

Indiana Standards for Aerobic Treatment Units (ATU)

I. Purpose

This document replaces the department's *Standards for Secondary Treatment Systems* (published December, 2009). The purpose of this document is to ensure uniform application of policy across all aerobic treatment units (ATU) technologies receiving sewage of domestic wastewater strength in accordance with the minimum requirements of [410 IAC 6-8.3](#), *Residential On-Site Sewage Systems*, for residential systems and [410 IAC 6-10.1](#), *Commercial On-Site Sewage Systems*, for commercial systems. This document provides the minimum standards that manufacturers of this type of technology will use to create and update their manuals for their specific technologies. This document does not provide for the use of ATUs for high strength waste (See [410 IAC 6-10.1-20](#) for the definition of high strength waste).

These standards apply to aerobic treatment units [see list of Indiana approved ATUs listed on Indiana State Department of Health (department) website, [Approved Technologies New to Indiana](#).] Manufacturers of ATUs not currently recognized under these standards may submit the ATUs for review by the department.

These standards apply to all on-site systems with a daily design flow (DDF) ≤ 1050 gpd. For on-site systems with a DDF > 1050 gpd, plans and specifications must be submitted to the department for review and approval (see *Section III.A*). These standards do not address design requirements for recirculating gravel filters and subsurface wetlands. Contact the department for design requirements for other secondary treatment systems (e.g. non-proprietary components such as recirculating gravel filters and subsurface constructed wetlands).

II. Definitions

For definitions not included in this document, the definitions in [410 IAC 6-8.3](#) and [410 IAC 6-10.1](#) shall apply.

- A. Aerobic Treatment Unit (ATU): A propriety sewage treatment component, independent of a soil absorption field, that uses mechanical means to bring sewage into contact with oxygen to maintain aerobic conditions within the treatment component.
- B. Authorized Representative: A person authorized by the manufacturer to represent the manufacturer.
- C. Certified Designer: A person authorized by the manufacturer to design on-site sewage systems which incorporates the manufacturer's ATU into the design of the system.
- D. Certified Installer: A person certified by the manufacturer to install on-site sewage systems which includes the manufacturer's ATU.
- E. Certified Service Provider: A person certified by the manufacturer to provide operation, maintenance, and inspections of an on-site sewage system which includes the manufacturer's ATU.
- F. Design Daily Flow: The calculated daily sewage flow from a residence or commercial facility expressed in gallons per day. The DDF is the total sewage flow for the entire project. See [410 IAC 6-8.3](#) and [410 IAC 6-10.1](#) for calculating DDF.
- G. Department: The Indiana State Department of Health
- H. Local Health Department (LHD): A local health department created pursuant to [IC 16-20](#), or its duly authorized representative.

