

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 Wellington
101 East 4th St.
Wellington, MO 64097

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.

May 21, 2020
Effective Date


Edward B. Galbraith, Director, Division of Environmental Quality

May 20, 2022
Expiration Date


Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The proposed work includes construction of NitrOx MBBR treatment tanks, a new electromagnetic flow meter, and ultraviolet disinfection, along with electrical service and controls. Construction is proposed in order to meet final ammonia and *E. coli* permitted effluent limits.

The existing three-cell lagoon will remain in use, and the system design flow will remain 92,700 gpd. A Triplepoint Water Technologies, LLC NitrOx™ system will be installed between lagoon cell number 2 and cell number 3. The system is composed of two aerated tanks with a volume of 8,617 gallons each, or 17,234 gallons total. The average flow hydraulic retention time is 3.1 hours and the peak flow hydraulic retention time is 2.2 hours. A floating insulating cover and an immersion tank heater will be installed to maintain a minimum wastewater temperature. Each tank shall be filled approximately 50% with floating media. The effluent from the NitrOx™ will flow by gravity to Lagoon Cell No. 3 for polishing prior to flow measurement.

An electromagnetic flow meter will be installed to measure the secondary treated wastewater prior to UV disinfection. A remote readout will be provided.

A closed channel, gravity flow, non-contact UV disinfection system capable of treating a peak flow of 1.8 MGD will be installed. The disinfected effluent will flow by gravity to Outfall No. 001.

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

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 determine Cost Analysis for Compliance because the permit contains no new conditions or requirements that convey a new cost to the facility.

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 Bartlett & West 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 Kansas City Regional Office per 10 CSR 20-7.015(9)(G).
5. The wastewater treatment facility shall be located at least two hundred feet (200') from any residence and fifty feet (50') from the property line.
6. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.
7. 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 per 10 CSR 20-8.140(2)(B). The minimum distance between wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300') per 10 CSR 20-8.140(2)(C)1.
8. 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.
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 dnr.mo.gov/env/wpp/401/ for more information.

10. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.

10 CSR 20-8.140 Wastewater Treatment Facilities

- 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)
- Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140 (2) (D)
- 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:
 - 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)
 - Gratings over appropriate areas of treatment units where access for maintenance is necessary; 10 CSR 20-8.140 (8) (B)
 - First aid equipment; 10 CSR 20-8.140 (8) (C)
 - Posted "No Smoking" signs in hazardous areas; 10 CSR 20-8.140 (8) (D)
 - Appropriate personal protective equipment (PPE); 10 CSR 20-8.140 (8) (E)
 - Appropriately-placed warning signs for slippery areas, non-potable water fixtures (see subparagraph (7)(D)3.B. of this rule), low head clearance areas, open service manholes, hazardous chemical storage areas, flammable fuel storage areas, high noise areas, etc.; 10 CSR 20-8.140 (8) (I)
 - Provisions for local lockout/tagout on stop motor controls and other devices; 10 CSR 20-8.140 (8) (L)
 - Provisions for an arc flash hazard analysis and determination of the flash protection boundary distance and type of PPE to reduce exposure to major electrical hazards shall be in accordance with NFPA 70E *Standard for Electrical Safety in the Workplace* (2018 Edition), as approved and published August 21, 2017. 10 CSR 20-8.140 (8) (M)

10 CSR 20-8.190 Disinfection

- The UV dosage shall be based on the design peak hourly flow, maximum rate of pumpage, or peak batch flow. 10 CSR 20-8.190 (5) (A) 1.
- The UV system shall deliver the target dosage based on equipment derating factors and, if needed, have the UV equipment manufacturer verify that the scale up or scale down factor utilized in the design is appropriate for the specific application under consideration. 10 CSR 20-8.190 (5) (A) 3.
- The UV system shall deliver a minimum UV dosage of thirty thousand microwatt seconds per centimeters squared ($30,000 \mu\text{W} \cdot \text{s}/\text{cm}^2$). 10 CSR 20-8.190 (5) (A) 4.
- Closed vessel UV systems. The combination of the total number of closed vessels shall be capable of treating the design peak hourly flow, maximum rate of pumpage, or peak batch flow. 10 CSR 20-8.190 (5) (B) 2.
- Closed vessel UV systems utilizing medium-pressure lamps shall be provided with an automatic cleaning system in order to prevent algae growth. 10 CSR 20-8.190 (5) (B) 3.
- The UV system must continuously monitor and display at the UV system control panel the following minimum conditions:
 - The relative intensity of each bank or closed vessel system; 10 CSR 20-8.190 (5) (C) 1. A.
 - The operational status and condition of each bank or closed vessel system; 10 CSR 20-8.190 (5) (C) 1. B.
 - The ON/OFF status of each lamp in the system; 10 CSR 20-8.190 (5) (C) 1. C. and
 - The total number of operating hours of each bank or each closed vessel system. 10 CSR 20-8.190 (5) (C) 1. D.
- The UV system shall include an alarm system. Alarm systems shall comply with 10 CSR 20-8.140(7)(C). 10 CSR 20-8.190 (5) (C) 2.

