SECTION 37

EFFLUENT FILTERS

Effluent filters (also known as effluent screens) are removable, cleanable (or disposable) devices installed on the outlet piping of tanks for the purpose of retaining solids larger than a specific size and/or modulating effluent flow rate.

As outlined in the subsections below, effluent filters shall be required in certain locations, and/or applications; while in other situations, they are merely allowed or may simply be encouraged.

A. Types of Effluent Filters

There are different types of effluent filters based upon their intended location (i.e., type of tank they are installed in), intended application, desired function and/or designed goal/specification. Typical effluent filter locations/applications approved for use in Williamson County include:

1. Septic tanks
2. Settling tanks
3. Pump tanks
    (a) Pressure filters (inline)
    (b) Filter vaults
4. Grease interceptor tanks
5. Other miscellaneous special applications or in special tanks (*e.g.,* tanks in series, garage floor drains, veterinary clinics, barns, animal care facilities, salons/barber shops, spas, laundry facilities, wineries, distilleries, etc.).

NOTE: This Section 37 only pertains to those types of effluent filters specifically designed and intended to be installed inside of tanks. It does not pertain to spin disc filters or screen filters associated with subsurface drip disposal systems. Refer to Section 39 for details and requirements associated with drip system filters.

B. Septic Tank Effluent Filters

Septic tank effluent filters are gravity flow effluent filters specifically designed to be installed on the outlet piping network in the second compartment of septic tanks.

1. Use of Septic Tank Effluent Filters

    (a) New Systems

    After the effective date of the adoption of this *Section 37*, all newly constructed subsurface sewage disposal systems shall have an approved septic tank effluent filter installed on the outlet piping network in the second compartment of the septic tank.

    (b) Existing Systems

        (1) Exemption

        All subsurface sewage disposal systems in existence and in operation (regardless of regulatory compliance or presence of Department documented records) prior to the effective date of adoption of this *Section 37*, shall be exempt from the requirements of this *Subsection B* unless the existing septic tank is replaced with a new septic tank.

        (2) Termination

        In the event the existing septic tank is replaced with a new septic tank, the system's exemption from the requirements of this *Subsection B* will terminate and the system shall then be required to comply with the septic tank effluent filter requirements set forth in this *Subsection B.*

(3) Compliance

In the event an existing subsurface sewage disposal system's exemption status from the requirements of this *Subsection B* is terminated, an approved septic tank effluent filter shall be installed in compliance with the provisions outlined in this *Subsection B.*

NOTE: Although not required except as otherwise noted above in this Subpart (b), septic tank effluent filters may be installed in existing septic tanks (or added to existing systems) as desired by the property owner or as approved by the property owner in conjunction with system repairs.

2. Septic Tank Effluent Filter Certification (*i.e.*, Effluent Filters Approved for Use)

(a) All septic tank effluent filters approved for use shall conform to *NSF/ANSI Standard 46 - Evaluation of Components and Devices Used in Wastewater Treatment Systems*, maintain a current product listing with an ANSI accredited third-party certifier, and bear a listing mark. The filter manufacturer must provide the Department with written documentation of said certification from the certifying agency.

(b) All septic tank effluent filters must be approved by the Department prior to use. This approval process includes the submission of all pertinent and required information, along with demonstration of compliance with the provisions of this *Subsection B*. It shall be the filter manufacturer's responsibility to demonstrate to the Department their product's compliance with the provisions of this *Subsection B*.

(c) The Department will maintain a list of all septic tank effluent filters approved for use in Williamson County. The Department may remove any septic tank effluent filter (or filter model) from the approved list if it fails to meet the requirements of this *Subsection B* or if its performance is deemed to endanger public health or the environment.

3. General Requirements of Septic Tank Effluent Filters

(a) All septic tank effluent filters must be able to prevent the passage of solid materials, with a nominal size greater than one-sixteenth (1/16) inch in diameter, out of the septic tank.

(b) The septic tank effluent filter housing/case shall have a minimum nominal diameter of six (6) inches (or equivalent area).

(c) The entire septic tank effluent filter, including its housing and support case, shall be constructed from proven durable materials typically used in wastewater applications, which resist both decay and the corrosive nature of the environment within a septic tank.

(d) The septic tank effluent filter material must be designed such that the filtering medium maintains structural integrity throughout the life of the device.

(e) The filter medium must not tear or otherwise distort so as to make the filter inoperable during normal operation.

(f) The septic tank effluent filter shall be secured in the case/housing so that inadvertent movement does not take place during normal operation or maintenance.

(g) All septic tank effluent filters must be designed and constructed so as to be removable to allow for routine cleaning and maintenance.

(h) All septic tank effluent filters shall be designed with non-bypass capabilities so that no unfiltered wastewater, sludge and/or scum may be directly discharged out of the septic tank.

(i) All septic tank effluent filters shall be designed, constructed and sized so that under normally anticipated use they are capable of obtaining a minimum of 3 years between maintenance intervals.