III. Approval and On-site Sewage ATU Construction Permit

- A. In accordance with *410 IAC 6-8.3-52(h)* and *410 IAC 6-10.1-49(h)*, all ATU technologies must be reviewed and approved by the department in accordance with these standards in order to apply the provisions of these standards to the technology. ATU technologies using different manufactured ATU units shall be considered as separate ATU technologies for the purpose of this document.
- B. The department:
1. Reviews, approves, and lists aerobic treatment units when the manufacturer demonstrates that they meet or exceed the requirements of the department as outlined in *410 IAC 6-8.3*, *410 IAC 6-10.1*, and these standards;
 2. Removes ATUs from lists when performance is determined to be unacceptable. The department will inform the manufacturer, in writing, prior to taking this action.
 3. Lists approved ATU on its website, [Approved Technologies New to Indiana](#).
- C. For the purposes of these standards, an ATU must:
1. conform to NSF/ANSI *Standard 40-2010, Residential Wastewater Treatment Systems*, for Class I plants or to standards of an equivalent third party product testing laboratory acceptable to the department that meet or exceed the NSF/ANSI standards;
 2. bear a current registered certification mark;
 3. provide a minimum aerobic treatment capacity of one hundred fifty (150) gallons per bedroom per day;
 4. discharge into:
 - a. a soil absorption system approved in accordance with the provisions of *410 IAC 6-8.3*, *401 IAC 6-10.1* or department standards; or
 - b. another treatment system as approved in accordance with department standards published under the provisions of section *410 IAC 6-8.3-52(h)* and *410 IAC 6-10.1-49(h)*.
- [See [Indiana Interpretation of 410 IAC 6-8.3: Tanks Fitted with Aeration Units for Aerobic Digestion](#) for information on the use of aerobic treatment units (ATUs) under the provisions of *410 IAC 6-8.3-60(d) and (h)* and *410 IAC 6-10.1-68(d) and (h)*.]
- D. The department can approve an ATU technology only in a manner that is consistent with the testing methods and processes on the technology as listed by NSF/ANSI and submitted to the department.
1. Any changes, modifications, or substitutions of components, materials, products, or specifications to a listed ATU must be submitted by the manufacturer with verification of approval by ANSI/NSF for the modifications.
 2. Products in a manufacturer's product line that are included in an approved ATU are approved for use only in the approved ATU.
- E. Components and materials in an approved aerobic treatment system (ATU) must perform according to manufacturer and manufacturer performance requirements and the requirements of these standards.
- F. For on-site systems with a subsurface drip system (SDS) soil absorption field (SAF), a programmable logic controller (PLC) must be used to dose the SAF.
- G. For a commercial facility that generates actual effluent flows over a single work shift or over a 1, 2, or 3 day period each week, flow equalization of the aerobic treatment unit, with sufficient capacity to equalize actual flows, is required. Calculations for the maximum volume of liquid stored for flow equalization must include actual effluent flows summed over the peak flow period.

III. Requirements for manufacturers

- A. Each manufacturer must submit to the department:
1. Copies of all testing data and reports generated from that data;
 2. A listing of all approvals and manuals from other states and provinces; and copies of such approvals if they are to be considered as part of the department's review of the technology.
 3. Copies of all certifications from certifying organizations;
 4. Copies of all load testing to verify the structural integrity of the products; and
 5. Any other documentation deemed necessary by the department for the review of the SLS technology and products used in the technology.

The requirements of the above five items may be met by electronic submission of documents.

- B. Each manufacturer submittal must include the following product specific items:
1. The model numbers and capacities (GPD) for each ATU model for which approval is requested.
 2. The Design Configurations from *Section IV* of these standards for which approval is being requested.
 3. Schematics of each model, with dimensions, for which the manufacturer is requesting approval, including schematics of trash tanks. The schematics must include, but not limited to, such items as length, width, depth, size and location of inlets and outlets, types and location of any baffles, etc.
 4. Issues related to water softener backwash in accordance with *410 IAC 6-8.3-60(i)* and *410 IAC 6-10.1-68(i)*.

The requirements of the above five items may be met by electronic submission of documents.

