PUBLIC HEALTH DIVISION
Drinking Water Services
Kate Brown, Governor

Oregon Health Authority

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January 3, 2020

Robert Bruce
City of Idanha
PO Box 430
Idanha, OR 97350

Re: Membrane Filtration WTP (PR#158-2019)
City of Idanha (PWS ID#00394)
Conditional Approval

Dear Mr. Bruce:

Thank you for the submittal to the Oregon Health Authority's Drinking Water Services (DWS) of plan review information for the Membrane Filtration WTP for City of Idanha. On December 5, 2019, DWS received the necessary plans, specifications and a plan review fee of $825.

The project includes the replacement of the existing sand filter with a new membrane filtration system. The new membrane filtration system will consist of a WesTech skid/housing with Toray manufactured membranes, model HFU-2020N. The new WesTech system will also include a new neutralization/backwash system.

The plans are approved with the following conditions:

- Per OAR 333-061-0050(4)(a)(D), monitoring equipment shall be provided so that the water supplier can perform analyses necessary to monitor and control the treatment processes. This equipment includes pressure transducers, turbidimeter(s), pH meter, chlorimeter, thermometer, flow meter(s), and associated data acquisition and electronic controllers.
- Per OAR 333-061-0050(10)(a), following construction or installation of new facilities and repairs to existing facilities, those portions of the facilities which will be in contact with water delivered to users must be cleaned and flushed with potable water and disinfected according to AWWA Standards C651 through C654 before they are placed into service. Disinfection must be by chlorine unless another disinfectant can be demonstrated to be equally effective.

- Per OAR 333-061-0050(4)(c)(G), each membrane filter system must have a turbidimeter installed after each filter unit for continuous indirect integrity monitoring. This turbidimeter must take a reading every 15 minutes or less and have the ability to trigger a system shutdown if turbidity exceeds 0.30 NTU. Also, the Operations and Maintenance Manual must include a diagnosis and repair plan such that the ability to remove pathogens is not compromised.
- Ensure provisions are made for periodic calibration and/or verification of the pressure transducers used in completing the daily pressure decay direct integrity test.
- Per 333-061-0036(5)(d)(B), which requires direct integrity testing for membrane filtration, monitoring must demonstrate a removal efficiency equal to or greater than the 4.0-$\log_{10}$ removal credit awarded the membrane filtration equipment in the plan. This monitoring should occur at a frequency equivalent to that for indirect integrity monitoring as described in the following.
- Per 333-061-0036(5)(d)(C), Idanha must conduct continuous indirect integrity monitoring on each membrane unit according to the criteria specified in this paragraph.
    - Unless DWS approves an alternative parameter, continuous indirect integrity monitoring must include continuous filtrate turbidity monitoring.
    - Continuous monitoring must be conducted at a frequency of no less than once every 15 minutes.
    - Continuous monitoring must be separately conducted on each membrane unit.
    - If indirect integrity monitoring includes turbidity and the filtrate turbidity readings are above 0.15 NTU for a period greater than 15 minutes (i.e., two consecutive 15-minute readings above 0.15 NTU), direct integrity testing in accordance with subparagraphs (5)(d)(B)(i) through (v) of this rule must immediately be performed on the associated membrane unit.
    - If indirect integrity monitoring includes a DWS-approved alternative parameter and if the alternative parameter exceeds a DWS-approved control limit for a period greater than 15 minutes, direct integrity testing in accordance with subparagraphs (5)(d)(B)(i) through (v) of this rule must immediately be performed on the associated membrane unit.
- The Operations and Maintenance Manual must include a diagnosis and repair plan such that the ability to remove pathogens is not compromised.

The operating conditions that are specific to the model of membrane module proposed are as follows:

- Maximum flux = 100 gfd at 20°C
- Maximum flow rate per module = 53.8 gpm at 20°C
- Minimum Static DIT pressure = 18.3 psi

- Maximum Trans Membrane Pressure = 29 psi at 20°C
- Log removal credit granted is 4.0-$\log_{10}$ for *Cryptosporidium* and *Giardia*, and 0.0-$\log_{10}$ for virus.

Until DWS receives verification that the conditions have been met and final approval has been issued, the membrane filtration plant is not approved for use. For waterline projects, note that engineers must inspect and be prepared to sign off before burying lines. Upon completion of the project, the engineer must verify in writing that construction was completed according to the submitted plans. If substantial changes are made, a set of as-built drawings and record documents must be submitted. Documentation demonstrating how the above conditions were met should reference Plan Review #158-2019 and can be emailed to me at ZACHARIAH.CUNNINGHAM-GOLIK@dhsoha.state.or.us or mailed to:

Attn: Zach Golik
OHA-Oregon Drinking Water Services
444 A Street
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If you have any questions, please feel free call me at 541-726-2587, ext. 22.

Sincerely,

Zach Golik, PE
Regional Engineer
Drinking Water Services

CC: Julie Wray, DWS Portland
Matt Del Moro, PE, HBH Consulting Engineers, Inc