STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

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

Confluence Rivers Utility Operating Company, Inc.
Clemstone Wastewater Treatment Facility
11635 Flint Street
Platte City, MO 64079

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.

August 26, 2024
Effective Date

August 25, 2026
Expiration Date

John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The proposed project will include the conversion of two existing septic tanks to a moving bed biofilm reactor (MBBR) treatment system by the installation of MBBR units within the final two septic tanks of the existing six total septic tanks in series. The new MBBR units will be provided with sieves at the influent and effluent of each tank to retain the MBBR media. Two new blowers will be installed to provide aeration to the MBBR units. The bypass valve vault which previously allowed influent to be directed to the modified trickling filter unit (BioFicient) following the influent pump station will be removed. Sludge removal lines will be installed within the BioFicient treatment units following the septic tanks and will return sludge to the first septic tank in series. Sludge will continue to be pumped from the septic tanks as needed. A new electromagnetic flowmeter will be added following the influent pump station. The facility will continue to utilize the existing Ultraviolet (UV) disinfection system. The design flow for the facility will remain at 30,000 gallons per day (gpd).

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 complete a cost analysis for compliance because the facility is not a combined or separate sanitary sewer system for 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 consistent with plans and specifications signed and sealed by Kyle Ruediger, P.E. with 21 Design Group, Inc. 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. 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 https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem. See https://dnr.mo.gov/data-e-services/water/electronic-permitting-epermitting for more information.

6. A United States Army Corps of Engineers (USACE) Clean Water Act Section 404 Department of the Army permit and a Section 401 Water Quality Certification issued by the department may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied or notification is provided that no Section 404 permit is required by the USACE. You must contact your local USACE district since they determine what waters are jurisdictional and which permitting requirements may apply. You may call the department's Water Protection Program, Operating Permits Section at 573-522-4502 for more information. See https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality for more information.

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

- 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 100-year flood elevation. 10 CSR 20-8.140(2)(B).
- Unless another distance is determined by the Missouri Geological Survey or by the department's Public Drinking Water Branch, the minimum distance between wastewater treatment facilities and all potable water sources shall be at least 300 feet. 10 CSR 20-8.140(2)(C)1.
- Facilities shall be readily accessible by authorized personnel from a public right–of-way at all times. 10 CSR 20-8.140(2)(D).

- All wastewater treatment facilities shall be provided with an alternate source of electric power or pumping capability to allow continuity of operation during power failures. 10 CSR 20-8.140(7)(A)1.
- 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)
- Effluent 24-hour composite automatic sampling equipment shall be provided at all mechanical wastewater treatment facilities and at other facilities where necessary under provisions of the operating permit. 10 CSR 20-8.140(7)(F)
- For solids pumping systems, audio-visual alarms shall be provided in accordance with 10 CSR 20-8.140(7)(C) for:
    - Pump failure; 10 CSR 20-8.170(6)(A)
    - Pressure loss; 10 CSR 20-8.170(6)(B) and
    - High pressure. 10 CSR 20-8.170(6)(C)
- A septic tank must have a minimum capacity of at least 1,000 gallons. 10 CSR 20-8.180(2)(A)
- The septic tank shall be baffled. 10 CSR 20-8.180(2)(B)
- Moving Bed Bioreactor (MBBR). A MBBR secondary treatment system shall provide upstream preliminary treatment units capable of—
    - Screening to reduce pass-through and suspended solids; 10 CSR 20-8.180(8)(A)
    - Grit removal; 10 CSR 20-8.180(8)(B) and
    - Oil and grease removal. 10 CSR 20-8.180(8)(C)

8. Upon completion of construction:

    A. Confluence Rivers Utility Operating Company, Inc. will become the continuing authority for operation and maintenance of these facilities;

    B. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications;

    C. Submit the Statement of Work Completed form to the department in accordance with 10 CSR 20-6.010(5)(N) (https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155). Because the changes to the operating permit due to construction do not impose new conditions or effluent limits, the modification can be conducted as an internal modification. Therefore, the permit renewal currently being processed by the department will incorporate the operating permit modification associated with the proposed construction.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The Clemstone WWTF is currently under enforcement by the department for failure to comply with permit conditions. The facility has routinely exceeded effluent limitations for ammonia, and discharge monitoring data since 2015 indicates that the average concentration of ammonia in the effluent is significantly in excess of the permitted limits. The facility was acquired by Confluence Rivers Utility Operating Company, Inc., and Abatement Order on Consent (AOC) No. 2021-WPCB-1615 was issued by the department on December 14, 2021. Due to the history of the facility and the fact that it is not currently equipped to meet all the effluent limits, the AOC was entered under the anticipation that Confluence Rivers Utility Operating Company, Inc. would be in violation of the Missouri Clean Water Law following acquisition and transfer of the operating permit. This construction permit addresses the proposed improvements to bring the facility into compliance per the AOC requirements and the department approved Facility Plan. Per the AOC requirements, the construction must be completed within two years of the acquisition.