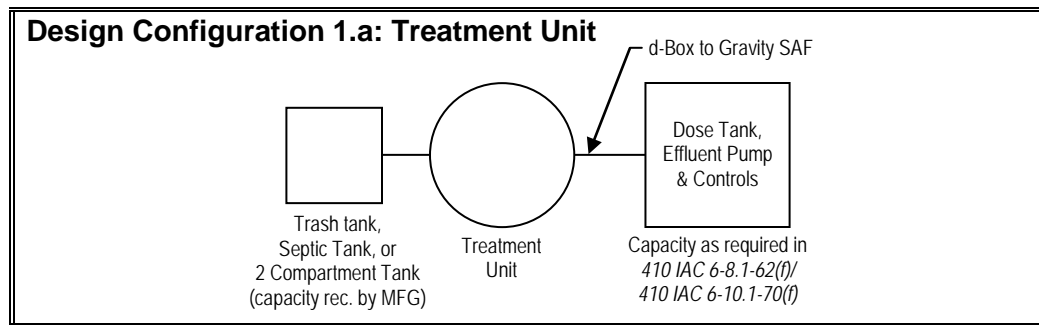
- C. Each manufacturer must provide Indiana specific design, installation, and maintenance manuals that cover all aspects of ATU system design, installation, and maintenance in accordance with *410 IAC 6-8.3* and *410 IAC 6-10.1* and these standards. Design, installation, and maintenance manuals must receive departmental approval in writing. Any changes to the approved Indiana design, installation, and maintenance manuals must be approved by the department in writing prior to publication.
- E. The Indiana design, installation, and maintenance manuals must be approved by the department prior to any training and prior to the issuance of any construction permits.
- D. For *ANSI/NSF Standard 40-2010, Residential Wastewater Treatment Systems* for Class I plants, the manufacturer of the unit, or authorized representative, must include a 2-year initial service policy in the original purchase price of the unit
- E. Each manufacturer must provide the approved Indiana design, installation, and maintenance manuals to each certified designer, certified installer, and certified service provider of its SLS technology, staff of the department, and staff of LHDs.
- F. Each manufacturer must notify the department at least 10 working days in advance of any scheduled training event for which more than three individuals have been invited to attend.
- G. Each manufacturer must train and certify every person involved in the design, plan review, permitting, installation, construction, inspection, and maintenance of its technology in accordance with its approved Indiana design, installation, and maintenance manuals.
- H. Each manufacturer must train and certify designers, installers, and service providers for their specific products.
- I. Each manufacturer must provide to previously certified individuals:
1. notification of, and access to, the design and installation manuals resulting from these standards; and
 2. notification of, and access to, future revisions to design and installation manuals.

- J. Each manufacturer must maintain a list of certified individuals and provide that list to the department upon request.
- K. If a manufacturer requires that system installers complete and submit an installation form to the manufacturer, the manufacturer is responsible for administration of that requirement.
- F. The manufacturer or authorized representative must provide the owner a copy of:
 - 1. The O&M agreement; and
 - 2. All manufacturer warranty information for each component of the ATU.
- G. Each manufacturer or authorized representative must report to the department and LHD failure of an owner to renew an O&M agreement within 30 days of non-renewal.

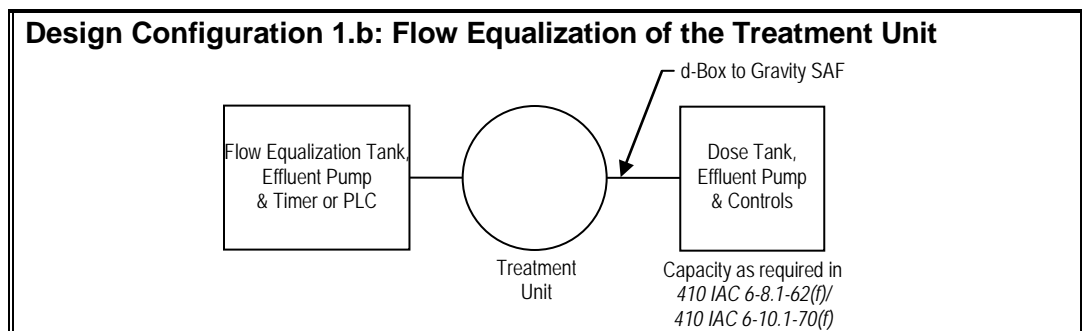
IV. Design Configurations for aerobic treatment units (ATU)

The design configurations for aerobic treatment units on projects with DDF \leq 1050 gpd are divided into five categories: 1a - treatment unit; 1b - flow equalization of the treatment unit; 1c - Remediation or Addition to an Existing Residential SAF; 2a - Treatment Unit and Dosing of the SDS SAF; and 2b - Flow Equalization of the Treatment Unit and Dosing of the SDS SAF.

