Permit No. CP0002025

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

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

Jann Clark,
City clerk
The City of Rockaway Beach
2536 State Highway 176
Rockaway Beach, MO 65740

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.

November 21, 2018
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

November 20, 2020
Expiration Date

Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The City proposed to construct the following improvements to the existing facility: a new high flow lift station, a new flow measurement structure at the beginning of the plant, a new filter backwash flow equalizing tank, a new UV level control weir, converting two old clarifiers into sludge holding basins with new sludge process piping and equipment, new return active sludge pumping, new aeration equipment for aeration basins/high flow holding basin/existing sludge basin, new mixers for selector basins and a new on-site backup generator with switchgear for the entire treatment plant.

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 in accordance with the plans and specifications submitted by the Toth & Associates on August 15, 2018.

3. The Department must be contacted in writing prior to making any changes to the approved plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(8).

4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the Department's Southwest Regional Office per 10 CSR 20-7.015(9)(E)2.

5. 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.

6. 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.

7. Upon completion of construction:

   A. The City of Rockaway Beach will become the continuing authority for operation, maintenance, and modernization 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; and

   C. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(D). When the facility applies for their next operating permit renewal, they will be expected to include an updated facility description on their application.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The treatment plant has had many problems with non-compliance over the years. The Department issued Notice of Violations (NOV) multiple times for effluent exceedances and failure to submit DMRs/reports. In 2007 the EPA became involved and issued the first Administrative Compliance Order (ACO). In 2016, Ozark Environmental Services (OES) took over the operation of the plant and corrected deficiencies. The OES continues to operate and maintain the plant without any additional permit violations but the facility still has operational problems and needs to make improvements. The proposed construction is to correct the problems that still exist at the treatment plant. The problems resolved through this upgrade are the existing flow measurement flumes submerges under several feet of sewage during wet weather, UV equipment does not fit the existing concrete trough correctly, there is not enough sludge processing and storage basins, the current jet aeration equipment has clogging problems and no back-up power source for the plant, etc.

2. FACILITY DESCRIPTION

The current treatment plant was built in 1998 and is a non-conventional "jet aeration" type of activated sludge process. The existing treatment plant consists influent flow measurement, influent pumping station, flow equalization basin, selector (anaerobic & anoxic) basins, automatic bar screen, biological reactors, clarifiers, effluent filters, UV disinfection system, sludge digester and storage basins.

The proposed construction will build a new influent structure, replace existing aeration and mixing systems, convert two (2) unused existing clarifiers to sludge basins, add a flow equalization tank for effluent filters' backwash water and add backup power for the entire treatment plant.

The Rockaway Beach Regional WWTF is located at 1000 Boys Camp Road, Rockaway Beach City, in Taney County, Missouri. The facility has a design average flow of 600,000 gpd and serves a hydraulic population equivalent of approximately 6,000 people.

3. COMPLIANCE PARAMETERS

The existing facility can meet all effluent limits as established in Operating Permit MO-0108162 issued November 1, 2017. The proposed construction will replace aging equipment and improve daily operation.

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

- High Flow Lift Station – Construction of a duplex influent pump station with each 5 HP submersible pump capable of operating at 415 gpm at 23 feet of TDH. The station will divert excess wet weather flow to the existing high flow holding basin.

- Aeration in High Flow Equalization Basin – the existing flow equalization basin is going to be utilized during wet weather events where the peak flow is greater than the design peak capacity of the treatment facility. Once the wet weather event subsides, the flow should be returned to the head of the treatment facility for full secondary treatment. The equalization basin has a design volume of 0.25 MG at 5.7 feet level. A new10 HP floating aerator (Aqua-Jet Endura model from Aqua-Aerobic or approved equal) will be installed with a pivotal mooring arrangement to allow aeration and mixing of the basin contents. The proposed aerator within the basin meets complete mix requirements of 0.04 HP per 1000 gallons of stored water suggested in Metcalf & Eddy and meets the minimum of 1.25 cfm required in 10 CSR 20-8.150(7)(E)2. The aerator is necessary to prevent odors while the wastewater is being held.