(j) Septic tank effluent filters for residential facilities shall be sized to have a manufacturer's daily flow rate (gpd) equivalent to a minimum of one and one-half (1½) times the facility's total septic tank capacity. Multiple filters may be placed in parallel with one another to achieve this minimum required daily flow rating.

(k) Septic tank effluent filters for commercial/non-residential facilities shall be sized to have a manufacturer's daily flow rate (gpd) equivalent to a minimum of two (2) times the facility's total septic tank capacity. Multiple filters may be placed in parallel with one another to achieve this minimum required daily flow rating.

(l) An optional audio/visual high-water alarm may be installed with the septic tank effluent filter to provide notification when the filter has reached 90% capacity/maturity (*i.e.*, the filter has clogged) and service/maintenance/cleaning is required.

(1) The alarm must be integral with the filter housing/case and must be supplied from the filter manufacturer as a package with the filter.

(2) The alarm must be installed in accordance with manufacturer recommended guidelines.

(3) All electrical components associated with effluent filter devices shall comply with and be installed in accordance with the requirements of the current edition of the *National Electric Code (NEC)*. All associated buried wiring shall be installed in appropriately sized conduit and shall have explosion proof seals (with approved seal compound) installed at both ends of the conduit. All associated electrical enclosures (alarm boxes) shall have a minimum NEMA (National Electric Manufacturers Association) Type 4X rating.

A State issued electrical permit shall be required for the installation and inspection of all electrical components associated with effluent filter devices.

Refer to the applicable provisions outlined in *Section 16, Subsection F* regarding *Electrically Assisted Systems (EAS)*.

(m) The septic tank effluent filter manufacturer must provide installation and maintenance instructions with each filter. Said manuals shall be contained with and packaged with the filter or shall be readily available and easily accessible.

(n) The septic tank effluent filter manufacturer must provide a warranty of their product to be free from defects in material and workmanship for a minimum of two (2) years from the date of installation.

4. Installation of Septic Tank Effluent Filters

(a) The septic tank effluent filter and support case/housing shall be installed in accordance with the manufacturer's specifications, guidelines and recommendations.

(b) All septic tank effluent filters shall be installed on the outlet piping network in the second compartment of the septic tank.

(c) All septic tank effluent filters shall be placed to allow accessibility (*i.e.*, readily accessible to the ground surface) for routine maintenance without entering the tank and such that they are removable by hand.

The filter handle must extend to within two (2) inches of the manhole access riser lid to facilitate maintenance.

(d) All septic tank effluent filters shall be located directly underneath the center of the manhole access opening on the outlet end (*i.e.*, second compartment) of the septic tank such that it is easily accessible for removal, cleaning and servicing. Under no circumstances shall it be located under the lip of the manhole access opening on the tank lid.

(e) All septic tank effluent filters shall be located so they do not interfere with pumping and cleaning of the septic tank.

(f) All septic tank effluent filters shall be installed level within the septic tank.

(g) The effluent filter case/housing shall be solvent welded to the Schedule 40 PVC outlet pipe exiting the septic tank.

(h) If the effluent filter case/housing requires supplemental support for additional stability, it shall be done in accordance with the manufacturer's recommended guidelines. All supplemental support legs/pipe shall be constructed from Schedule 40 PVC pipe (or equivalent) solvent welded into the molded-in hubs/sockets on the effluent filter's case/housing specifically provided for that purpose.

(i) The effluent filter case/housing (including supplemental support case, if applicable) shall be designed to function as an outlet tee baffle with its inlet extending a minimum of twelve (12) inches below the outlet invert of the septic tank, and be at least eighteen (18) inches above the floor (bottom) of the septic tank.

For low profile tanks with a liquid depth of thirty (30) inches, the distance of the effluent filter case/housing from the floor (bottom) of the septic tank may be reduced to at least seventeen (17) inches, instead of eighteen (18) inches.

(j) The outlet filter housing shall extend a minimum of five and one-half (5.5 or 5½) inches above the outlet invert of the septic tank.

(k) In certain circumstances it may not be possible or feasible to retrofit an existing septic tank with an approved effluent filter. In those situations, in lieu of being installed inside the existing septic tank, the approved effluent filter may be housed in a secondary structure/basin located after the existing septic tank.

(1) The use of a secondary structure/basin in these situations shall be evaluated and approved by the Department on an individual, case-by-case basis.

(2) Under no circumstance shall the use of a secondary structure/basin to house effluent filters be allowed on new system installations.

(3) The secondary structure/basin shall be watertight, structurally sound and constructed from proven durable materials typically used in wastewater applications, which resist decay and the corrosive nature of both the wastewater and soil environment.

(4) The secondary structure/basin shall be installed, bedded and backfilled in accordance with the structure/basin manufacturer's recommendations and guidelines. The secondary structure/basin shall be installed level.

(5) The secondary structure/basin shall be sized in accordance with the filter manufacturer's recommendations and guidelines to ensure filter effectiveness and proper performance.