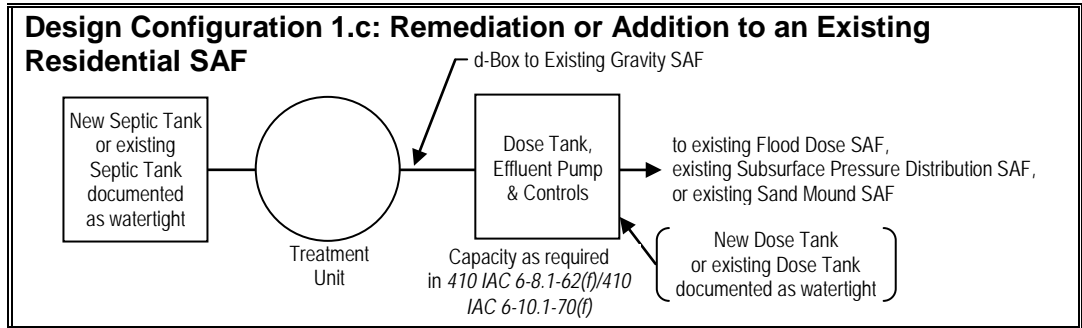
- A. Design Configuration Options for on-site systems with a DDF \leq 1050 gpd.
 - 1. For SAF described in [410 IAC 6-8.3](#), or [410 IAC 6-10.1](#), one of the following options.
 - a. Design Configuration 1.a: Treatment Unit



- 1) A septic tank, a two compartment septic tank, or a trash tank preceding the treatment unit with at least the capacity recommended by the manufacturer of the treatment unit required in *Section III.C.* of these standards.
- 2) For a gravity SAF, a distribution box (d-box).
- 3) For a flood dose, subsurface pressure distribution, or sand mound SAF, a tank following the treatment unit with:
 - a) A capacity as required in *410 IAC 6-8.3-62(f)* or *410 IAC 6-10.1-70(f)*, whichever is applicable;
 - b) A wastewater grade effluent pump; and
 - c) Controls to dose the SAF using demand dosing.
- b. Design Configuration 1.b: Flow Equalization of the Treatment Unit

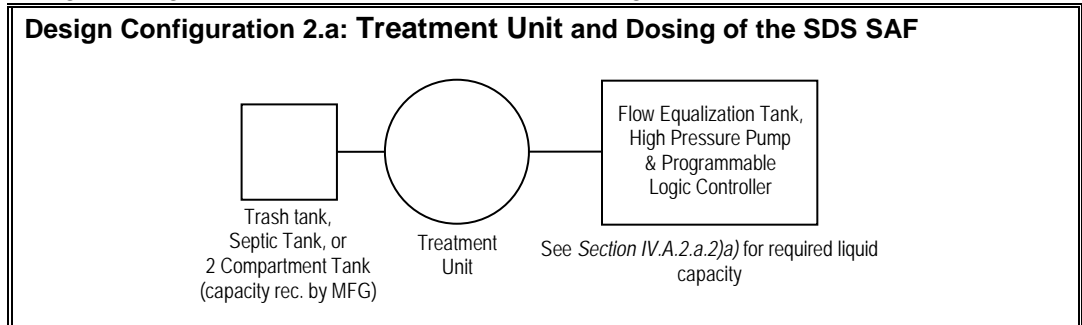


- 1) A flow equalization tank preceding the treatment unit required in *Section III.C.* of these standards, with:
 - a) A minimum capacity of the sum of:
 - i) The volume of liquid from the tank bottom to the off-float necessary to submerge the effluent pump during operation;
 - ii) The volume of liquid between the off-float and the timer enable float of ≥ 0.10 DDF;
 - iii) For flow equalization of the treatment unit, the volume of liquid between the enable float and the alarm float of ≥ 1 DDF;
 - iv) The volume of liquid between the alarm float and the invert of the inlet of ≥ 0.35 DDF;
 - b) A wastewater grade effluent pump;
 - c) A timer or PLC to equalize flows, as recommended by the manufacturer, to the treatment unit; and
 - d) A wide angle enable float for the timer or PLC.
 - 2) For a gravity SAF, a distribution box (d-box).
 - 3) For a flood dose, subsurface pressure distribution, or sand mound SAF, a tank that complies with the requirements of *Subsection A.1.a.3)* of these standards must follow the treatment unit.
- c. Design Configuration 1.c: Remediation or Addition to an Existing Residential SAF

