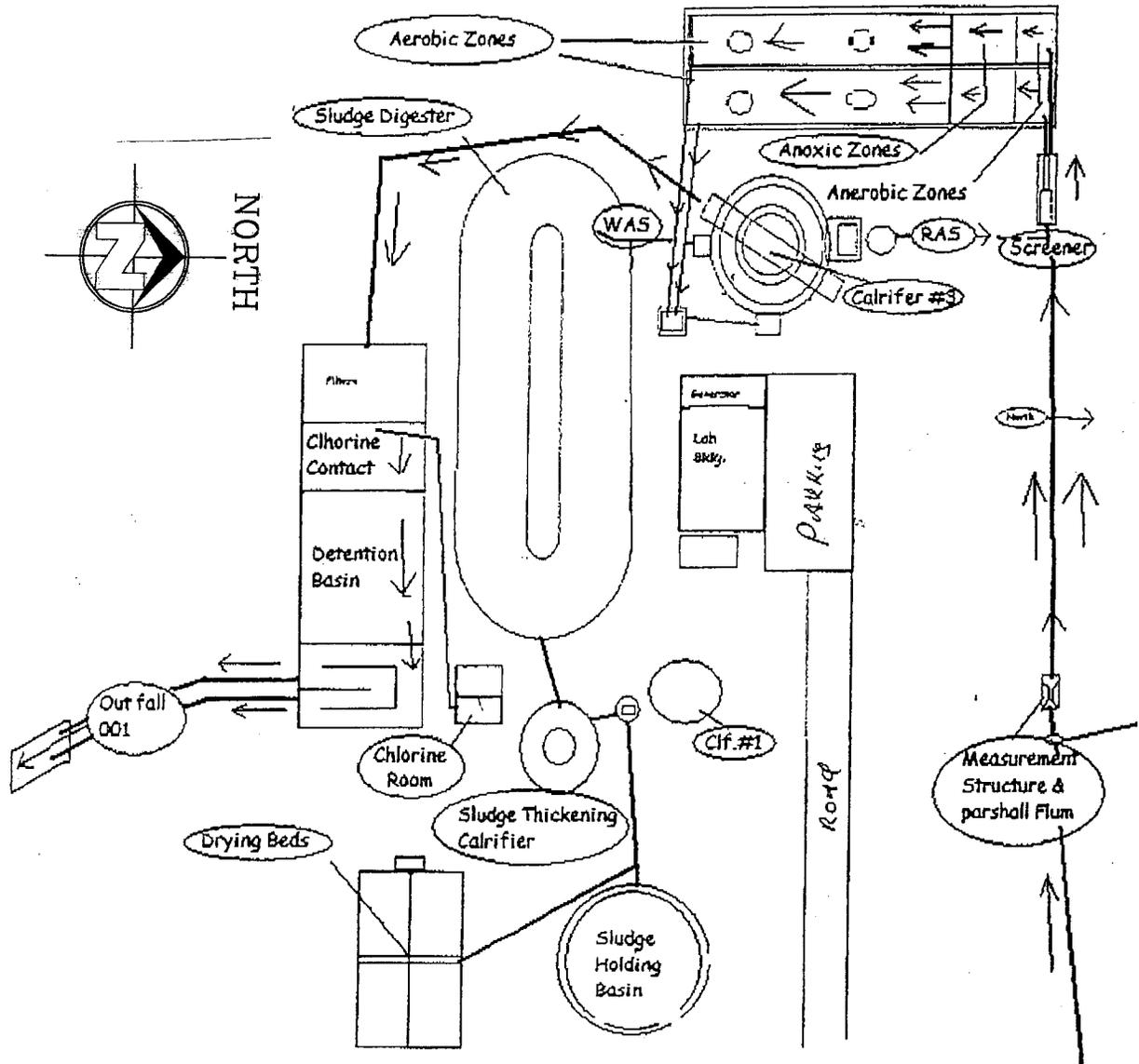
A. UV Configuration;

- 1. By Rule, the UV works should be configured with 100% redundancy. In most cases, this is done by installing a pair of disinfection units where each half can treat the design flow of the treatment facility. The idea is that both units, when operated simultaneously, would be large enough to fully treat the peak flows coming through the treatment plant. Unfortunately, the usual configuration for a UV installation will not be large enough to treat the peak flows at Seymour's plant.
- 2. The MSOP for Seymour lists the Design Capacity of the plant at 0.378-mgd. The actual capacity of this facility is closer to 0.65-

mgd. Therefore, the UV system is designed to provide 100% redundancy of the actual plant capacity with two essentially identical units or modules. Each of these UV units or modules is sized to treat 0.75-mgd when all the bulbs are new and operating at maximum output. The units are oversized slightly because it is expected that the true capacity of these modules will decrease as the bulbs reach the end of their service life. Each of these smaller units can be operated at 50% or 100% capacity.

3. The third UV unit or module has been added to accommodate the wet weather peak flows. This unit is the same physical size as the other two units. But, this third module is fitted with higher output bulbs. It has twice the treatment capacity of either of the two smaller UV modules. It can also be operated at 50% or 100% of its rated capacity.
4. The UV controller for this system is to provide six levels of treatment based upon the incoming flow rate, which is to be measured by a new magnetic flow meter. The range of disinfection with these six steps will be between 0.375-mgd and 3.0-mgd. A larger number steps is difficult and not cost effective.
5. The flows coming into this plant during wet weather have been increasing. In 2003, the flows were measured with temporary weirs at 1.8-mgd. During the plant upgrade of 2004, a new Parshall Flume was installed, which can measure flows accurately to 2.0-mgd. Recent wet weather events have had readings greater than 2.2-mgd on this meter. It is simply unknown how much greater the actual flows have been. For this reason, we are sizing the UV equipment to accommodate peak flows up to 3.0-mgd.
6. The remainder of the design elements of the plant are for servicing the proposed UV equipment while keeping the operating personnel safe.





SEYMOUR MISSOURI WASTEWATER TREATMENT FACILITY

PROCESS SKETCH

*EXHIBIT OF
WASTEWATER TREATMENT FACILITY
SEYMOUR, MISSOURI*