(i) The secondary structure/basin shall be a minimum of twenty-four (24) inches in diameter (or equivalent area), unless otherwise specified by the filter manufacturer.

(ii) The height, capacity and other dimensions of the secondary structure/basin shall be in accordance with the filter manufacturer's recommendations and guidelines to accommodate the filter size, the minimum required clearance distance between the bottom of the filter and the bottom of the basin, and to ensure filter effectiveness and proper performance.

(6) The inlet and outlet pipes of the secondary structure/basin shall be a minimum of three (3) inch diameter Schedule 40 PVC, unless otherwise specified by the filter manufacturer.

(7) Positioning of the inlet and outlet pipe holes in the secondary structure/basin shall be in accordance with the filter manufacturer's recommendations and guidelines so as to ensure the proper minimum elevation drop between the two (*i.e*, minimum height distance between the inlet invert and the outlet invert).

(8) All piping connections into the secondary structure/basin shall be watertight. It is recommended that properly sized rubber grommets be used to achieve a watertight seal.

(9) Manhole lids/riser covers shall be installed on the secondary structure/basin opening(s) in accordance with the structure/basin manufacturer's recommendations and guidelines.

(i) The manhole lid(s)/riser cover(s) shall be watertight, structurally sound and constructed from proven durable materials typically used in wastewater applications, which resist decay and the corrosive nature of both the wastewater and soil environment.

(ii) The manhole lid(s)/riser cover(s) shall be a minimum of twenty-four (24) inches in diameter (or equivalent area), unless otherwise specified by the basin manufacturer.

(iii) The manhole lid(s)/riser cover(s) shall include a gasket, or other similar material or mechanism, to provide a watertight and airtight seal to the basin/riser.

(iv) The manhole lid(s)/riser cover(s) shall be properly secured to the basin/riser, or sufficiently heavy enough, so as to discourage unauthorized entry.

(v) The manhole lid(s)/riser cover(s) shall be able to withstand normal residential and light commercial traffic and shall be rated to accommodate a uniform load of one hundred fifty (150) pounds per square foot without damage to the lid/cover.

(10) Ground level access risers shall be installed on the secondary structure/basin such that the manhole lid/riser cover is flush with the ground surface.

5. Recommended Maintenance (Cleaning) of Septic Tank Effluent Filters

(a) The septic tank effluent filter and support case/housing should be inspected, serviced, cleaned and maintained in accordance with the manufacturer's specifications, guidelines and recommendations.

(b) The licensed installer of the system should provide the owner of the system with a copy of the manufacturer's maintenance instructions.

(c) The septic tank effluent filter and support case/housing should be maintained by the property owner (or licensed installer, licensed pumper or licensed service provider, if applicable) and should remain in service for the life of the system.

(d) Service (*i.e.*, cleaning and maintenance) to the septic tank effluent filter and support case/housing should be performed as required and in accordance with the manufacturer's guidelines, but no less than each time the septic tank is pumped and cleaned. Cleaning of the filter cartridge is recommended a minimum of every three years or when it has reached 90% capacity/maturity.

If an optional alarm is installed with the septic tank effluent filter, the alarm will provide notification of when the filter needs servicing.

(e) For cleaning, the septic tank effluent filter cartridge is removed from its case/housing and is typically rinsed off with fresh water from a garden hose while being held over the open manhole access port to ensure that all septage and solid materials fall back inside the septic tank. It is also important to wash off any solids accumulated inside the filter's case/housing.

(f) Proper sanitation should be maintained at the site and on the ground surface in proximity to the tank manhole opening during the filter cleaning process. Any spills should be cleaned up and residuals treated with lime.

(g) Other sanitary practices should be employed, as necessary, during the filter cleaning process.

The use of personal protective equipment (PPE's), such a rubber gloves, eye protection, protective clothing and other garments, is highly recommended during the filter cleaning process.

C. Settling Tank Effluent Filters

Settling tank effluent filters are the exact same gravity flow septic tank effluent filters outlined in the above *Subsection B* of this *Section 37*. However, they are installed on the outlet piping network in the second compartment of settling tanks instead of septic tanks.

Settling tank effluent filters shall conform to all of the provisions outlined in the above *Subsection B* of this *Section 37*.

D. Pump Tank Effluent Filters

Pump tank effluent filters are specifically designed to be used in conjunction with pumps installed in the outlet end of pump tanks. There are two main categories of pump tank effluent filters: 1) in-line pressure filters and 2) filter vaults.

1. In-line Pressure Filters

In-line pressure filters are devices installed on the discharge pipe leaving the pump, operated under pressure and designed to remove suspended solids from wastewater to help protect downstream portions/components of the system (*e.g.*, field line trenches, lateral network piping, ATS, media filters, etc.) from clogging potential. They contain some type of screen filter typically consisting of a mesh material configured as a cylinder and used to remove particles larger than a specific size in pressurized systems.

(a) Use of in-line pressure filters

(1) In-line pressure filters are allowed and may be used in conjunction with the installation of submersible centrifugal style pumps.

