John A. Kitzhaber, MD, Governor



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March 24, 2011

Bob Bedell Marshland Water Association P.O. Box 553 Clatskanie, OR 07016

Marshland Water Association (PWS ID #41 01449), Plan Review # 176-2009, Intake Transmission Pipe, Clarifier, and Treatment Facilities Final Approval

Dear Mr. Bedell:

With submittal of as-built drawings, written letters on September 2, 2010 and March 21, 2011, and the November 9, 2010 Contact Time Tracer Study, **Marshland's Intake Transmission Pipe, Clarifier, and Treatment Facilities project (Plan Review # 176-2009) is granted final approval**. The conditions outlined in the Drinking Water Program's (DWP's) October 9, 2009 conditional approval letter have been met. **The project is approved without conditions.** As outlined in the September 2, 2010 response, the only change from the original submitted plans was replacing the 23,000 gallon concrete raw water settling tank with a Hydro Quip Inclined Plate clarifier for raw water settling.

A Bi-Lateral Compliance Agreement (BCA) between the DWP and Marshland, was signed on February 8, 2010, to address compliance with the Arsenic Maximum Contaminant Level (MCL) associated with the previous groundwater source. With the completion of the new surface water treatment plant to replace the groundwater system, and the May 25, 2010 non-detect Arsenic sample at the intake to the surface water plant (creek), the terms of the BCA have been satisfied, and the system is in compliance with the Arsenic MCL.

I have the following comments on the project regarding the tracer study, and the initial and routine monitoring requirements:

1. I have received and reviewed the November 9th, 2010 Disinfection Contact Time Tracer Study performed by HBH Consulting Engineers. The results are summarized

below.

Contact time through 860-foot of 3-inch pipe segment from the plant to the 50,000 gallon storage reservoir, the storage reservoir, and the 1,000-foot of 6-inch pipe segment from the reservoir to the first user:

Flow = 25 gallons per minute (gpm) through 860-foot pipe and 30 gpm through reservoir and 1000-foot pipe Storage Tank at 50% Volume or 25,000 gallons Contact Time = 144 minutes = Approx. 12 minutes in 860-foot section of 3 inch pipe + 83 minutes in reservoir + 49 minutes in 1,000 foot section of 6-inch pipe

Please use 144 minutes as the contact time for determining CTs (Chlorine Concentration multiplied by Contact Time) for disinfection in the monthly reports submitted to DWP. If the peak demand flow leaving the reservoir is less than 30 gpm, you may use an empirically-determined effective baffling factor of 10% for the 50,000 gallon storage tank (You may use 10 % of the lowest operating volume of the tank to determine effective volume of the tank). The following formula may be used to determine contact time:

Contact time = [0.10 x (V_{Reservoir}) + 316 gallons + 1468 gallons] / Peak Demand Flow

If Marshland intends to continue to use the reservoir for contact time for disinfection, a new tracer study will be needed if peak demand flows exceed 10 % of the flow used during the tracer study or 33 gpm, or if the reservoir volume is less than 25,000 gallons (tank half-full), the volume during the tracer study.

2. Initial Monitoring Requirements:

<u>Chemicals (to be taken at the Entry Point from Tandy Creek-after treatment and storage tank):</u>

- Synthetic Organic Compounds-SOCs: One sample during 1st quarter 2011 (January 1 – March 31) and 2nd quarter 2011 (April 1 – June 30)
- Nitrate: Annually, beginning in 2011
- Inorganic Compounds (including Arsenic): Once a calendar year beginning with 2011 and continuing through 2012

• Radionuclides (Gross Alpha, Radium 226/228, and Uranium): Once every nine years, next sample due in 2019

Note, that initial monitoring requirements for Volatile Organic Compounds have been met, as one of the four required initial quarters of monitoring has been satisfied by 1992 monitoring when the Tandy Creek surface water source was used.

Lead and Copper Monitoring (to be taken at approved taps in the distribution system):

• Five sample locations at approved taps in the distribution system between January and June 30, 2011

Coliform (to be taken at Tandy Creek-source water sample):

• Raw *E. coli* counts of creek water, once every two weeks for one year according to the schedule submitted to the DWP earlier this year

3. <u>Routine monitoring requirements for chemicals and lead and copper distribution</u> <u>monitoring will be specified after the initial monitoring outlined above is</u> <u>completed.</u>

4. <u>Routine coliform sampling</u>: Monthly in the distribution system, according to your coliform sampling plan

Thank you for your time and cooperation in completing the project. If you have any questions, or would like this letter in an alternate format, please contact me at either (971) 673-0459 or james.b.nusrala@state.or.us.

Sincerely,

James Nusrala, P.E. Regional Engineer <u>http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater</u> cc: Fred Bolton, PE Bolton Engineering 14875 SW Peachtree Drive Tigard, OR 97224

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