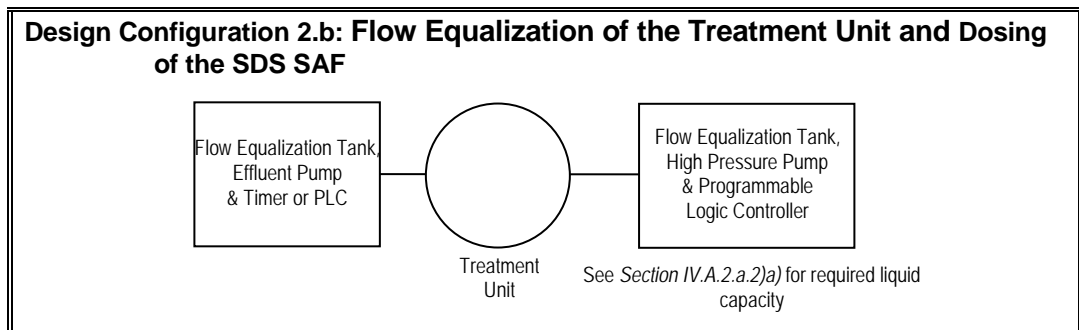


This option may be used for an existing residential on-site system in an attempt to remediate a SAF that shows signs of failure, or to an existing residential on-site system that does not show signs of failure. This option is strongly discouraged when it includes the use of existing components (see *Section VII.C* of these standards). Option 1.c allows the installation of a treatment unit pursuant to *Section III.C.* of these standards between a septic tank and an existing SAF. If an existing tank is abandoned, it must be abandoned in a manner that complies with the requirements of the department.

2. For an on-site system described in [Indiana Standards for Subsurface Drip Systems](#) one of the following options.
 - a. Design Configuration 2.a: Treatment Unit and Dosing of the SDS SAF



- 1) A septic tank, a two compartment septic tank, or a trash tank with at least the capacity recommended by the manufacturer of the treatment unit required in *Section III.C.* of these standards must precede the treatment unit.
- 2) A flow equalization tank following the treatment unit with:
 - a) A minimum capacity of the sum of:
 - i) The volume of liquid from the tank bottom to the off-float necessary to submerge the high pressure effluent pump during operation;
 - ii) The volume of liquid of 1.5 to 2 times the dose volume of the largest zone in the SDS SAF plus drainback (if applicable), or the volume of liquid of 1.5 to 2 times the flush volume of the zone with the most lateral connections plus drainback (if applicable), whichever is greater, from the off-float to the timer enable float;
 - iii) The volume of liquid of 0.6 DDF from the timer enable float and the peak flow float;
 - iv) The volume of liquid of 0.2 DDF from the peak flow float to the alarm float;
 - v) The volume of liquid between the alarm float and the invert of the inlet of ≥ 0.35 DDF;
 - b) A wastewater grade high pressure effluent pump;
 - c) A PLC with a dose scheme as required in the [Indiana Standards for Subsurface Drip Systems](#); and
 - d) A wide angle enable float for the PLC.
- b. Design Configuration 2.b: Flow Equalization of the Treatment Unit and Dosing of the SDS SAF



- 1) A flow equalization tank that complies with the requirements of *Subsection A.1.b.1)* of these standards must precede the treatment unit required in *Section III.C.* of these standards.
 - 2) A flow equalization tank that complies with the requirements of *Subsection A.2.a.2)* of these standards must follow the treatment unit.
- B. The manufacturer or designer of the treatment unit described in *Section III.C.* of these standards, for the application described in *Subsections A.1.b and A.2.b* of these standards, must specify the type of pump and the operating parameters of the pump used for dosing the treatment unit.