(2) In-line pressure filters shall be required to be used in conjunction with the installation of any downstream system component based upon the manufacturer's recommendations and guidelines of said specific downstream component. For example, when required by the manufacturer of an approved ATS unit.

(3) In-line pressure filters may be required by the Department under certain specific situations when a structure's or facility's wastewater contains constituents of concern that could potentially pose a threat to the proper functioning of an on-site wastewater system. Refer to *Section 36, Subsection B, Part 9*.

(b) In-line pressure filters approved for use

(1) All in-line pressure filters must be approved by the Department prior to use. This approval process includes the submission of all pertinent and required information, along with demonstration of compliance with the provisions of this *Subsection D, Part 1*. It shall be the filter manufacturer's responsibility to demonstrate to the Department their product's compliance with the provisions of this *Subsection D, Part 1*.

(2) The Department will maintain a list of all in-line pressure filters approved for use in Williamson County. The Department may remove any in-line pressure filters (or filter model) from the approved list if it fails to meet the requirements of this *Subsection D, Part 1* or if its performance is deemed to endanger public health or the environment.

(c) General requirements of in-line pressure filters

(1) The manufacturer shall provide detailed installation instruction, operation and maintenance, and, if applicable, troubleshooting and repair manuals for all approved in-line pressure filters. Said manuals shall be contained with and packaged with the filters or shall be readily available and easily accessible.

(2) The entire filter, including its housing, support case and filter screen/cartridge/assembly, pressure alarm switch, etc., shall be constructed from proven durable materials typically used in wastewater applications, which resist both decay and the corrosive nature of the sewage effluent environment.

(3) The in-line pressure filter material must be designed such that the entire filter, and all of its associated components, maintains structural integrity throughout the life of the device.

(4) The in-line pressure filter, and all of its associated components, must not tear, deform or otherwise distort so as to make it inoperable during normal operation.

(5) The in-line pressure filter shall be designed and constructed so as to be accessible through the pump tank outlet riser and shall be of such design that the filter screen/cartridge is easily removable from its housing/body to allow for routine cleaning and maintenance without removing the pump from the tank.

The filter assembly must be located or extend to within two (2) inches of the manhole access riser lid to facilitate easy screen removal unless it is designed to accommodate an extension wrench tool to accomplish that goal.

(6) The in-line pressure filter shall be sized on a case-by-case basis for the specific application and system it is intended to serve. It shall dimensionally fit the specific pump tank (depth, access opening, etc.) and accommodate the specific pump (*i.e.*, discharge size, height, other dimensions, flow rate, pressure, etc.) for that specific application/system.

(7) The minimum required filtration level of the in-line pressure filter shall be determined on a case-by-case basis for the specific application and in accordance with the specific system requirements (e.g., constituents of concern, component protection criteria, etc.) it is intended to serve.

Filtration levels for most commercially available in-line pressure filters typically range between 1/16-inch to 1/20-inch. Some manufacturers or models have optional filter socks (typically at 100, 190, 300 or 600 microns) that may be added for greater levels of filtration if desired.

(8) The total dynamic headloss (TDH) of the system's pump hydraulic calculations (refer to *Section 16, Subsection B*) must be adjusted in accordance with the in-line pressure filter manufacturer's recommendations to accommodate the friction loss through the filter.

(9) An optional audio/visual pressure alarm switch may be installed in conjunction with some in-line pressure filter makes/models to provide notification when the filter has clogged and service is required. The pressure alarm switch may be wired to its own separate audio/visual alarm box or connected to the system's main control panel

(i) The pressure alarm switch should be supplied from the manufacturer as a package with the in-line pressure filter.

(ii) The pressure alarm switch must be installed in accordance with manufacturer recommended guidelines.

(iii) All electrical components associated with the audio/visual pressure alarm switch (and its associated alarm box) shall comply with and be installed in accordance with the requirements of the current edition of the *National Electric Code (NEC)*. All associated buried wiring shall be installed in appropriately sized conduit and shall have explosion proof seals (with approved seal compound) installed at both ends of the conduit. All associated electrical enclosures (boxes) shall have a minimum NEMA (National Electric Manufacturers Association) Type 4X rating.

If connected to the system's main control panel, said control panel shall be specified as such to accommodate the installation of the pressure alarm switch.

A State issued electrical permit shall be required for the installation and inspection of all electrical components associated with pressure alarm switches.

Refer to the applicable provisions outlined in *Section 16, Subsection F* regarding *Electrically Assisted Systems (EAS)*.

(d) Installation of in-line pressure filters

(1) The in-line pressure filter, and all associated components, shall be installed in accordance with the manufacturer's specifications, guidelines and recommendations.

(2) All in-line pressure filters shall be installed on the discharge port or discharge pipe leaving the pump in the outlet end of the pump tank.

(3) All in-line pressure filters shall be positioned to allow accessibility (*i.e.*, readily accessible to the ground surface) for routine maintenance without entering the tank and such that they are removable by hand.