- New Flow Measurement Structure – Installation of accurate flow measurement devices will give the treatment facility a means of improved data analysis. The existing flow measurement flumes often are submerged under several feet of sewage during wet weather and the recorded flow results cannot be trusted. A new 6-inch throat influent parshall flume with ultrasonic flow sensor (Siemens Sitrans LUT430 or approved equal) will be installed in a concrete structure and shall measure the raw influent wastewater following screening.

- Filter Backwash Flow Equalizing Tank - Installation of a pre-cast concrete tank approximately 6 ft x 13 ft x 6 ft with a volume of 3,500 gallon. For each backwash cycle, the total volume of backwash water is about 2,000 gallons in 5 minutes. Only one of the four effluent filters can be backwashed at a time. A stainless steel plate with a small orifice (1.75” H x 1” W) cut into the bottom will be installed in an internal wall inside the tank. This orifice will discharge at an average rate of 50gpm backwash water to the influent pump station that is 8 times slower than its current discharge rate of 400 gpm.

- New mixers in the selector basins – two (2) 3 HP direct drive floating mixers (Aqua-Aerobic) will replace the existing gear reduction submersible mixers in two (2) selector basins. The selector basins inadvertently serve as grit collectors which is very hard on the current submersible units. The new units are more efficient and require much less maintenance.

- New aeration equipment for Biological Reactors – The existing aged "jet" aeration equipment in the existing biological reactors (operating volume 306,000 gallons each) causes operational problems. Two (2) biological reactors operating in parallel by means of a transfer pipe provide a total volume of 612,000 gallons. The proposed new high speed surface aeration equipment aerator (Aqua-Jet Endura model from Aqua-Aerobic or approved equal) will be installed after the current jet system is permanently removed. Eight (8) new 15/6.7 HP dual surface aerators with 124 inches diameter mist cover will be installed in the north and south aeration basins, four aerators in each basin. Aerator float diameter is 71 inches. The aeration basins are designed for a daily average design flow of 600,000 gallons and daily loading of 1,626 lbs BOD_5. The aeration system is more than adequate for maintaining aerobic conditions and also adequate for mixing. A transfer pipe and elbow allows wastewater from the aeration basins to move by gravity to the clarifiers. The walkway above the basins will be improved at the same time.

- Aerobic Sludge Digesters – The facility currently has a sludge digester with a 28 ft diameter, a 9 ft sidewater depth, and a volume of 41,400 gallons. The existing system was not designed to process all sludge produced at the facility and never worked well. The facility proposed to convert the two old clarifiers (current inactive) two additional sludge digester basins with a 20 ft diameter, a 16 ft sidewater depth, and a volume of 35,200 gallons each at 15 feet depth by converting. The design basis of the sludge digester is an influent concentration of 4,000 mg/L (0.4%) with a flowrate of 13,000 gpd. Installation of one 7.5 HP floating aerator with pivotal mooring and decant piping at each basin will provide aeration and mixing of the sludge to prevent anaerobic conditions. The same aeration system will be installed at the existing sludge basin. New piping will allow the supernatant to gravity flow to the influent pump station. There will be 20,945 cu. Ft. of capacity provided with the three (3) basins. Three 7.5 HP aerators in three sludge digesters provide oxygen which meets 10 CSR 20-8.170(6)(B) of 1.0 HP per 1000 cf. A new 7.5 HP sludge pump (Flygt CT3127.180) will be installed between the two new basins for moving thick sludge at a fast rate during loading of sludge trucks. The sludge pump has a design flow of 300 gpm at 27 ft TDH normal operations.

- Return Activated Sludge (RAS). The RAS rate is 100% of the design average flow, 0.6 MGD, which meets the requirements of 10 CSR 20-8.180(4)(D)1. The RAS MLSS is expected to be 4,000 mg/L. The RAS pumps with VFDs are designed for 290gpm at 31ft TDH. There will be three (3) 5 HP submersible pumps, two (2) operational and one (1) standby.

- UV Level Control Weir – the original UV equipment was replaced with a unit from a different manufacturer. This replacement equipment does not fit the existing concrete trough correctly and causes some lamps to be exposed. This system has two sets of horizontal lamp modules with 24 lamps per module. The lamp modules are about 1.5 inches too tall for trough depth and the top rows of lamps are about one-half out of the water, or about ¾ inch in the dry. This is a total of 12 lamps only half submerged. A new weir will be installed and replaces the current weir to increase the operating depth about 2 inches so that all lamps are under water.

