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**INSPECTION AND SAMPLING IN TITLE 5 I/A SINGLE FAMILY HOME REMEDIAL AND
GENERAL USE TREATMENT SYSTEMS WITH DESIGN FLOWS LESS THAN 2000
GALLONS PER DAY**

Effective date: January 1, 2006

Policy/SOP/Guideline #: BRP/DWM/PeP-P06-1

Program Applicability: BRP, Watershed Permitting, Title 5

Approved by: Assistant Commissioner
Glenn Haas

Regulation Reference: 310 CMR 15.284, 15.287(2),
310 CMR 15.289(3)

310 CMR 15.202(4)(c)

Supersedes Policy/SOP/Guideline: NONE

PURPOSE:

This policy presents the Department's position on the appropriate inspection and sampling schedule for Remedial Use and General Use Innovative/Alternative (I/A) Title 5 systems installed at Single Family Homes (SFH). This policy amends the provisions for inspection and sampling contained in Title 5, 310 CMR 15.000 and the Department's approvals and certifications for I/A Systems.

APPLICABILITY:

This policy is for SFH owners and operators who own, operate and/or maintain Remedial and General Use systems, and for boards of health and Department staff that monitor operation of such systems. This policy applies only to I/A systems that serve SFH facilities with design flows of less than 2000 gallons per day (gpd). This policy does not prohibit the local approving authority from requiring more frequent inspection and/or sampling. **This policy does not apply to nitrogen reducing systems Certified for General Use or to Provisional or Piloting systems or to Remedial or General Use commercial systems or systems with design flows of 2000 gpd or greater.**

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD Service - 1-800-298-2207.

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INTRODUCTION:

Over 2000 Remedial and General Use I/A Systems have been installed at SFH in Massachusetts since the promulgation of 310 CMR 15.000 in 1995. Remedial Use systems, installed to replace failed onsite systems, are designed to reduce biochemical oxygen demand (BOD₅) and total suspended solids (TSS) to 30 milligrams per liter (mg/L) or less. General Use I/A systems can be installed either for nitrogen reduction or when the owner can demonstrate the capability to install a standard Title 5 system. Some boards of health are requiring General Use systems to be installed for new construction to meet local environmental limits.

The Department requires quarterly inspection and effluent sampling for pH, BOD₅ and TSS for the first year of operation in remedial situations. When approved by the Department, sampling is reduced to an annual event after the first year. All SFH I/A systems Certified for General Use must be inspected on a quarterly schedule, four times per year. The above inspection provisions were adopted based on the Board of Certification of WWTP Operators recommendations to ensure that the systems are correctly maintained and operated.

The Department has been collecting operating data on aerobic I/A systems, i.e. - trickling filters, submerged media, RSF or other systems. This database indicates that these systems are producing a higher quality effluent than required by the regulations; median BOD₅ and TSS values are 9.5 mg/L and 7.6 mg/L, respectively. Inspection reports for both Remedial and General Use systems indicate that problems occur at a low incidence and are generally detected by the onsite alarm system.

Accordingly, the Department will reduce the inspections required per year for SFH Remedial and General Use systems and condition the requirement for sampling and laboratory testing on SFH Remedial Use systems.

TEXT:

The Remedial Use technology approvals oblige the owner to have quarterly operation and maintenance (O & M) inspections conducted for the life of the system. In addition, the system for the first year of operation must have quarterly effluent sampling for pH, BOD₅ and TSS and then an annual sample for those parameters. General Use systems that are not certified for nitrogen reduction require quarterly inspection, without sampling, for the life of the system.

The I/A Program has reviewed the operations of the over 2000 aerobic Remedial and General use I/A Systems installed on SFH in Massachusetts and has developed a new policy for inspection and sampling. The continued sampling of the Remedial Use aerobic I/A systems is not necessary except in special circumstances for the following reasons:

1. Systems approved by the Department for Remedial Use must have previously received general use approval in other states.
2. There is generally a reasonable amount of information on operations in those states.
3. Field sampling of SFH systems only duplicates a process that has already been conducted in other states.
4. The Department has reviewed over 4500 data points and found these systems provide good effluent quality.

The Program has determined that under almost all circumstances a visual examination of the effluent wastewater followed by simple field testing will demonstrate that the systems are operating at secondary treatment standards, 30 mg/L of BOD₅ and TSS. The Department will now require that system operators perform and provide documentation for the following field tests:

1. Visual examination of the effluent for color, turbidity and effluent solids,
2. Effluent pH to determine if the wastewater is between 6 and 9 standard units,
3. Dissolved oxygen, 2 mg/L or more, to ensure that the system is operating, and
4. Turbidity, less than or equal to 40 NTU.

If the effluent does not pass all of the field tests than the operator will be required to collect a sample for laboratory analysis.

Based on the preponderance of inspection reports submitted since 1996, the Program has also determined that conducting four inspections per year is unnecessary for SFH systems. The Program has determined that quarterly inspection does not improve operation or reduce system failures. Remedial Use system will now require two inspections per year. During those inspections the operator will conduct and document the field tests described above. Should the system fail the field test, the operator will be required to collect an effluent sample for laboratory testing. If the laboratory tests indicate that the system is not in compliance, the operator must conduct a follow up inspection and field-testing to pinpoint the problem within 60 days of the original inspection date. Should the subsequent inspection and field-test fail the operator shall conduct a full evaluation within 30 days:

1. Including if necessary laboratory testing, and
2. Prepare and submit a report to the local approving authority that details the problems and includes recommendations for repairing the system.

General Use systems are presumed equivalent to a standard Title 5 system. The Program has determined that an annual inspection with one field test as described above is adequate.

Table 1, next page, presents the Program's inspection and sampling requirements for SFH I/A systems with design flows of less than 2000 gpd. The table does not include inspection requirements that the technology supplier specifies is necessary for start up and shut down of these systems.

Table 1. INSPECTION AND SAMPLING REQUIREMENTS FOR SFH REMEDIAL AND GENERAL USE SYSTEMS

System Type	Inspection Schedule	Field Test	Laboratory Test
Remedial	Twice per year	Visual, pH, DO, Turbidity	pH, BOD ₅ and TSS ¹
General ²	Once per year	Visual, pH, DO, Turbidity	pH, BOD ₅ and TSS ¹

1 = Laboratory Test required only if system does not pass Field Test, follow up Inspection and Field Test within 60 days if Laboratory Test results do not meet the secondary treatment limits.

2 = Systems Certified for General Use but not certified for nitrogen reduction.