The filter assembly must be located or extend to within two (2) inches of the manhole access riser lid to facilitate easy screen removal unless it is designed to accommodate an extension wrench tool to accomplish that goal.

(4) All in-line pressure filters shall be located directly underneath the center of the manhole access opening on the outlet end of the pump tank such that it is easily accessible for removal, cleaning and servicing.

(5) All in-line pressure filters shall be positioned so as to allow sufficient space for the installation of the associated pump control floats (float tree) and pump discharge assembly to ensure proper pump function.

(6) All in-line pressure filters shall be positioned so that the associated pump, control floats and pump discharge assembly can be easily removed from the pump tank for maintenance, repair or replacement.

(7) Unless otherwise specified by the manufacturer's guidelines and installation instructions, it is recommended that threaded union quick disconnects be installed on either side of the in-line pressure filter to facilitate easy maintenance, removal and/or replacement. Refer to *Subsection E and G of Section 16, and Subsection E of Appendix 12,* regarding threaded union requirements.

(8) As required for all pump installations, a high water alarm contained in the pump tank is imperative when an in-line pressure filter is installed. Refer to *Section 16, Subsection D*.

(9) If allowed by the manufacturer and done in accordance with their guidelines and recommendations, multiple in-line pressure filters may be assembled together into a manifold to accommodate high flow rates or high strength effluent applications. Special considerations in the overall system design may be

required to accommodate this type of configuration. Use of such multiple in-line pressure filters shall be considered and evaluated by the Department on an individual, case-by-case basis.

(e) Recommended Maintenance (cleaning) of in-line pressure filters

(1) The in-line pressure filter and associated components should be inspected, serviced, cleaned and maintained in accordance with the manufacturer's specifications, guidelines and recommendations.

(2) The licensed installer of the system should provide the owner of the system with a copy of the manufacturer's maintenance instructions.

(3) The in-line pressure filter and associated components should be maintained by the property owner (or licensed installer, licensed pumper or licensed service provider, if applicable) and should remain in service for the life of the system.

(4) Service (*i.e.*, cleaning and maintenance) of the in-line pressure filter, filter cartridge/assembly (filter screen and/or sock) and all other associated components should be performed as required, but no less than each time the pump tank is pumped and cleaned, or when the pump (and/or any float) is replaced or requires routine maintenance. Cleaning of the filter cartridge/assembly (filter screen and/or sock) is required when it has clogged as outlined by the manufacturer.

(i) Service intervals vary from system to system and are dependent upon usage. It is recommended that all in-line pressure filters be inspected biannually for the first year of service to establish a minimum service interval for the filter. Once determined, said minimum service interval should be consistently maintained unless something changes in the system.

(ii) Service intervals will typically be more frequent if using an optional filter sock

(iii) If an optional pressure alarm switch is installed in conjunction with the in-line pressure filter, the audio/visual alarm will provide notification of when the filter cartridge/assembly (filter screen and/or sock) needs servicing.

(iv) Some in-line pressure filter makes/models may be equipped with a pressure gauge and a drastically different pressure reading between routine inspection intervals may indicate that the filter screen (and/or sock) is clogged and needs cleaning. It is important to record the pressure readings during each inspection so as to have a benchmark for comparison with future inspection readings.

(v) Excessive pump run times or a high water alarm event in the pump tank may also indicate a clogged filter.

(5) For cleaning, disconnect power to the pump before removing the filter screen cartridge (and/or sock) from the housing/body. The filter screen cartridge is typically rinsed off and washed thoroughly in an appropriate location to ensure that all septage and solid materials are collected and disposed of properly. In lieu of cleaning, the dirty filter screen may simply be replaced with a new one. Filter socks are typically discarded into the solid waste trash and replaced with a new one. It is also important to wash off any solids accumulated inside the filter's case/housing.

Reinsert the cleaned filter screen cartridge into the housing/body and re-assemble the device in accordance with the manufacture's guidelines. Then restore power to the pump.

(6) During every service event, the filter screen cartridge, and all of filter components, should be inspected for any damage or corrosion, and replaced as necessary.

(7) Proper sanitation should be maintained at the site and on the ground surface in proximity to the tank manhole opening during the filter cleaning process. Any spills should be cleaned up and residuals treated with lime.

(8) Other sanitary practices should be employed, as necessary, during the filter cleaning process.

The use of personal protective equipment (PPE's), such a rubber gloves, eye protection, protective clothing and other garments, is highly recommended during the filter cleaning process.

2. Filter Vaults

Filter vaults (also known as pump vaults) are devices installed in the outlet end of a pump tank that houses a pump and screens effluent before it enters the pump to prevent solids from clogging the pump intake or damaging other internal pump components.

(a) Use of filter vaults

(1) Filter vaults shall be required to be used in conjunction with the installation of any and all vertical turbine style pumps which require filtered effluent entering the pump intake.

(2) Filter vaults are allowed and may be used in conjunction with the installation of submersible centrifugal style pumps.