11. Upon completion of construction:

- A. The City will become the continuing authority for operation and maintenance of these facilities;
- B. Submit an electronic copy of the as built if the project was not constructed in accordance with previously submitted plans and specifications; and
- C. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request that the operating permit modification be issued.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The existing operating permit includes a schedule of compliance for final ammonia effluent limitations that will become effective on February 1, 2022, as well as *E. coli* effluent limits that are currently effective. The goal of the proposed facility improvements is to meet these effluent limits.

2. FACILITY DESCRIPTION

The existing facility is a three-cell lagoon that was constructed in 1980. The proposed work includes construction of NitrOx MBBR treatment tanks, a new electromagnetic flow meter, and ultraviolet disinfection, along with electrical service and controls.

The Wellington WWTF is located at 0.24 miles SW of the Intersection of Hwy 24 and Hwy 131, Wellington, in Lafayette County, Missouri. The facility has a design average flow of 92,700 gpd and serves a hydraulic population equivalent of approximately 1,080 people.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits for ammonia as established in Operating Permit MO-0041165. Final effluent limits for BOD5 and TSS will also be modified from equivalent to secondary to secondary limits.

The limits following the completion of construction will be applicable to the facility:

Parameter	Units	Monthly average limit
Biochemical Oxygen Demand ₅	mg/L	30
Total Suspended Solids	mg/L	30
Ammonia as N-summer	mg/L	1.3
Ammonia as N-winter	mg/L	2.4

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

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

- Three Cell Non-Aerated Lagoon – The influent flows into Lagoon Cell No. 1 from the existing force main sewer. Lagoon Cell No. 1 has a maximum water depth of 5 ft, surface area of 5.4 acres and a wastewater volume of 8,712,000 gallons. Lagoon Cell No. 2 has a maximum water depth of 5 ft, surface area of 1.6 acres and a wastewater volume of 2,629,000 gallons. Lagoon Cell No. 3 has a maximum water depth of 7.5 ft, surface area of 0.5 acres and a wastewater volume of 954,000 gallons. Each cell has 2 ft of freeboard and the combined

volume is 12,925,000 gallons providing 140 days of retention at the proposed design flow.

Construction will cover the following items:

- Components are designed for a Population Equivalent of 900 based on hydraulic loading to the system. Design flow to the system will remain 92,700.
- Flow Measurement – Installation of accurate flow measurement devices will give the treatment facility a means of improved data analysis.
 - Electromagnetic Meter – An effluent electromagnetic 3-inch flow meter shall be installed in a meter manhole and measure the secondary treated wastewater prior to UV disinfection and discharge at Outfall No. 001. A remote readout will be provided.
- Triplepoint Water Technologies, LLC NitrOx™ – The lagoon treated effluent will flow by gravity from lagoon cell number two to the NitrOx™ system. The NitrOx™ system is capable of treating a design average flow of 63,000 gpd and a Peak Daily Flow of 125,000 gpd. With the addition of a V-Notch weir between lagoon cells number 1 and number 2 the flow is attenuated allowing for the MBBR to be based on a lower design flow. The system is composed of two tanks with each approximately 12 ft x 12 ft x 11 ft high, with a sidewater depth of 8 ft. Total volume of the two tanks is 8,617 gallons each, or 17,234 gallons total. The average flow hydraulic retention time is 3.1 hours and the peak flow hydraulic retention time is 2.2 hours. A floating insulating cover shall be installed in each tank. An immersion tank heater will be installed to maintain a minimum wastewater temperature of approximately 5°C. Each tank shall be filled approximately 50% with high surface area HDPE media. Aeration by means of two tri-lobe positive displacement blowers each capable of supplying 167 scfm with 7.5 HP motors (5.3 bhp) to medium bubble aeration grids. The effluent from the NitrOx™ will flow by gravity to Lagoon Cell No. 3 for polishing prior to flow measurement, disinfection, and discharge.
- Disinfection – Disinfection is the process of removal, deactivation, or killing or pathogenic microorganisms.
 - Non-Contact Ultraviolet (UV) – A closed channel, gravity flow, low pressure high intensity UV non-contact disinfection system capable of treating a peak flow of 1.8 MGD while delivering a minimum UV intensity of 30 mJ/cm² with an expected ultraviolet transmissivity of 65% or greater. The enclosed UV system consists of one reactor with two banks per reactors, and 40 lamps per bank. The two UV banks are arranged in parallel. The disinfected effluent will flow by gravity to Outfall No. 001.

