

MUNICIPALITY OF ANCHORAGE



Development Services Department
On-Site Water & Wastewater Section (On-site)

Phone: 907-343-7904
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December 19, 2017

Crewdson Engineering, LLC
PO Box 671389
Chugiak, AK 99567

Attn: James Crewdson, P.E.
Re: Bio-Microbics BioBarrier MBR 1.0-N Approval

Dear Mr. Crewdson,

This letter is in response to your request that the Municipality of Anchorage (MOA) Onsite-Water & Wastewater Section approve the BioBarrier Membrane BioReactor (MBR) wastewater treatment system, manufactured by Bio-Microbics, Inc and distributed by Denali Environmental Supply, for use in the MOA. The BioBarrier MBR is an NSF 40, 245 and 350 Class R certified wastewater treatment system that utilizes biological processes and membrane separation to treat wastewater. Although allowed by the NSF 350 certification, the MBR 1.0-N is not allowed to discharge to the ground surface and is only allowed to discharge directly into a subsurface absorption system. The MBR 1.0-N is granted interim approval for monitoring and testing in accordance with the requirements listed below.

1. The design, installation, operation and maintenance of MBR 1.0-N systems shall be in accordance with the approved manufacturer's requirements, as well as the attached Approval Request letter and supporting concrete tank design documents;
2. Each project specific design shall be permitted on a case-by-case basis during the monitoring period;
3. The proposed concrete tank (design dated 10/25/17) is approved for a maximum burial depth of six feet. Other tank designs will require review and approval;
4. The design shall meet all applicable horizontal and vertical separation distances required by the currently adopted code. As an alternative, if necessary, a sand filter sized for a minimum flow of two times and maximum flow of five times the MBR maximum effluent discharge rate (in gallons-per-minute), may be used as a means of providing the required Category III vertical separation distances during the two year monitoring period. The minimum length of the sand filter shall provide two feet effluent travel distance prior to discharging to groundwater and four feet effluent travel distance prior to discharging above an impermeable barrier (three feet if system is also being tested for nitrogen reduction approval, as detailed under Requirement #8 below);

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5. Effluent from the MBR 1.0-N, or sand filter if included in the design, shall be discharged into a subsurface absorption system. The effective area shall be sized using the wastewater application rates included in the Approval Request letter to provide an operational capacity sufficient to dispose of 150 gallons of wastewater per day per bedroom;
6. MOA shall not be responsible for construction, testing, maintenance and service contract costs;
7. Requirements for Category III Approval:
 - a. A minimum of two systems shall be installed, monitored and tested;
 - b. The monitoring period shall begin when the first system becomes operational and end two years after the second system becomes operational;
 - c. There is no limit on the maximum number of systems that can be installed during the monitoring period, but all systems shall be monitored until the end of the monitoring period;
 - d. Monthly remote monitoring reports shall be submitted to the department for all installed systems;
 - e. In general, reduction of CBOD, TSS and fecal coliform levels have been demonstrated by NSF 350 testing to the satisfaction of the department. However, an effluent sample shall be collected each winter, during the two year monitoring period, and analyzed for CBOD and fecal coliform levels to demonstrate levels in compliance with Category III requirements. Samples shall be collected from at least the first two systems installed;
 - f. Third-party, department approved individuals shall collect samples and have them analyzed by a department approved lab;
 - g. A report shall be submitted to the department at the end of the monitoring period to include status of and observed/known mechanical, operational or functional issues noted on all installed systems, as well as sample results required above.

Upon successful completion of these requirements, the BioBarrier MBR 1.0-N shall be approved for use as a Category III advanced wastewater treatment system, under the jurisdiction of AMC chapter 15.65. The MBR 1.0-N must maintain NSF 350R certification as a condition of this approval.

8. Requirements for Nitrogen Reducing Approval:
 - a. A minimum of two systems shall be tested. There is no limit on the maximum number of systems that can be installed for testing;
 - b. Effluent samples shall be collected monthly, for three months during the coldest time of the year, and analyzed for total nitrogen levels. Total nitrogen levels for all samples must be 20 mg/L or less;
 - c. Third-party, department approved individuals shall collect samples and have them analyzed by a department approved lab;

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- d. A report shall be submitted to the department at the end of the test period for each tested system. The report shall include:
1. Total nitrogen test results,
 2. Outside air temperature at the time samples were taken,
 3. Confirmation that house was occupied for the entire testing period,
 4. Number of bedrooms,
 5. Number of occupants and
 6. Measured total gallons of effluent treated per month.
- e. The department may require additional testing or place limitations on approval, based on test conditions and/or results identified in reports.

Upon successful completion of these requirements, the MBR 1.0-N shall be additionally approved for use as a nitrogen reducing advanced wastewater treatment system, under the jurisdiction of AMC chapter 15.65. The MBR 1.0-N must maintain NSF 350R and 245 certification as a condition of this approval.

Sincerely,



Rebecca Carroll, P.E.

Municipality of Anchorage
On-Site Water & Wastewater Section
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