(3) Filter vaults shall be required to be used in conjunction with the installation of any downstream system component based upon the manufacturer's recommendations and guidelines of said specific downstream component. For example, when required by the manufacturer of an approved ATS unit.

(4) Filter vaults may be required by the Department under certain specific situations when a structure's or facility's wastewater contains constituents of concern that could potentially pose a threat to the proper functioning of an on-site wastewater system. Refer to *Section 36, Subsection B, Part 9*.

(b) Filter vaults approved for use

(1) All filter vaults must be approved by the Department prior to use. This approval process includes the submission of all pertinent and required information, along with demonstration of compliance with the provisions of this *Subsection D, Part 2*. It shall be the filter vault manufacturer's responsibility to demonstrate to the Department their product's compliance with the provisions of this *Subsection D, Part 2*.

(2) The Department will maintain a list of all filter vaults approved for use in Williamson County. The Department may remove any filter vault (or filter vault model) from the approved list if it fails to meet the requirements of this *Subsection D, Part 2* or if its performance is deemed to endanger public health or the environment.

(c) General requirements of filter vaults

(1) The manufacturer shall provide detailed installation instruction, operation and maintenance, and, if applicable, troubleshooting and repair manuals for all approved filter vaults. Said manuals shall be contained with and packaged with the filter vaults or shall be readily available and easily accessible.

(2) The entire filter vault, including its housing, support case and filter cartridge/assembly, etc., shall be constructed from proven durable materials typically used in wastewater applications, which resist both decay and the corrosive nature of the sewage effluent environment.

(3) The filter vault material must be designed such that the entire filter vault, and all of its associated components, maintains structural integrity throughout the life of the device.

(4) The filter vault, and all of its associated components, must not tear, deform or otherwise distort so as to make it inoperable during normal operation.

(5) The filter vault shall be designed and constructed so as to be removable through the pump tank outlet riser and shall be of such design that it is secured in the riser so that inadvertent movement does not take place during normal operation or maintenance.

(6) The associated filter cartridge/assembly shall be housed inside of the vault or otherwise integrally affixed to the vault (such as the case for filter plates/panels housed on the sides of the vault, for example). It must be designed and constructed ~~so as to be removable from the vault~~ to allow for routine cleaning and maintenance without removing the pump from the vault or the vault from the tank.

Filter cartridge handles must extend to within two (2) inches of the manhole access riser lid to facilitate easy removal.

(7) The filter vault shall be designed and constructed so that the associated pump is securely held in place to prevent inadvertent movement during normal operation.

(8) The filter vault shall be designed and constructed with sufficient space to house the associated pump control floats (float tree) and pump discharge assembly to ensure proper pump function.

(9) The filter vault shall be designed and constructed so that the associated pump, control floats and pump discharge assembly can be easily removed from the vault for maintenance without removing the vault from the tank.

(10) The filter vault dimensions shall be sized on a case-by-case basis for the specific application and system it is intended to serve. It shall be sized to accommodate the specific pump tank depth and specific pump dimensions (*i.e.*, height, diameter, etc.) for that specific application/system.

Furthermore, the filter vault must be sized in conjunction with the associated pump manufacturer guidelines to ensure the vault will work with the specific pump specified (*i.e.*, the vault matched with the pump). It is recommended that the filter vault, pump, control floats, discharge assembly and appurtenances come together as a matched package from the same manufacturer to ensure proper compatibility, operation, installation and performance.

(11) The minimum required filtration of the vault's filter cartridge/assembly shall be in accordance with the associated pump manufacturer guidelines so as to properly protect the pump. Regardless, all filter vaults must be able to prevent the passage of solid materials, with a nominal size greater than one-eighth (1/8) inch in diameter, from reaching the pump intake.

(12) An optional audio/visual alarm may be installed in conjunction with the vault to provide notification when the filter has reached capacity/maturity and service is required

A low-level (*i.e.*, low-water) alarm float should be installed on the associated float tree to signal insufficient effluent is present for proper pump operation. This is an indicator that the filter has possibly clogged, preventing effluent from reaching the pump intake, and needs maintenance/cleaning.

(i) The low-level alarm float should be supplied from the manufacturer as a package with the other floats and the float tree assembly.

(ii) The low-level alarm float must be installed on the associated float tree in accordance with manufacturer recommended guidelines.

(iii) The low-level alarm float shall meet all of the requirements of other float switches as outlined in *Section 16 and Appendix 12*. Additionally, the installation, setup, wiring and other electrical requirements associated with the low-level alarm float shall be in accordance with the applicable provisions outlined in *Section 16*. The associated control panel shall be specified as such to accommodate the installation of a low-level alarm float.

(d) Installation of filter vaults

(1) The filter vault, and all associated components, shall be installed in accordance with the manufacturer's specifications, guidelines and recommendations.

(2) All filter vaults shall be installed on the outlet end of the pump tank.

(3) All filter vaults shall be placed to allow accessibility (*i.e.*, readily accessible to the ground surface) for routine maintenance without entering the tank and such that they are removable by hand.