2. FACILITY DESCRIPTION

The Confluence Rivers Utility Operating Company, Inc. owns and operates the Clemstone WWTF, which currently utilizes a modified trickling filter ("BioFicient" package plant) system. The influent pump station includes a bar screen on the influent and conveys wastewater to a series of six septic tanks which then flow to the modified trickling filter units, followed by a UV disinfection unit prior to discharge.

The Clemstone WWTF is located at 11635 Flint Street, Platte City, in Platte County, Missouri. The facility has a design average flow of 30,000 gpd and serves a hydraulic population equivalent of approximately 300 people.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits as established in Operating Permit MO-0044083.

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	1.1
Ammonia as N-winter	mg/L	2.7
pH	SU	6.5-9.0
E. coli	#/100mL	206

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

- Components are designed for a Population Equivalent of 300 based on hydraulic loading to the system.

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

- Influent Pump Station – Duplex influent pump station with influent bar screen and dual 2.0 HP single phase Ebara submersible vortex sewage pumps.
- Septic Tanks – A septic tank provides passive primary treatment as the settleable solids in raw wastewater settle onto the bottom of the tank. Following the influent pump station, wastewater is pumped to a series of septic tanks. When the water level reaches a certain height, the wastewater flows into the next compartment by two tee-drop pipes. The existing treatment system includes six septic tanks, but construction will modify the final two septic tanks in series to convert them into MBBR units. Each septic tank has a volume of 4,712 gallons. With 4 septic tanks provided, the total volume is 18,848 gallons. The septic tanks therefore provide approximately 0.63 days of detention at design average flow. Settled solids in the septic tank shall be removed by a contract hauler.
- BioFicient Modified Trickling Filter
    - Calorie Reducer Treatment Compartment – one compartment with jet-aerator assembly and two-3.0 HP Goulds high shear pumps.
    - BioReducer Treatment Compartments – three compartments with 4,300 gallons media volume and 5,000 gallons of underdrain volume. First two compartments each equipped with two-3.0 HP Goulds high shear pumps, and final compartment equipped with two-1.5 HP pumps of the same model.
- Disinfection – Disinfection is the process of removal, deactivation, or killing of pathogenic microorganisms.
    - Closed Vessel Ultraviolet (UV) – Two Atlantic UV S2400C disinfection units. A closed vessel, single-bulb UV disinfection system with each unit capable of treating a peak flow of 2,400 gph. The disinfected effluent will flow by gravity to Outfall No. 001.
- Emergency Power – Kohler backup generator with propane tank onsite

Construction will cover the following items:

- Moving Bed Biofilm Reactor (MBBR) – Installation of two MBBR units capable of treating a design average flow of 30,000 gpd and a peak hydraulic flow of 120,000 gpd. The MBBR units are approximately 15 ft by 6 ft with a sidewater depth of 7 ft for a volume of approximately 4,712 gallons for each unit. The hydraulic retention time is 7.5 hours at design flow and 1.885 hours at the peak hourly flow. The MBBR will be filled approximately 50 percent with Raschig Kontakt 650 (650 m^2/m^3) media. Aeration by means of two blowers each capable of supplying 186 scfm at a discharge pressure of 4.01 psig to the coarse aeration grid. Media retention sieves will be provided with openings not to exceed ½-inch.

The effluent from the MBBR will flow by gravity to the BioFicient Modified Trickling Filter.

- Sludge Return Lines – Construction of 4-inch force main sludge removal lines to remove sludge from the BioReducer treatment compartments and convey them to the septic tanks using the existing submersible pumps within the compartments.
- Flow Measurement – Installation of accurate flow measurement devices will give the treatment facility a means of improved data analysis.
    - Electromagnetic Meter – An influent electromagnetic 2-inch flow meter shall measure the raw influent wastewater following the influent pump station.

5. OPERATING PERMIT

These construction activities do not change the effluent limits or conditions of the current operating permit. The department will conduct an internal modification to reflect the current facility description upon receipt of the Statement of Work Completed form.

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:

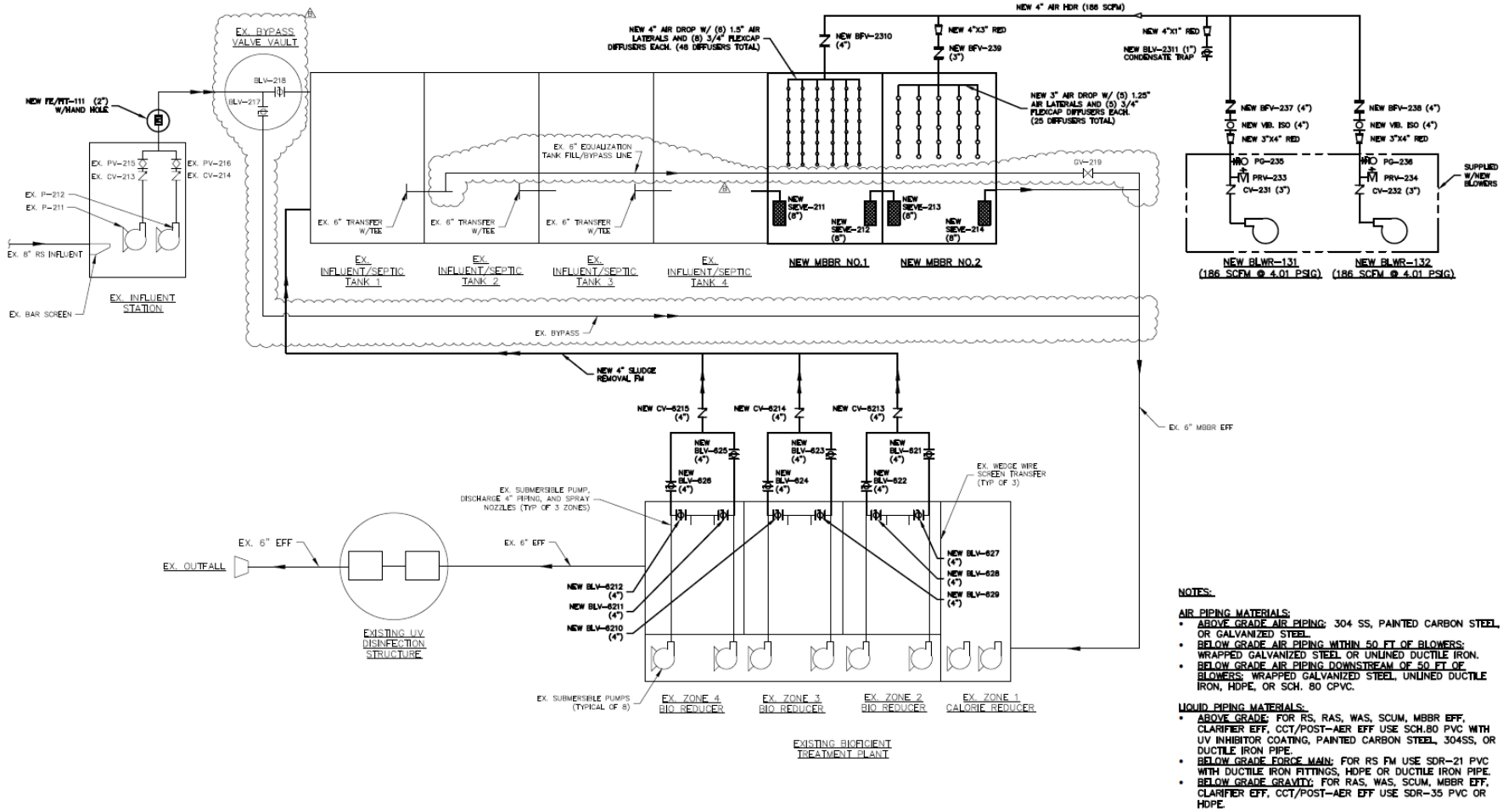
Administrative Hearing Commission
U.S. Post Office Building, Third Floor
131 West High Street, P.O. Box 1557
Jefferson City, MO 65102-1557
Phone: 573-751-2422
Fax: 573-751-5018
Website: https://ahc.mo.gov

Thomas Silkwood
Engineering Section
thomas.silkwood@dnr.mo.gov

Chia-Wei Young, P.E.
Engineering Section
chia-wei.young@dnr.mo.gov

APPENDIX

- **Process Flow Diagram**



- **Summary of Design**

CLEMSTONE WASTEWATER SYSTEM
SUMMARY OF DESIGN (MO-0044083)

CSWR
Central States Water Resources

Prepared For

Owner:

Central States Water Resources
1630 Des Peres Rd., Suite 140
Des Peres, MO 63131

Prepared by:

21 Design Group
1351 Jefferson, Suite 301
Washington, MO 63090

Kyle Ruediger, P.E.
Date: 02/15/2024

21 DESIGN
ENGINEERING & SURVEYING

Summary of Design

Clemstone Subdivision Wastewater Treatment Facility

Design Effluent Requirements

See below the current operating permit limits

OUTFALL #001	TABLE A-1. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations in **Table A-1** shall become effective on **January 1, 2020** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	**UNITS**	**FINAL EFFLUENT LIMITATIONS**			**MONITORING REQUIREMENTS**	
		DAILY MAXIMUM	**WEEKLY AVERAGE**	**MONTHLY AVERAGE**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
Limit Set: Q						
Flow	MGD	*		*	once/quarter†	24 hr. estimate
Biochemical Oxygen Demand$_5$	mg/L		45	30	once/quarter†	composite**
Total Suspended Solids	mg/L		45	30	once/quarter†	composite**
E. coli (Note 1, Page 3)	#/100mL		1,030	206	once/quarter†	grab
Ammonia as N (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	 6.0 11.3		 1.1 2.7	once/quarter†	composite**
EFFLUENT PARAMETER(S)	**UNITS**	**MINIMUM**		**MAXIMUM**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
pH – Units***	SU	6.5		9.0	once/quarter†	grab
EFFLUENT PARAMETER(S)			**UNITS**	**MONTHLY AVERAGE MINIMUM**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
Biochemical Oxygen Demand$_5$ – Percent Removal (Note 2, Page 3)			%	85	once/quarter†	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 3)			%	85	once/quarter†	calculated
MONITORING REPORTS SHALL BE SUBMITTED **QUARTERLY**. THE FIRST REPORT IS DUE APRIL 28, 2020. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

* Monitoring requirement only.
** A composite sample made up from a minimum of four grab samples collected within a 24 hour period with a minimum of two hours between each grab sample.
*** pH is measured in pH units and is not to be averaged.
† See table below for quarterly sampling.