5. OPERATING PERMIT

Operating permit MO-0041165 will require a modification to reflect the construction activities. The modified Wellington WWTF, MO-0041165, was successfully public noticed from April 17, 2020 to May 18, 2020 with no comments received. Submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification be issued.

This facility does not meet the requirements of the MOGD, issued on July 1, 2019 for the following reason: publicly owned.

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>

Cailie Carlile, PE
Engineering Section
cailie.carlile@dnr.mo.gov



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT -
WASTEWATER FACILITY

RECEIVED

FEB 10 2020

FOR DEPARTMENT USE ONLY

APP NO.	CP NO.
AP34418	CP0002126
DATE RECEIVED	CHECK NO.
\$1000.00	1475
DATE RECEIVED	2-10-20

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*? **report approval letter attached EP6-125-17**
☒ YES Date of Approval: Feb. 2019 ☐ 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 **Hard copies Submitted Separately**
- 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

Wastewater Improvement Project

2.2 PROJECT DESCRIPTION

The project includes installing a new V notch weir, raw water recirculation pump, MBBR treatment tanks, a mag meter and UV disinfection along with associated piping and valves.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

Sludge is stored in the wastewater lagoons and periodically removed and land applied.

2.4 DESIGN INFORMATION

- A. Current population: 810; Design population: 900
- B. Actual Flow: 55,900 gpd; Design Average Flow: 63,000 gpd;
Actual Peak Daily Flow: _____ gpd; Design Maximum Daily Flow: 126,000 gpd;
Design Wet Weather Event: _____

Max flow is attenuated by lagoon storage and V notch weir installed

2.5 ADDITIONAL INFORMATION

- A. Is a topographic map attached? ☒ YES ☐ NO **topo map included in drawings of project site**
- B. Is a process flow diagram attached? ☒ YES ☐ NO **included in drawings**

2.6 ESTIMATED PROJECT CONSTRUCTION COST

~~\$ 575,000.00~~ **780,000**

3.0 WASTEWATER TREATMENT FACILITY				
NAME City of Wellington, MO		TELEPHONE NUMBER WITH AREA CODE (816) 934-2521		EMAIL ADDRESS wellingtoncityclerk@embarqmail.com
ADDRESS (PHYSICAL) 101 East 4th St,	CITY Wellington	STATE MO	ZIP CODE 64097	COUNTY Lafayette
Wastewater Treatment Facility: Mo- (Outfall 0 Of 0)				
3.1 Legal Description: ¼, ¼, ¼, Sec. , T , R (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): Northing (Y): For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams:				
4.0 PROJECT OWNER				
NAME Richard Peterson, Mayor		TELEPHONE NUMBER WITH AREA CODE (816) 934-2521		EMAIL ADDRESS wellingtoncityclerk@embarqmail.com
ADDRESS 101 East 4th St,	CITY Wellington	STATE MO	ZIP CODE 64097	
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 City of Wellington		TELEPHONE NUMBER WITH AREA CODE (816) 934-2521		EMAIL ADDRESS wellingtoncityclerk@embarqmail.com
ADDRESS 101 East 4th St, City Hall	CITY Wellington	STATE MO	ZIP CODE 64097	
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 checked="" type="checkbox"/> NO				
5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION. <i>N/A</i>				
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 Jim Ross		TELEPHONE NUMBER WITH AREA CODE (816) 282-6367		EMAIL ADDRESS jim.ross@bartwest.com
ADDRESS 200 NE Missouri Rd, Suite 287	CITY Lee's Summit	STATE MO	ZIP CODE 64086	
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 <i>Richard Peterson</i>				
PRINTED NAME Richard Peterson			DATE 1-30-20	
TITLE OR CORPORATE POSITION Mayor		TELEPHONE NUMBER WITH AREA CODE 816-934-2521		EMAIL ADDRESS cityclerkwellingtonmo@gmail.com
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.				