- Emergency Power – A 400 ekW standby diesel generator and automatic transfer switch will be provided to operate the treatment facility in event of power failure. The fuel storage will allow for 24 hours of simultaneous, continuous operation of all process equipment.

5. OPERATING PERMIT

These construction activities do not require a modification to the operating permit. It is expected that the facility owner will include a new facility description in their next operating permit renewal application to reflect the construction of a flow equalization tank for backwash water of its effluent filters.

Lei Hou, PE
Engineering Section
lei.hou@dnr.mo.gov

RECEIVED
AUG 15 2018
Water Protection Program

AP 30416S
CR 0002025

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER FACILITY

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED 3,000.00	CHECK NO. 33113
DATE RECEIVED 8-15-18	D.S.

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: _____ Upgrades & improvements only. No expansion.

1.4 Has the department approved the proposed project's facility plan*?
☐ YES Date of Approval: _____ ☐ NO ☐ N/A (If Not Applicable, complete No. 1.5.) Facility plan included in this submittal.

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? This facility has a current NPDES permit MO-0108162
☐ 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 EPA ☐ 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
Rockaway Beach Regional WWTF Improvements

2.2 PROJECT DESCRIPTION
Construct the following improvements to the existing facility as follows: 1-New high flow control works. 2-New flow measurement structure. 3-Relocate existing force main to new influent structure. 4-New filter backwash flow equalizing tank. 5-New UV level control weir. 6-New sludge processing piping and equipment. 7-New return activated sludge pumping and flow measurement. 8-New aeration equipment. 9-New backup generator with switchgear.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
Sludge is wasted to one of three aerobic digesters, then aerated and thickened by decanting. The processed sludge is then hauled to the Tri-Lakes Biosolids facility.

2.4 DESIGN INFORMATION
A. Current population: 3,250; Design population: 6,000

B. Actual Flow: 180,000 gpd; Design Average Flow: 600,000 gpd;
Actual Peak Daily Flow: 265,000 gpd; Design Maximum Daily Flow: 600,000 gpd;
Design Wet Weather Event: 600,000

2.5 ADDITIONAL INFORMATION
A. Is a topographic map attached? ☑ YES ☐ NO Topo included in Summary of Design

B. Is a process flow diagram attached? ☑ YES ☐ NO Flow diagram included in Summary of Design

2.6 ESTIMATED PROJECT CONSTRUCTION COST
$ 1,100,000.00

3.0 WASTEWATER TREATMENT FACILITY

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Rockaway Beach Regional WWTF	(417) 561-4424	rockawaycity@suddenlinkcity.com

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
1000 Boys Camp Road	Rockaway Beach	MO	65740	Taney

Wastewater Treatment Facility: Mo- 0108162 (Outfall 1 Of 1)

3.1 Legal Description: SE ¼, SE ¼, SW ¼, Sec. 11 , T 23N , R 21W
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): 484760 Northing (Y): 4061622
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: Lake Taneycomo

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
City of Rockaway Beach	(417) 561-4424	rockawaycity@suddenlinkcity.com

ADDRESS	CITY	STATE	ZIP CODE
2536 State Highway 176	Rockaway Beach	MO	65740

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	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
City of Rockaway Beach	(417) 561-4424	rockawaycity@suddenlinkcity.com

ADDRESS	CITY	STATE	ZIP CODE
2536 State Highway 176	Rockaway Beach	MO	65740

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	EMAIL ADDRESS
Shawn Barry, PE / Toth & Associates	(417) 888-0645	sbarry@tothassociates.com

ADDRESS	CITY	STATE	ZIP CODE
830 E Primrose, Suite 200	Springfield	MO	65807

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: Jana Clark

PRINTED NAME	DATE
Jana Clark	8/8/15

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
City Clerk	417-561-4424	Rockawaycity@suddenlinkmail.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 ☐ Subsurface
☐ 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 two 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 _____

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

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

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

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

10.0 LAND APPLICATION SYSTEM

10.1 Type of land application: ☐ Fixed Head Sprinklers ☐ Center Pivot ☐ Traveling Gun ☐ Drip Dispersal
☐ Subsurface Low Pressure Pipe ☐ Other (describe) _____

10.2 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.)

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

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

10.5 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

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

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

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