Treatment Step 1 – Influent/Septic Tanks

The flow to the wastewater facility is delivered via gravity sewer from the collection system. There is currently six being utilized for this influent/septic tank process. The wastewater facility's influent pump station discharges directly to the first of these influent/septic tanks and transfer in series.

The tanks will be the preliminary treatment for BOD and TSS. They will remove around 10% and 30%, respectively prior to discharging to the next treatment step.

Flow Rate: Influent – see design flows

Treatment Step 2 – Treatment Reactor

The Moving Bed Biological Reactor (MBBR) is a dual stage reactor. The treatment process takes place on the high surface area media which enhances bacterial growth. The reactor will include a course aeration grid which keeps the individual biofilm carriers in suspension and provides nitrification. The MBBR is a proven technology per Missouri DNR documents which rate this treatment process at a level B at removal below 0.7. Only land application is rated higher on a scale of A through D.

The aeration reactor will consist of a dual basin.

Effluent from the treatment reactor will flow via gravity pipe to the existing Bioficient treatment plant.

See Design Criteria at the end of this report.

Unit Dimensions: 15' length x 6' width x 7' water depth

Flow Rate: Treatment reactor is designed to treat the design flow rate of 30,00 gallons per day

Treatment Step 3 – Bioficient Treatment Plant

The existing Bioficient treatment plant consists of four zones. The first zone is a mixing/calorie reducer. The wastewater then passes through a wedge wire screen and enters 3 bio reducer sections. Water is continuously pumped from the underdrain and dispersed over the trickling filter media by non-clog spray nozzles. Each zone was designed to remove 50% of the incoming BOD and TSS. Piping in these zones will be modified to incorporate additional piping and valves to allow for removal of grit and sludge from the bottom.

The nozzles are to be oriented in a way that utilizes more of the available surface area of the available media.

Unit Dimensions of Each Zone: 12' width x 12' length x 11'-6" deep

See Design Criteria at the end of this report.

Treatment Step 4– Ultraviolet Disinfection

The existing Ultraviolet (UV) disinfection is the final treatment phase. The UV system is an enclosed inline unit on the gravity effluent line.

Flow Rate: Unit is capable of treating flow up to 40 gallons per minute which is 57,600 gpd. There are 2 banks existing banks to allow the capability of treating the design flow of 30,000 gpd with one bank out of service.

Physical Controls: The UV system is setup to provide continuous contact with the plant discharge due to design of influent and effluent of unit to prevent overheating of the lamps. The UV unit will be equipped with an intensity meter to track strength of the lamps.

	MBBR w/Trickling Filter		
	Removal Efficiency Worksheet		
	Platte City, MO		
	Raw Sewage Influent Characteristics (Into Primary Tank)		
1	Design Flow	30,000	gpd
2	Influent BOD Conc.	250	mg/L
3	Influent TSS Conc.	250	mg/L
4	Influent NH_3-N Conc.	30	mg/L
5	Influent BOD Loading	62.55	lbs/day
6	Influent TSS Loading	62.55	lbs/day
7	Influent NH_3-N Loading	7.51	lbs/day
	Treated Effluent Targets		
8	Effluent BOD Conc. Target	30.0	mg/L
9	Effluent TSS Conc. Target	30.0	mg/L
10	Effluent NH_3-N Conc. Target	1.1	mg/L
11	Effluent BOD Loading Target	7.51	lbs/day
12	Effluent TSS Loading Target	7.51	lbs/day
13	Effluent NH_3-N Loading Target	0.28	lbs/day
	Primary Tank Treatment		
14	BOD Removal Efficiency	10%	
15	TSS Removal Efficiency	30%	
16	Effluent BOD Loading	56.30	lbs/day
17	Effluent TSS Loading	43.79	lbs/day
	MBBR Treatment		
18	Influent BOD Loading	56.30	lbs/day
19	Influent NH_3-N Loading	7.51	lbs/day
20	Number of Stages	3	
21	BOD Removal Efficiency	95%	
22	Effluent BOD Loading	2.81	lbs/day
23	NH_3-N Removed through Cellular Synthesis in MBBR	2.14	lb NH_3-N
24	Total NH_3-N Removed through Cellular Synthesis	2.14	lb NH_3-N
25	NH3-N Removal Efficiency	95%	
26	Effluent NH_3-N Loading	0.26	lbs/day
	Modified Trickling Filter Treatment		
27	Influent BOD Loading	2.81	lbs/day
28	Influent TSS Loading	65.18	lbs/day
29	Typical BOD Removal Efficiency in MTF	90%	
30	BOD Removal Efficiency for Effluent BOD Target	0%	
31	Typical TSS Removal Efficiency in MTF	95%	
32	TSS Removal Efficiency for Effluent TSS Target	88%	
33	Effluent BOD Loading	2.81	lbs/day
34	Effluent TSS Loading	3.26	lbs/day
35	NH_3-N Removed through Cellular Synthesis in RSF	0.00	lb NH_3-N
	Calculated Effluent Loading Check		
36	Effluent BOD Conc.	11.3	mg/L
37	Effluent TSS Conc.	13.0	mg/L
38	Effluent NH_3-N Conc.	1.0	mg/L
39	Effluent BOD Loading	2.81	lbs/day
40	Effluent TSS Loading	3.26	lbs/day
41	Effluent NH_3-N Loading	0.26	lbs/day