V. Requirements for plan submittal, review, and construction permit issuance

- A. A plan submittal for an individual site must comply with:
 1. These standards, and applicable sections of [410 IAC 6-8.3](#), or [410 IAC 6-10.1](#), and applicable standards of the department;
 2. Local ordinances, requirements and procedures for on-site systems;
 3. Requirements of an approved and listed aerobic treatment system (ATU); and

4. *IC 16-41-25-3*.
- B. A plan submittal for an on-site system with a DDF > 1050 gpd and an approved ATU must be reviewed and approved by the department.
- C. A plan submittal for an on-site system with a DDF ≤ 1050 gpd and an approved ATU must be reviewed and approved by:
 1. The department; or
 2. The local health department (LHD) when the department delegates authority, in writing, to LHD staff member(s) for plan review and approval:
 - a. Delegation is automatically rescinded if the staff member(s) to which delegation was granted leave employment with the LHD on-site program and the LHD has no remaining on-site program staff delegated responsibility for plan review and approval;
 - b. Delegation may be revoked upon documentation that the LHD program is not operating in compliance with [410 IAC 6-8.3](#), [410 IAC 6-10.1](#), or standards set by the department, or provisions of the delegation;
 - c. If delegation is revoked, the department will notify the LHD, in writing, stating reason(s) for revocation and criteria for delegation to be reinstated.
- D. An approval or construction permit may not be issued by the department or LHD, whichever has authority as described in *Subsection C* of these standards, without training and authorization of authorized representatives as required in *Section III.G* of these standards.
- E. The department or LHD, whichever has authority as described in *Subsection C* of these standards, may suspend or revoke an approval or construction permit prior to or during installation of an on-site system due to violation of these standards.

VI. Requirements for owners

- A. The owner must:
 1. Have a signed O&M agreement with an authorized service provider, prior to construction permit issuance, that commences at the time the aerobic treatment system (ATU) is placed into operation; and
 2. Maintain an O&M agreement with an authorized service provider during the life of the ATU.
- B. Prior to the start of construction, the owner, or authorized representative of the owner, must:
 1. Obtain a written approval from the department, unless plan review and approval has been delegated to the LHD, as described in *Section V.C* of these standards; and
 2. Obtain a written permit from the LHD.
- C. After installation:
 1. Staff of the department and LHD may make observations of the on-site system at reasonable times; and
 2. The owner must notify the department and LHD if the on-site system shows signs of failure as defined in *410 IAC 6-8.3-8* or *410 IAC 6-10.1-3*.

VII. Requirements for regulators

LHDs are strongly encouraged to have in-place local ordinances, policies and procedures for enforcement of O&M requirements.

- A. Before a LHD may issue a construction permit for an on-site system incorporating an aerobic treatment system (ATU), the ATU must be listed by the department.
- B. When a plan submittal for the replacement of a residential on-site system includes an ATU, and the LHD applies the provision for best judgment in *410 IAC 6-8.3-53(i)*, the LHD must inform the department, in writing, prior to issuing a construction permit.

- C. For a plan submittal with a proposal to remediate a soil absorption field (SAF), or to add an ATU to an existing residential on-site system, an LHD must:
 - 1. Must comply with the provisions of *410 IAC 6-8.3-53(i)*;
 - 2. Require all new components; or
 - 3. Require that, for on-site system components proposed for reuse, the owner, or authorized representative of the owner, document that each component:
 - a. Is watertight and in good condition, using test procedures that comply with requirements of the department; and
 - b. Complies with size and product requirements in applicable sections of [410 IAC 6-8.3](#), and the standards of the department.
- D. A LHD may require an owner to record a deed restriction or notice with the deed that identifies the ATU and the requirement for an O&M agreement required in *Section VI.A* of these standards.
- E. After installation:
 - 1. The department or LHD, whichever has authority for plan review and approval as described in *Section V.C* of these standards, must conduct a final inspection.
 - 2. A final inspection may not be based on a statement by an authorized installer that the on-site system having a ATU was installed as designed.
 - 3. The department and LHD must maintain documentation on the final inspections their staff conducts.
- F. When a ATU is specified in the plans for an on-site system, a regulator may allow:
 - 1. A reduction in the size of a SAF, except for SAF allowed for in the [Indiana Standards for Enviro-Septic® Soil Absorption Field Technology](#), [Indiana Standards for Infiltrator ATL Systems](#), and [Indiana Standards for Subsurface Drip Systems](#), and department approvals for the use of gravelless pipe SAF technology, by up to one third of a full-sized system as required in *410 IAC 6-8.3* or *410 IAC 6-10.1*. The size of the system, after the maximum reduction, is to be calculated as follows:

$$DDF/SLR * 0.667 = \text{Reduced Infiltrative Surface Area}$$

- 2. For SAF allowed for in [Indiana Standards for Chamber Trench Soil Absorption Field Technology](#), the SAF may be reduced in size as allowed above, **or** as allowed for the [Indiana Standards for Chamber Trench Soil Absorption Field Technology](#), **but not both**.

VIII. Requirements for authorized designers

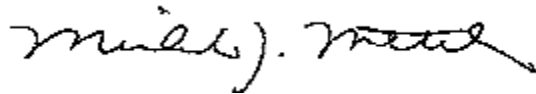
- A. Plans for an on-site system having an aerobic treatment system (ATU) must:
 - 1. Be designed by an authorized designer;
 - 2. Include an approved ATU as listed on the department website, [Approved TNI](#).
- B. The authorized designer must determine if the regulator will permit the application of the provisions of *Section VII.F* of these standards before beginning design of the on-site system.
- C. Only sewage as defined in *410 IAC 6-8.3-41* and in *410 IAC 6-10.1-38* may be discharged to a ATU. When water softening equipment is used, and the manufacturer of the treatment unit required in *Section III.C.* of these standards recommends that water softener backwash not be discharged to the treatment unit, one of the following options may be employed:
 - 1. Use of an exchange-tank (canister-type) water softener, where a service provider periodically replaces a resin canister for recharging; or
 - 2. Bypassing the treatment unit and discharge the water softener backwash to:
 - a. The effluent sewer on the downstream side of the treatment unit;
 - b. The dose tank serving the soil absorption field (SAF), or
 - c. A separate SAF trench constructed specifically for the water softener backwash.

- D. Specifications for an on-site system having a ATU must list the specific manufacturer and model number of the unit.

IX. Requirements for authorized service providers

- A. Operation and maintenance (O&M) of an aerobic treatment system (ATU) must be performed by an authorized service provider according to the requirements in the manufacturer O&M program.
- B. O&M of a ATU must be documented in accordance with the manufacturer O&M program by an authorized service provider for scheduled and unscheduled O&M.
- C. Authorized service providers must have and know how to operate equipment necessary to assess and adjust the operation of all components as necessary to bring the ATU into compliance with the manufacturer O&M program.
- D. Requirements for a manufacturer O&M program.
 - 1. Authorized service providers must:
 - a. Have, and know how to operate equipment necessary to assess and adjust the operation of all components as necessary to bring a ATU into compliance with the manufacturer O&M program;
 - b. Check wastewater level in all tanks and verify proper operation of float and alarm functions;
 - c. Verify that all tank risers and lids are in good condition and risers are watertight;
 - d. Verify that all box risers and lids are present and in good condition;
 - e. Visually inspect the soil absorption field (SAF) at least once per year or at the time of maintenance, whichever is less, for signs of effluent on the ground surface, with the results documented in the O&M report; and
 - f. Notify the department and LHD if an on-site system shows signs of failure as defined in *410 IAC 6-8.3-8* or *410 IAC 6-10.1-3*.
 - 2. Documentation of O&M of installed ATU must be in accordance with the manufacturer O&M program by the authorized service provider for scheduled and unscheduled O&M.

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