Associated filter cartridge handles must extend to within two (2) inches of the manhole access riser lid to facilitate easy removal.

(4) All filter vaults shall be located directly underneath the center of the manhole access opening on the outlet end of the pump tank such that it is easily accessible for removal, cleaning and servicing.

(e) Recommended Maintenance (cleaning) of filter vaults

(1) The filter vault and associated components should be inspected, serviced, cleaned and maintained in accordance with the manufacturer's specifications, guidelines and recommendations.

(2) The licensed installer of the system should provide the owner of the system with a copy of the manufacturer's maintenance instructions.

(3) The filter vault and associated components should be maintained by the property owner (or licensed installer, licensed pumper or licensed service provider, if applicable) and should remain in service for the life of the system.

(4) Service (*i.e.*, cleaning and maintenance) of the filter vault, filter cartridge/assembly (or filter plates/panels) and all other associated components should be performed as required, but no less than each time the pump tank is pumped and cleaned, or when the pump (and/or any float) is replaced or requires routine maintenance. Cleaning of the filter cartridge/assembly (or filter plates/panels) is recommended a minimum of every three years or when it has reached capacity/maturity as outlined by the manufacturer.

If an optional low-level alarm float is installed on the vault's associated float tree, the alarm will provide notification of when the filter cartridge/assembly (or filter plates/panels) needs servicing.

(5) For cleaning, the filter cartridge/assembly (or filter plates/panels) is ~~removed from the vault and is~~ typically rinsed off with fresh water from a garden hose ~~while being held over the open manhole access port~~ in such a manner to ensure that all septage and solid materials fall back inside the pump tank. It is also important to wash off any solids accumulated inside the filter's case/housing.

(6) Proper sanitation should be maintained at the site and on the ground surface in proximity to the tank manhole opening during the filter cleaning process. Any spills should be cleaned up and residuals treated with lime.

(7) Other sanitary practices should be employed, as necessary, during the filter cleaning process.

The use of personal protective equipment (PPE's), such a rubber gloves, eye protection, protective clothing and other garments, is highly recommended during the filter cleaning process.

E. Grease Interceptor Tank Effluent Filters

Grease interceptor tank effluent filters are the exact same gravity flow septic tank effluent filters outlined in the above *Subsection B* of this *Section 37*, with the exception of the filtration level (*i.e.*, size of solids retention). However, they are installed on the outlet piping network of grease interceptor tanks instead of septic tanks.

Grease interceptor tank effluent filters shall be installed in all grease interceptor tanks and shall comply with the same use provisions for septic tank effluent filters as outlined in *Subsection B, Part 1* of this *Section 37* (*i.e.*, for new systems and existing systems).

Grease interceptor tank effluent filters shall conform to all of the provisions outlined in the above *Subsection B* of this *Section 37*, with the exception of: Part 3, Subparts (a) and (i); Part 4, Subparts (b) and (i); and Part 5, Subpart (d).

1. General Requirements of Grease Interceptor Tank Effluent Filters

The following general requirements of grease interceptor tank effluent filters are different than those outlined in the above noted Part 3(a) and (i), of Subsection B of this Section 37:

(a) All grease interceptor tank effluent filters must be able to prevent the passage of solid materials, with a nominal size greater than one thirty-second (1/32) inch in diameter, out of the grease interceptor tank.

(b) Grease interceptor tank effluent filters are not required to be designed, constructed and sized so that under normally anticipated use they are capable of obtaining a minimum length of time between maintenance intervals.

Maintenance intervals on grease interceptor tanks are highly variable based upon the usage and grease production from the use/facility they serve. Refer to the below *Part 3* of this *Subsection E*.

2. Installation of Grease Interceptor Tank Effluent Filters

The following installation requirements of grease interceptor tank effluent filters are different than those outlined in the above noted Part 4(b) and (i), of Subsection B of this Section 37:

(a) All grease interceptor tank effluent filters shall be installed on the outlet piping network of the grease interceptor tank.

(b) The effluent filter case/housing (including supplemental support case, if applicable) shall be designed to function as an outlet tee baffle with its inlet extending to twelve (12) inches above the floor (bottom) of the grease interceptor tank.

3. Recommended Maintenance (Cleaning) of Grease Interceptor Tank Effluent Filters

The following maintenance requirements of grease interceptor tank effluent filters are different than those outlined in the above noted Part 5(d), of Subsection B of this Section 37:

(a) Service (*i.e.*, cleaning and maintenance) of the grease interceptor tank effluent filter and support case/housing should be performed as required and in accordance with the manufacturer's guidelines, but no less than each time the grease interceptor tank is pumped and cleaned. Inspection and cleaning of the filter cartridge is recommended a minimum of every three months, or more frequently based on the filter's maturity rate, or when it has reached 90% capacity/maturity.

(b) Service intervals vary from system to system and are dependent upon usage and grease production from the use/facility they serve. It is recommended that all grease interceptor tank effluent filters be inspected monthly for the first year of service to establish a minimum service interval for the filter. Once determined, said minimum service interval should be consistently maintained unless something changes in the system.

