



SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT
Governor

July 07, 2021

Mr. Rick Lang, Operations Manager
Wagoner County RWD #4
9816 South 239th East Ave
Broken Arrow, Oklahoma 74014

Re: Draft Permit No. ST000073200423
New 0.98 MGD Wastewater Treatment Plant System Improvements
Facility No. S-21542

Dear Mr. Lang:

Enclosed is Draft Permit No. ST000073200423 for the construction of a new 0.98 MGD extended aeration wastewater treatment plant to include: one (1) 50,000 gallon diurnal flow equalization basin, one (1) 3.02 MGD mechanical bar screen, one (1) manual bar screen, one (1) 3.02 MGD stacked-tray vortex grit chamber, one (1) influent Parshall flume, two (2) flow equalization basins with a total storage capacity of 6.2 MG, one (1) FEB return lift station with two (2) 700 gpm pumps, one (1) anoxic basin, two (2) first-stage aeration basins, two (2) second-stage aeration basins, two (2) third-stage aeration basins, two (2) clarifiers, two (2) aerobic digesters, four (4) 100 hp blowers, one (1) ultraviolet disinfection system composed of two (2) 3.05 MGD capacity banks, a low profile cascade aerator with a total vertical height of 2 feet, an effluent Parshall flume, a polymer injection system, three (3) 30 cuyd sludge dewatering boxes, an office/lab building, one (1) 500 kW backup power generator, yard piping, and all appurtenances to serve the New 0.98 MGD Wastewater Treatment Plant, Wagoner County, Oklahoma.

The project authorized by this permit should be constructed in accordance with the plans approved by this Department on July 07, 2021. Any deviations from the approved plans and specifications affecting capacity, flow or operation of units must be approved, in writing, by the Department before changes are made.

Receipt of this permit should be noted in the minutes of the next regular meeting of the Wagoner County RWD #4, after which it should be made a matter of permanent record. We are returning one (1) set of the approved plans to you, one set (1) to your engineer and retaining one (1) set for our files.

Respectfully,

Isaac Cornelson, E.I.
Construction Permit Section
Water Quality Division

IC/RC/md

Enclosure

c: Mark A. Mulder P.E., POE & Associate





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DRAFT PERMIT No. ST000073200423

SEWAGE TREATMENT

FACILITY No. S-21542

DRAFT PERMIT TO CONSTRUCT

July 07, 2021

Pursuant to O.S. 27A 2-6-401, the Wagoner County RWD #4 is hereby granted this Tier II Draft Permit to construct a new 0.98 MGD extended aeration wastewater treatment plant to include: one (1) 50,000 gallon diurnal flow equalization basin, one (1) 3.02 MGD mechanical bar screen, one (1) manual bar screen, one (1) 3.02 MGD stacked-tray vortex grit chamber, one (1) influent Parshall flume, two (2) flow equalization basins with a total storage capacity of 6.2 MG, one (1) FEB return lift station with two (2) 700 gpm pumps, one (1) anoxic basin, two (2) first-stage aeration basins, two (2) second-stage aeration basins, two (2) third-stage aeration basins, two (2) clarifiers, two (2) aerobic digesters, four (4) 100 hp blowers, one (1) ultraviolet disinfection system composed of two (2) 3.05 MGD capacity banks, a low profile cascade aerator with a total vertical height of 2 feet, an effluent Parshall flume, a polymer injection system, three (3) 30 cuyd sludge dewatering boxes, an office/lab building, one (1) 500 kW backup power generator, and all appurtenances to serve the New 0.98 MGD Wastewater Treatment Plant, located in Section 18, T-18-N, R-16-E, Wagoner County, Oklahoma, in accordance with the plans approved on July 07, 2021.

VARIANCES

A variance was requested from OAC 252:656-5-1(2), which requires the design to use an average daily flow 100 gpd per capita, which includes normal infiltration. The request proposed to use a design flow of 80 gpd per capita. The request is granted based on the provided flow data showing a flow much less than 100 gallons per day per capita.

The request for a variance from OAC 252:656-3-5(e), which requires redundant treatment units, including the grit chamber, is granted. The proposed design is for a single vortex stacked-tray grit chamber without any moving parts and includes two (2) FEBs that will be able to receive flow for several days.

The request for a variance from OAC 252:656-13-2(g)(2), which requires the detention time in the vortex grit chamber at design flow to be 30 seconds, is granted. The proposed design is for a detention time of 2.02 minutes at design peak hourly flow.