WWTF Improvements Design Criteria
Clemstone

	Plant Influent Characteristics		
1	Annual Average Daily Flow	30,000	gpd
2	Maximum Monthly Average Daily Flow	30,000	gpd
3	Peak Daily Flow	90,000	gpd
4	Peak Hourly Flow (w/out Equalization)	120,000	gpd
5	Influent BOD	250	mg/L
6	Influent BOD	62.6	lbs/day
7	Influent TSS	250	mg/L
8	Influent TSS	62.6	lbs/day
9	Influent NH3-N	30	mg/L
10	Influent NH3-N	7.5	lbs/day
11	Influent TKN	35	mg/L
12	Influent TKN	8.8	lbs/day
13	Influent pH	7	
14	Water Temperature	12	deg-C
	MBBR Influent Characteristics		
26	Annual Average Daily Flow	30,000	gpd
27	Maximum Monthly Average Daily Flow	30,000	gpd
28	Peak Daily Flow (w/Equalization)	45,000	gpd
29	Peak Hourly Flow (w/Equalization)	45,000	gpd
30	Influent BOD	225	mg/L
31	Influent TSS	225	mg/L
32	Influent NH3-N	29	mg/L
33	Influent TKN	34	mg/L
34	Design Influent TKN	34	mg/L
35	Influent pH	7	
36	MBBR Water Temperature	4	deg-C
	MBBR Sizing Summary		
37	No. of Tanks Proposed	2	
38	Length	15.0	ft
39	Width	6.0	ft
40	Side Water Depth	7.0	ft
41	Tank Height	9.0	ft
42	Volume of Each	4,712	gallons
43	Volume Total	9,425	gallons
44	Hydraulic Retention Time at Average Flow	7.5	hours
45	Hydraulic Retention Time at Peak Daily Flow	5.0	hours
46	Total Media Surface Area Requirement	8,959	m^2
	MBBR Aeration Requirement Summary		
68	AOR (lbs/day)	113.4	lbs/day
69	Assumed Diffuser Subm. at AWL (ft.)	6.25	ft
70	Elevation (ft.)	910	ft

71	Alpha	0.70	
72	Beta	0.9	
73	Target DO Residual (MBBR Process) (mg/L)	3.0	mg/L
74	SOR (lbs/day)	322	lbs/day
75	Target Diffuser Efficiency/ft. Submergence	1.1	%
76	**Airflow (scfm)**	**186**	**scfm**
77	Airflow per 1,000 scfm	158	scfm/1,000 cf
	Blower Requirement Summary		
78	No. of Blowers	2	
79	Airflow Requirement for MBBR	186	scfm
80	Airflow Requirement for Digester	51	scfm
81	Airflow Requirement per Blower	237	scfm
82	Discharge Pressure	4.01	psig
83	Assumed Overall Efficiency	0.33	
	Effluent Parameters		
83	Effluent BOD	30	mg/L
84	Effluent BOD	7.5	lbs/day
85	Effluent TSS	30	mg/L
86	Effluent TSS	7.5	lbs/day
87	Summer Effluent NH3-N	1.4	mg/L
88	Summer Effluent NH3-N	0.4	lbs/day
89	Winter Effluent NH3-N	2.9	mg/L
90	Winter Effluent NH3-N	0.7	lbs/day
91	E Coli	200/400	MPN/1000 ml
92	E Coli	200/400	MPN/1000 ml

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER TREATMENT FACILITY

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: _____ ☑ N/A

1.3 Has the department approved the proposed project's facility plan*?
☑ YES Date of Approval: 1/30/23 ☐ NO (If No, complete No. 1.4.)

1.4 [Complete only if answered No on No. 1.3.] Is a copy of the facility plan* for wastewater treatment facilities included with this application?
☑ YES ☐ NO ☐ Exempt because _____

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: With Application
☐ Enclosed is the appropriate operating permit application and fee submittal. Denote which form: ☐ A ☑ B ☐ B2
☐ N/A: However, In the event the department believes that my operating permit requires revision to permit limitation such as changing equivalent to secondary limits to secondary limits or adding total residual chlorine limits, please share a draft copy prior to public notice? ☑ YES ☐ NO

1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency? ☐ YES ☑ NO

1.9 Is the appropriate fee or JetPay confirmation included with this application? ☑ YES ☐ NO
See Section 7.0

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

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT
Clemstone WWTF Improvements

2.2 ESTIMATED PROJECT CONSTRUCTION COST
$ 150,000

2.3 PROJECT DESCRIPTION
Addition of a Moving Bed Biological Reactor

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
Sludge removed by contract hauler