(c) If an optional alarm is installed with the grease interceptor tank effluent filter, the alarm will provide notification of when the filter needs servicing

F. Other Miscellaneous Effluent Filters

Some types of facilities and/or uses, both residential and commercial/non-residential, may produce a wastewater containing constituents that could potentially pose a threat to the proper functioning of an on-site wastewater system. Installation of additional tanks, multiple tanks or special tanks, all containing special internal effluent filters, may be required to mitigate these types of wastewater concerns. Examples of such facilities/uses include, but are not limited to: domestic kitchens, certain home occupations, garage floor drains, residential dog washing stations/areas, veterinary clinics, barns, animal care facilities, salons/barber shops, spas, laundry facilities, wineries, distilleries, bakeries, jammeries and agricultural, meat or food processing facilities, etc. Constituents of concern include, but are not limited to: hair, lint, fats, oils, greases, grit, suspended solids, residues and sludges (grain residues, winery lees, etc.), food processing waste (plant material, leaves, stems, seeds, etc.) and meat processing waste (blood, fat, hair, feathers, etc.).

1. Filtration Size and Associated Application

Gravity flow effluent filters, filter vaults and in-line pressure filters installed inside of tanks are available in various filtration levels. Filtration sizes and their associated applications include, but are not limited to, the following:

(a) ⅛" Filtration Level

Gravity flow effluent filters and pump/filter vaults with one-eighth (⅛) inch level of filtration are generally the lowest level of filtration commercially available. They can be used in a wide range of applications where the nominal particle sizes of concern in the wastewater are larger than one-eighth (⅛) inch in diameter (*e.g.*, residues, sludges, food processing wastes, etc.).

All gravity flow effluent filters approved for use in this filtration category shall conform to *NSF/ANSI Standard 46* in accordance with *Subsection B, Part 2, Subpart (a) of this Section 37.*

(b) 1/16" Filtration Level

Gravity flow effluent filters and pump/filter vaults with one-sixteenth (1/16) inch level of filtration are generally used for residential & light commercial applications producing domestic strength wastewater. They can also be used in a wide range of applications where a slightly greater level of filtration is needed than that provided by a one-eighth (⅛) inch level filter (*e.g.*, suspended solids, residues, sludges, food processing wastes, etc.).

All gravity flow effluent filters approved for use in this filtration category shall conform to *NSF/ANSI Standard 46* in accordance with *Subsection B, Part 2, Subpart (a) of this Section 37.*

In-line pressure filters with this level of filtration are typically used as a final layer of protection of outlet openings/holes in pressure distribution systems (*e.g.*, LPP and mound systems) from potential clogging or to protect ATS media systems from premature clogging.

(c) 1/20” Filtration Level

Generally only found with certain in-line pressure filter models, applications associated with one-twentieth (1/20) inch level of filtration are typically the same as those associated with one-sixteenth (1/16) inch level of filtration; but, with a slightly higher filtration level.

(d) 1/32” Filtration Level

Gravity flow effluent filters with one thirty-second (1/32) inch level of filtration are generally used for grease trap applications (FOG), garage floor drains, various animal care facilities (hair), salons/barber shops (hair), laundromats (hair and/or lint) and other applications where fine suspended solids are present in the wastewater.

All gravity flow effluent filters approved for use in this filtration category shall conform to *NSF/ANSI Standard 46* in accordance with *Subsection B, Part 2, Subpart (a) of this Section 37.*

(e) 1/64” Filtration Level

Gravity flow effluent filters with one sixty-fourth (1/64) inch level of filtration are generally used for specialty commercial applications where very fine filtration is required or where very fine suspended solids (*i.e.*, high TSS concentrations) or high organic strength (*i.e.*, high BOD_5 or $cBOD_5$ concentrations) are present in the wastewater.

All gravity flow effluent filters approved for use in this filtration category shall conform to *NSF/ANSI Standard 46* in accordance with *Subsection B, Part 2, Subpart (a) of this Section 37.*

All gravity flow effluent filters approved for use in this filtration category shall come equipped with an audio/visual high-water alarm to provide notification of required filter servicing in accordance with *Subsection B, Part 3, Subpart (l) of this Section 37.*

(f) Micron level filtration

Some manufacturers or models of in-line pressure filters have optional filter socks (typically at 100, 190, 300 or 600 microns) that may be added where extremely fine levels of filtration are required. Use of these filter levels are generally associated with specialty commercial applications.

2. All miscellaneous effluent filters listed in this *Subsection F*, shall conform to all applicable provisions outlined in this *Section 37.*

NOTE: This Subsection F only pertains to those types of effluent filters specifically designed and intended to be installed inside of tanks. Refer to Section 12, Subsection B and to Section 36, Subsection B, Part 9 regarding other types of special filters, screens and/or tanks/interceptors/traps. Refer to Section 39 regarding spin disc filters or screen filters associated with subsurface drip disposal systems.