

**NORTH CAROLINA DEPARTMENT
OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION**

INNOVATIVE WASTEWATER SYSTEM APPROVAL
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INNOVATIVE WASTEWATER SYSTEM NO: IWWS-99-2

ISSUED TO: Gary Koteskey, President
GAG *SIM/TECH* Filters
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Boyne City, MI 49712
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FOR: GAG Sim/Tech Filter Model STF-100 (Job Ready)
GAG Sim/Tech Filter Field Assembled Models STF-100A, STF-100A2, and STF-100A3
Pressure Alarm Switch Model STF-101
Polyester Sock Model STF-104

APPROVAL DATE: June 1, 1999

In accordance with 15A NCAC 18A.1969, an application by GAG *SIM/TECH* Filters, Boyne City, MI, for approval of their GAG Sim/Tech Filter has been reviewed and found to meet the standards of an innovative system when all of the following conditions are met:

A. GENERAL

This Innovative System Approval is applicable to subsurface wastewater systems utilizing GAG Sim/Tech Filters in the discharge line from an effluent pump, following pretreatment by a septic tank, or other approved wastewater pretreatment component, which delivers effluent to a pressurized or gravity distribution device. The GAG Sim/Tech Filter is designed to filter out solids greater than 1/16-inch in size (or 600 microns when the optional sock filter insert is used) from the effluent to prevent plugging of small holes in the distribution network. This Innovative System Approval is limited to systems where the pumping rate through the filter shall not exceed 80 gallons per minute. However, for systems requiring a higher pumping rate, consideration shall be given by the State for approval on a case-by-case basis, based upon special design considerations made by the system designer and manufacturer.

B. SYSTEM DESCRIPTION

1. The GAG Sim/Tech filter is installed in the vertical discharge pipe on the pressure side of an effluent pump in a wastewater system pump tank. The filter assembly consists of inlet and outlet pipe and disconnect fittings, filter containment cannister, and the filter. The filter is manufactured of Type 347 stainless steel with 0.062 inch diameter holes and a 41 percent

open area, and is three-inches in diameter and 18 inches long. The filter assembly which comes with Model STF-100 (“Job Ready”) includes a two-inch Sch. 40 PVC inlet pipe which attaches to the pump discharge pipe (or directly to the pump discharge port), a Sch. 40 PVC filter containment cannister with filter, and Sch. 80 PVC union for connection with a two-inch PVC discharge pipe. An optional polyester sock with 600-micron mesh size may also be inserted in the filter. Field assembled Models STF-100A, STF-100A2, and STF-100A3 come with a Sch. 40 PVC filter containment cannister and filter, and inlet and outlet ports to be connected by the installer to the pump and discharge piping (Model 100A: 3-inch inlet, 2-inch outlet; Model 100A2: 2-inch inlet, 2-inch outlet; Model 100A3: 3-inch inlet, 3-inch outlet).

2. The pressure alarm switch, when provided, is installed in the cannister between the pump and the filter, and wired directly to an outside, above grade separate alarm panel, or directly to the pump high water alarm. Pressure alarm switch is applicable to Model STF-100 and Model STF-100A2, only.

C. USE LIMITATIONS AND DESIGN CRITERIA

1. The GAG Sim/Tech filter may be used in any system requiring pumping to a pressurized distribution system. The filter may also be used in the initial construction or when modifying or repairing a system which involves pumping to a conventional (gravity distributed) drainfield, when it is determined by the environmental health specialist that the retention of solids facilitated by the filter shall improve system performance. Under this Innovative Approval, the filter shall not be installed where the design pumping rate exceeds 80 gallons per minute, unless specifically approved by the State on a case-by-case basis.
2. Pump total dynamic head calculations should assume the filter will increase friction head losses by up to two feet (based on the filter being 95-percent clogged, and a flow rate of 80 gpm). The designer may utilize lesser estimated head loss values based upon manufacturer’s recommendations, when the pumping rate is less than 80 gpm.
3. **The pressure alarm switch** is a recommended, optional accessory for most applications, and **mandatory** when a polyester sock insert is used in conjunction with the filter. When used, the pressure alarm switch shall be connected either to the pump’s high-water alarm, or to a separate adjacent audible and visible alarm. Requirements for the alarm shall be the same as for the pump high water alarm (see Rule 15A NCAC 18A .1952[c][9]).

D. INSTALLATION AND TESTING PROCEDURES

1. The GAG Sim/Tech filter and appurtenances shall be assembled and installed in accordance with manufacturer’s specifications. The filter cannister and the cannister/pump disconnect shall be located in such a manner that they can be readily accessible by the operator beneath the access manhole opening and removable by hand from above finished grade. The pump disconnect shall be located within 18 inches of the top of the riser opening.
2. A check valve shall be installed in the pump discharge line downstream of the filter/pump disconnect.
3. Wherever the pressure alarm switch is also to be installed, a shut-off/pressure adjustment

valve shall also be installed in the discharge line downslope of the filter/pump disconnect and within 100 feet of the pump tank. When pumping to a pressure distribution system, the pressure alarm switch shall be adjusted per manufacturer's instructions so that an alarm condition will be triggered when the pressure drop across the filter increases by more than two pounds per square inch. Pressure drop setting shall be tested by simulating a pressure drop in the pressure distribution network by adjustment of the shut-off/pressure adjustment valve.

E. OPERATION AND MAINTENANCE

1. System classification, management and inspection shall be in accordance with Rule .1961. A management entity with a Certified Operator shall be required to maintain the system whenever the GAG Sim/Tech filter is used in conjunction with pumping to a pressure-distribution drainfield or to a pretreatment system which utilizes a pressure distribution system (e.g. Low-pressure pipe drainfield or LPP-distribution system in sand filter), and whenever pumping is timer-controlled (e.g. flow equalization system).
2. Use of the GAG Sim/Tech filter shall be clearly indicated on the Operation Permit. The filter shall be used and maintained in accordance with manufacturer's specifications and applicable laws and rules. Debris removed from the filter during servicing shall be directed into the septic tank, or otherwise handled in accordance with an alternate approved sanitary disposal method.

F. LITERATURE

The manufacturer shall furnish with each filter:

- Literature to be provided to the system installer describing installation procedures.
- Literature to be provided by the installer to the system owner/user/operator describing filter and recommended maintenance and servicing procedures.

G. MAINTAINING APPROVAL STATUS

The approval status is governed by Rule .1954(e).

Approved by: _____ Date: _____