2.5 DESIGN INFORMATION

A. Current population: 280 ; Design population: 300

B. Actual Flow: 20.8k gpd; Design Average Flow: 30k gpd;
Actual Peak Daily Flow: 64.4k gpd; Design Maximum Daily Flow: 90k gpd; Design Wet Weather Event: _____

2.6 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	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Clemstone Subdivision	314-380-8544	env.comp@cswrgroup.com

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
11635 Flint Street	Platte City	MO	64079	Platte

Wastewater Treatment Facility: Mo- 0044083 (Outfall 1 Of 1)

3.1 Legal Description: _____ ¼, _____ ¼, _____ ¼, Sec. 33, T 53N, R 34W
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): 352357 Northing (Y): 4357847
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: Tributary to Clear Branch

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Confluence Rivers Utility Operating Company	314-380-8544	env.comp@cswrgroup.com

ADDRESS	CITY	STATE	ZIP CODE
1630 Des Peres Road, Suite 140	St. Louis	MO	63131

5.0 CONTINUING AUTHORITY: A continuing authority is a company, business, entity or person(s) that will be operating the facility and/or ensuring compliance with the permit requirements.

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Same		

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 ☐ 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? ☐ YES ☐ 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? ☐ YES ☐ NO

D. 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	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Kyle Ruediger, 21 Design Group, Inc	(636) 283-5064	kyle@21designgroup.net

ADDRESS	CITY	STATE	ZIP CODE
1351 Jefferson, Suite 301	Washington	MO	63090

7.0 APPLICATION FEE

☐ CHECK NUMBER ☑ JETPAY CONFIRMATION NUMBER

8.0 PROJECT OWNER: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PROJECT OWNER SIGNATURE

PRINTED NAME	DATE
Jacob O. Freeman, PE	2/15/24

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Engineer Director	314-380-8544	env.comp@cswrgroup.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.

PART B – LAND APPLICATION ONLY
(Submit only if the proposed construction project includes land application of wastewater.)

8.0 FACILITY INFORMATION

8.1 Type of wastewater to be irrigated: ☐ Domestic ☐ State/National Park ☐ Seasonal business
☐ Municipal ☐ Municipal with a pretreatment program or significant industrial users
☐ Other (explain) _____

8.2 Months when the business or enterprise will operate or generate wastewater:
☐ 12 months per year ☐ Part of the year (list months): _____

8.3 This system is designed for:
☐ No-discharge.
☐ Partial irrigation when feasible and discharge rest of time.
☐ Irrigation during recreational season, April – October, and discharge during November – March.
☐ Other (explain) _____.

9.0 STORAGE BASINS

9.1 Number of storage basins: _____ (Use additional pages if greater than three basins.)

9.2 Type of basins: ☐ Steel ☐ Concrete ☐ Fiberglass ☐ Earthen ☐ Earthen with membrane liner

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.
Basin #1: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____
Basin #2: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____
Basin #3: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____

9.4 Storage Basin operating levels (report as feet below emergency overflow level).
Basin #1: Maximum operating water level _____ ft Minimum operating water level _____ ft
Basin #2: Maximum operating water level _____ ft Minimum operating water level _____ ft
Basin #3: Maximum operating water level _____ ft Minimum operating water level _____ ft

9.5 Design depth of sludge in storage basins.
Basin #1: _____ ft Basin #2: _____ ft Basin #3: _____ ft

9.6 Existing sludge depth, if the basins are currently in operation.
Basin #1: _____ ft Basin #2: _____ ft Basin #3: _____ ft

9.7 Total design sludge storage: _____ dry tons and _____ cubic feet

10.0 LAND APPLICATION SYSTEM

10.1 Number of irrigation sites _____ Total Acres _____ Maximum % field slopes _____
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
(Use additional pages if greater than three irrigation sites.)

10.2 Type of vegetation: ☐ Grass hay ☐ Pasture ☐ Timber ☐ Row crops
☐ Other (describe) _____

10.3 Wastewater flow (dry weather) gallons per day: Average annual _____ Seasonal _____ Off-season _____

10.4 Land application rate (design flow including 1-in-10 year storm water flows):
Design: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week
Actual: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week

10.5 Total irrigation per year (gallons): Design: _____ gal Actual: _____ gal

10.6 Actual months used for irrigation (check all that apply):
☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec

10.7 Land application rate is based on:
☐ Hydraulic Loading ☐ Other (describe) _____
☐ Nutrient Management Plan (N&P) If N&P is selected, is the plan included? ☐ YES ☐ NO

INSTRUCTIONS FOR COMPLETING
APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER TREATMENT FACILITIES

All blanks must be filled in when the application is submitted to the Missouri Department of Natural Resources. This includes the **required signature**.

Note: Use the form Application for Construction Permit – Sewer Extension, MO 780-1632, if only collection system component(s) are to be constructed.

A land disturbance permit is required if construction will result in the disturbance of one or more acres of land. A land disturbance permit is available through the department's ePermitting system at dnr.mo.gov/env/wpp/epermit/help.htm. A permit fee in accordance with 10 CSR 20-6.011 is required.

After receiving a complete application, the Department enters the application information into the Missouri Clean Water Information System. You may search for the status of a construction permit online at dnr.mo.gov/mocwis_public/applicationInprocessSearch.do.

