



May 28, 2026

ANJUMAN ISLAM, PH.D DIRECTOR
RACINE WATER UTILITY
ROOM 227 CITY HALL ANNEX
RACINE WI 53403

Project Number: W-2026-0508
PWSID#: 25200626
DNR Region: SER
County: Racine

SUBJECT: WATER SYSTEM FACILITIES PLAN AND SPECIFICATION APPROVAL

Dear Ms. Islam:

The Wisconsin Department of Natural Resources (department), Division of Environmental Management, Bureau of Drinking Water and Groundwater, is conditionally approving plans and specifications for the following project. An engineering report or information of sufficient detail to meet the requirements of s. NR 811.09(3), Wis. Adm. Code, was submitted along with the plans and specifications.

Water system name: Racine Waterworks

Date received: 05/08/2026

Project Submitter: Anjuman Islam, Ph.D. - Racine Water & Wastewater Utility

Regional DNR Contact: Dave Barkhahn, 141 NW Barstow St, Waukesha WI 53188, (920)413-9912, David.Barkhahn@Wisconsin.gov

DNR Plan Reviewer: McCrea Baker, 101 South Webster Street, Madison WI 53707, (608) 220-6987, mccrea.baker@wisconsin.gov

Project description: The Racine Water Utility (Utility) has submitted plans and specifications for the relocation of the powdered activated carbon (PAC) injection from the filtered water to the raw water. The plans and specifications are hereby approved subject to the conditions below.

Background: The Utility owns and operates a conventional surface water treatment plant with membrane treatment along the west shore of Lake Michigan. The water supply system consists of three active raw water intakes, two shorewells, four low lift pumps, a conventional filtration plant including rapid mix, flocculation, sedimentation, and filtration followed by a submerged membrane filtration facility, chemical treatment and chlorine contact clearwells, four high lift pumps, five booster stations, eight elevated storage tanks, and the distribution system. Chemical treatment at the plant currently consists of gaseous chlorine addition for chlorine contact time and distribution system disinfection, fluoride addition for community dental health benefits, and the addition of phosphoric acid for distribution system corrosion control.

A PAC feed system was installed in the 2000s for taste and odor control purposes, but had not been placed into operation. The originally constructed and current PAC slurry injection location is post filtration, immediately upstream of membrane filtration. Since the time of installation, it has been noted at other water systems that PAC addition upstream of membranes can cause damage to the membranes.

Taste and odor concerns have not been an issue with the water at the utility since the time of installation of the PAC feed system until 2025, when there were customer complaints regarding the taste and odor of the water. The Utility is seeking to begin using the PAC feed system to address the water quality concerns. To protect the membranes, the Utility has proposed to relocate the PAC injection location to the raw water.

The existing PAC feed system is installed in a building connected to the east end of the filter building. PAC is stored in two 3,000 cubic foot capacity silos. Four volumetric feeders are provided, with individual capacities ranging from 20 to 400 pounds per hour. The system was originally designed for expected feed rates ranging from 137 to 938 pounds per hour. The PAC is mixed with water and pumped to the injection locations as a slurry.

PAC Injection Relocation: An existing injection tap will be utilized on the raw water piping for the injection of the PAC slurry. Approximately 10 to 15 feet of new 4-inch diameter PVC PAC slurry piping will be connected to the existing PAC slurry piping and will discharge to the injection tap on the raw water piping with new 2.5-inch diameter flexible piping.

PAC Product: The existing PAC has been stored in the PAC towers since 2006. The existing PAC will be removed and disposed of. The Utility is currently undergoing jar testing with NSF standard 61 certified Ingevity AquaNuchar and Calgon WPH 1000 PAC. The selected PAC product must be submitted to the department for approval prior to application.

Approval conditions related to Chapters NR 810 and NR 811, Wis. Adm. Code:

1. A resident project representative shall be designated by the water supply owner or by the agent retained by the owner. The resident project representative shall be knowledgeable regarding the proposed construction and be able to ensure the improvements are being constructed in accordance with the department approved plans, specifications, and conditions of the approval. The project representative shall be present on the work site as needed to assure proper construction and installation of the improvements. (s. NR 811.11, Wis. Adm. Code)
2. After construction, maintenance, repair or modification, waterworks facilities shall be disinfected by procedure outlined in the applicable AWWA standards for wells, water mains, storage facilities or treatment facilities. Waterworks may not be placed in service until bacteriological samples have established that the water is bacteriologically safe. (s. NR 810.09(4), Wis. Adm. Code)
3. The specific PAC product shall be submitted to the department for approval prior to bringing the PAC system into service. (s. NR 811.38, Wis. Adm. Code)
4. The owner or owner's agent shall provide notification to Dave Barkhahn from the department's Waukesha office upon completion of the improvements so that he can inspect the completed improvements and issue written authorization prior to placing the improvements in service, if he deems necessary. (s. NR 810.26 (1), Wis. Adm. Code)

Approval constraints: The project was reviewed in accordance with ss. 281.34 and 281.41, Wis. Stats., for compliance with Chapters NR 108, NR 810, NR 811 and NR 820, Wis. Adm. Code and is hereby approved in accordance with ss. 281.34 and 281.41, Wis. Stats., subject to the conditions listed above. This approval is valid for two years from the date of approval. If construction or installation of the improvements has not commenced within two years the approval shall become void and a new application must be made and approval obtained prior to commencing construction or installation.

This approval is based upon the representation that the plans submitted to the department are complete and accurately represent the project being approved. Any approval of plans that do not fairly represent the project

because they are incomplete, inaccurate, or of insufficient scope and detail is voidable at the option of the department.

Be advised that this project may require permits or approvals from other federal, state or local authorities. For example, a certificate of authority from the Public Service Commission of Wisconsin may be required per s. 196.49, Wis. Stats. and ch. PSC 184, Wis. Adm. Code.

Appeal rights: If you believe that you have a right to challenge this decision, you should know that the Wisconsin Statutes and administrative rules establish time periods within which requests to review department decisions must be filed. To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. Requests for contested case hearings must be made in accordance with ch. NR 2, Wis. Adm. Code. Filing a request for a contested case hearing does not extend the 30 day period for filing a petition for judicial review. For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you must file your petition with the appropriate circuit court and serve the petition on the department within 30 days after the decision is mailed. A petition for judicial review must name the Department of Natural Resources as the respondent.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

For the Secretary



McCrea J. Baker, P.E.
Public Water Engineering Section
Bureau of Drinking Water and Groundwater

cc: Joel Brunner – Racine Water Utility
Christopher Tippery, P.E. – CDM Smith
Dave Barkhahn – DNR, Waukesha
Jesse Jensen – DNR, Waukesha
PSC – Madison