The request for a variance from OAC 252:656-23-2(a), which requires cascade aerators to be designed using the formulas listed in OAC 252:656 Appendix C. The formulas in Appendix C are used to determine



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the minimum total cascade height. The approved engineering report for this project (reference number ERS000073190562) determined a minimum total cascade height of 8.09 feet was required to provide the minimum dissolved oxygen concentration throughout the year and proposed a total cascade height of 9.05 feet. The plans and specifications propose to provide a low profile cascade aerator with a total cascade height of approximately 2 feet. This request is granted based on the number and history of performance of other wastewater treatment facilities with a low profile cascade aerator of the same design.

The request for a variance from OAC 252:656-19-3(f)(3), which requires the digester bottom to be sloped 1:4 toward the sludge withdrawal pipe, is conditionally granted. The design of the Aero-Mod treatment system is such that sludge concentration is low and performance of other plants with a similar design currently shows that a sloped bottom is not necessary for daily operation; however, the condition for granting this variance is, a standard operating procedure (SOP) for the routine maintenance and cleaning of the digester must be developed and maintained in the treatment facility's Operation and Maintenance Manual (O&M Manual) in accordance with OAC 252:656-3-10, which must be developed and maintained at the wastewater treatment facility.

The request for a variance from OAC 252:656-16-1(j), which requires a means to measure flow rates of the return activated sludge, is conditionally granted. The justification indicated a magnetic flow meter would not have the upstream or downstream pipe lengths required for accurate and reliable measurement of flow. The proposal stated controls would be programmed to calculate the RAS flow rate based on the pumping rate and pump run time, and would be calibrated upon installation. The conditions for granting the request are:

- a. A standard operating procedure will be developed for calibrating the program for calculating RAS flow and maintained at the wastewater treatment plant with the plant O&M manual.
- b. The program will be calibrated yearly to ensure accuracy as pump efficiencies decrease over time.
- c. Records of each calibration will be kept on site at the wastewater treatment plant and made available to DEQ upon request.

The request for a variance from OAC 252:656-19-4(b), which requires 6 inch suction and discharge piping for sludge removal, is granted. The proposal includes 180 gpm pumps with a 4 inch discharge pipe/force main which will provide at least 3.0 ft/s pipe velocity.



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PROVISIONS AND CONDITIONS

By acceptance of this permit, the permittee agrees to operate and maintain the facility in accordance with the Discharge - OPDES (NPDES) rules OAC 252:605 and to comply with the State Certification laws, Title 59, Section 1101-1116 O.S. and the rules and regulations adopted thereunder regarding the requirements for certified operators.

This draft permit is issued subject to the following provisions and conditions.

- 1) That the recipient of the permit is responsible that the project receive supervision and inspection by competent and qualified personnel.
- 2) That construction of all phases of the project will be started within one year of the date of approval or the phases not under construction will be resubmitted for approval as a new project.
- 3) That no significant information necessary for a proper evaluation of the project has been omitted or no invalid information has been presented in applying for the permit.
- 4) That the Oklahoma Department of Environmental Quality shall be kept informed of occurrences which may affect the eventual performance of the works or that will unduly delay the progress of the project.
- 5) That the issuing of this permit does not relieve the responsible parties from any damage which may accrue as the result of the location and operation of the plant in this area.
- 6) That the recipient of the permit is responsible for the continued operation and maintenance of these facilities in accordance with the rules and regulations adopted by the Environmental Quality Board and that this Department will be notified in writing of any sale or transfer of ownership of the facilities.
- 7) That these facilities are approved for an average hydraulic loading of 6,600 gallons/day or an organic load of 11 pounds of BOD₅/day. Before additional loading is connected to the system, plans for suitable enlargement of the facilities shall be submitted to the Oklahoma Department of Environmental Quality for approval.





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- 8) That the permittee is responsible for complying fully with NPDES permit provisions and submitting a permit renewal application 180 days prior to permit expiration.
- 9) That any deviations from approved plans or specifications affecting capacity, flow or operation of units must be approved by the Department before any such deviations are made in the construction of this project.
- 10) That any notations or changes recorded on the official approved set of plans and specifications in the Oklahoma Department of Environmental Quality files shall be a part of the plans as approved.
- 11) As-built plans of this project shall be placed on file with this Department within two months of the completion of the work or a certification by the engineer shall be submitted certifying that no changes have been made in the work as approved.
- 12) The issuance of this permit does not relieve the responsible parties of any obligations or liabilities which the permittee may be under pursuant to prior enforcement action taken by the Department.

Failure to appeal the conditions of this permit in writing within 30 days from the date of issue will constitute acceptance of the permit and all conditions and provisions.

A handwritten signature in black ink that reads 'Rocky Chen'. The signature is written in a cursive, somewhat stylized font.

Rocky Chen, P.E., Engineering Manager, Construction Permit Section
Water Quality Division