Part A – Basic Application Information

1.0 If the answer to any of the questions in this section is no, this application may be considered incomplete and returned to the applicant.

1.1 Check the appropriate box. If the project is funded with federal or state monies, supply the funding agency name and project number.

1.2 Check the appropriate box. Provide the date of department approval for the antidegradation report. Include a copy of the approved *Water Quality and Antidegradation Review* with this application. Not every construction project may require an antidegradation review. For more information, guidance documents and forms concerning antidegradation visit dnr.mo.gov/env/wpp/permits/antideg-implementation.htm.

1.3 Check the appropriate box and provide the date of department approval. Per 10 CSR 20-8.110(2), a facility plan must be submitted to the department prior to the submittal of a construction permit application. The department has developed a fact sheet to aid in the development of an approvable facility plan, Facility Plan Guidance for Wastewater Treatment Facilities, Fact Sheet--PUB2416.

1.4 Complete only if No. 1.3 is answered No. Check the appropriate box. Include the exemption reason from 10 CSR 20-6.010(4)(B).

1.5 Check the appropriate box. Provide a copy of the appropriate plans and specifications for department review when applying for a construction permit per 10 CSR 20-8.110 and 10 CSR 20-6.010. A Missouri registered professional engineering seal, signature and date is required on each sheet of the plans and the cover of the technical specifications. An electronic copy of the construction permit application and the information listed below in Portable Document Format (PDF) searchable format or department approved equivalent per 10 CSR 20-6.010(5)(G), along with one (1) paper copy for projects not seeking department funding or two (2) paper copies for projects seeking department funding under 10 CSR 20-4.

1.6 Check the appropriate box. A summary of design shall accompany the plans and specifications when applying for a construction permit per 10 CSR 20-6.010(5)(G) and10 CSR 20-8.110(8). The department has developed a fact sheet to aid in the development of an acceptable summary of design. This document is available online at dnr.mo.gov/pubs/pub2417.htm.

1.7 Check the appropriate box if an operating permit modification is needed. Include the applicable operating permit application. New outfalls, discharges, projects converting to land application, or a lagoon upgrade require an operating permit modification application. Contact the Department for clarification. Projects that may not need an operating permit modification check the N/A box and indicate whether you want to review the draft prior to public notice should the Department determine a modification is required. The Department can modify your operating permit without an application for projects that are adding chlorine disinfection, constructing to meet current operating permit limits, or constructing to meet limits in a schedule of compliance.

- Form A is available online at dnr.mo.gov/forms/780-1479-f.pdf.
- Form B is available online at dnr.mo.gov/forms/780-1512-f.pdf.
- Form B2 is available online at dnr.mo.gov/forms/780-1805-f.pdf.

1.8 Check the appropriate box. More information about the Compliance and Enforcement Water Protection Program is available online at dnr.mo.gov/env/wpp/enf/index.html.

1.9 Check the appropriate box. Include payment or payment confirmation for the fee with your application. See 10 CSR 20-6.011(2) and Wastewater Treatment Facility Permit Fees -- PUB2564.

Note: The department returns incomplete construction permit applications and related engineering documents and the application forfeits the fees. See 10 CSR 20-6.011(5)(A). The applicant forfeits the fees when the applicant withdraws construction applications. See 10 CSR 20-6.011(5)(B).

2.1 Provide the name of the proposed construction project.

2.2 Provide the estimated project construction cost. The estimated and final project construction cost will be useful to the department in conducting affordability analyses.

2.3 Briefly describe the construction project by providing the number and capacity of each new unit.

2.4 Briefly describe the method of sludge handling, use and disposal at the treatment facility.

2.5 Provide the project design information and when required in the units specified.

A. Provide the current population and the design population to be served by the wastewater treatment facility.

B. Provide the estimated design flow information in accordance with 10 CSR 20-8.110(3).

2.6 Provide the additional project information in accordance with 10 CSR 20-8.110(5).

A. Attach a topographic map of the area extending at least one mile beyond the facility property boundaries. This map must show the outline of the facility and the following information. A topographic map is available online at dnr.mo.gov/internetmapviewer or from the Department of Natural Resources' Missouri Geological Survey in Rolla, Mo., at 573-368-2125. (Submittals of more than one map may be necessary to show the entire area.)

1. The area surrounding the wastewater treatment facility, including all unit processes.
2. The major pipes or other structures through which wastewater enters the treatment facility and the pipes or other structures through which treated wastewater is discharged from the treatment facility. Include outfalls from bypass piping, if applicable.
3. The actual point of discharge.
4. Wells, springs, other surface water bodies and drinking water wells that are: 1) within ¼ mile of the property boundaries of the treatment facility and 2) listed in public record or otherwise known to the applicant.
5. Any areas where biosolids produced by the treatment facility are treated, stored, or disposed.
6. If the treatment facility receives waste classified as hazardous under the Resource Conservation and Recovery Act, or RCRA, by truck, rail, or special pipe, show on the map where hazardous waste enters the treatment works and where it is treated, stored or disposed.
7. Outline any wastewater land application sites.

B. Provide a process flow diagram with the influent and effluent design average flow and peak flow capabilities. Also, depict all of the treatment facility components and the corresponding hydraulic capacities of each component. In addition, include all recycle flows in the diagram. If land application is used, depict all irrigation equipment and application sites.

3.0 Complete the Wastewater Treatment Facility information. Include the Missouri State Operation Permit number, outfall number, physical location, and other appropriate contact information.

3.1 Provide the project legal description. The department's mapping system is available online at dnr.mo.gov/internetmapviewer.

3.2 A Global Positioning System, or GPS, is a satellite-based navigation system. The department prefers that a GPS receiver is used and the displayed coordinates submitted. If access to a GPS receiver is not available, use a mapping system to approximate the coordinates.

3.3 Provide the name of the receiving stream(s) to which the discharge is directed and any subsequent tributary until a continuous flowing stream is reached.

4.0 Complete Project Owner information. Include the legal name, address, phone number with area code and email address.

5.0 Complete Continuing Authority contact information. If same as the Project Owner, write "Same as above". A continuing authority is a company, business, entity or person(s) that will be operating the facility and/or ensuring compliance with the permit requirements. A continuing authority is not, however, an entity or individual that is contractually hired by the permittee to sample or operate and maintain the system for a defined time period, such as a certified operator or analytical laboratory. To access the regulatory requirement regarding continuing authority, 10 CSR 20-6.010(2), please visit https://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c20-6.pdf. A continuing authority's name must be listed exactly as it appears on the Missouri Secretary of State's (SoS's) webpage: https://bsd.sos.mo.gov/BusinessEntity/BESearch.aspx?SearchType=0, unless the continuing

authority is an individual(s), government, or otherwise not required to register with the SoS. See 10 CSR 20-6.010(2) for the regulatory requirement regarding continuing authority.

5.1 Check the appropriate box. Include a letter signed by the continuing authority (if not same as the project owner) stating they will "accept, operate and maintain" the wastewater treatment facility after successful construction.

If the continuing authority will not accept and agree to operate and maintain the wastewater treatment facility, this application will be considered incomplete.

5.2 Complete if the continuing authority is a Missouri Public Service Commission, or PSC, regulated entity. See 10 CSR 20-6.010(2)(B)3 for more information. This information is not necessary for existing wastewater treatment facilities currently permitted with a PSC entity as owner and continuing authority.

5.3 Complete if the continuing authority is a property owners association. See 10 CSR 20-6.010(2)(B)5 for more information. This information is not necessary for existing wastewater treatment facilities currently permitted with the property owners association as owner and continuing authority.

6.0 Complete Engineer contact information.

7.0 Check the appropriate box and include check or confirmation number. Applicants can pay fees online by credit card or eCheck through a system called JetPay.

- Per Section 37.001, RSMo, a transaction fee will be included. The transaction fee is paid to the third party vendor JetPay, not the Department of Natural Resources.
- Be sure to select the correct fee type and corresponding URL to ensure your payment is applied appropriately. If you are unsure what type of fee to pay, please contact the Water Protection Program's Budget, Fees, and Grants Management Unit by phone at (573) 522-1485 for assistance.
- Upon successful completion of your payment, JetPay provides a payment confirmation. Submit this form with a copy of the payment confirmation if requesting a new permit or a permit modification. For permit renewals of active permits, the Department will invoice fees annually in a separate request.
- If you are unable to make your payment online, but want to pay with credit card, you may email your name, phone number, and invoice number, if applicable, WPPFEES@dnr.mo.gov. The Budget, Fees, and Grants Management Unit will contact you to assist with the credit card payment. **Please do not include your credit card information in the email.**
- Applicants can find fee rates in 10 CSR 20-6.011 and Wastewater Treatment Facility Permit Fees -- PUB2564 (https://dnr.mo.gov/pubs/pub2564.htm).

WP 04 Construction Permits: https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/592/

8.0 The owner of the construction project must sign the application.

Part B – Land Application

Complete Part B only if the proposed construction project includes land application of wastewater from a treatment facility.

8.0 Provide the applicable Facility Information land application information. Check the appropriate boxes.

9.0 Provide the applicable Storage Basins information. Check the appropriate boxes.

- Freeboard – The depth from the top of the berm to the emergency spillway. Minimum depth • is one foot.
- Safety Volume – The depth to contain the 25-year, 24-hour storm event. Minimum depth is • one foot.
- Maximum Operating Water Level – The water level at the bottom of the safety volume. • Minimum depth is two feet below the top of the berm.
- Minimum Operating Water Level – The water level above the bottom of the lagoon basin for • seal protection. Minimum depth is two feet and may be greater when additional treatment volume is included.
- Total Depth is from the top of the berm to the bottom of the lagoon basin including freeboard.•

10.0 Provide the applicable Land Application System information. Check the appropriate boxes.

10.7 Check the appropriate box. If the land application rate is based on a Nutrient Management Plan, or N and P, include the plan with this application for department review.

Mail the completed form and applicable fee to the department.

If there are any questions concerning this form, please contact the Department of Natural Resources, Water Protection Program at 800-361-4827 or 573-751-1300 or visit dnr.mo.gov/env/wpp.