Operation and Maintenance (O&M) Manual for Ecoflo® Biofilters ST/STB Model Series

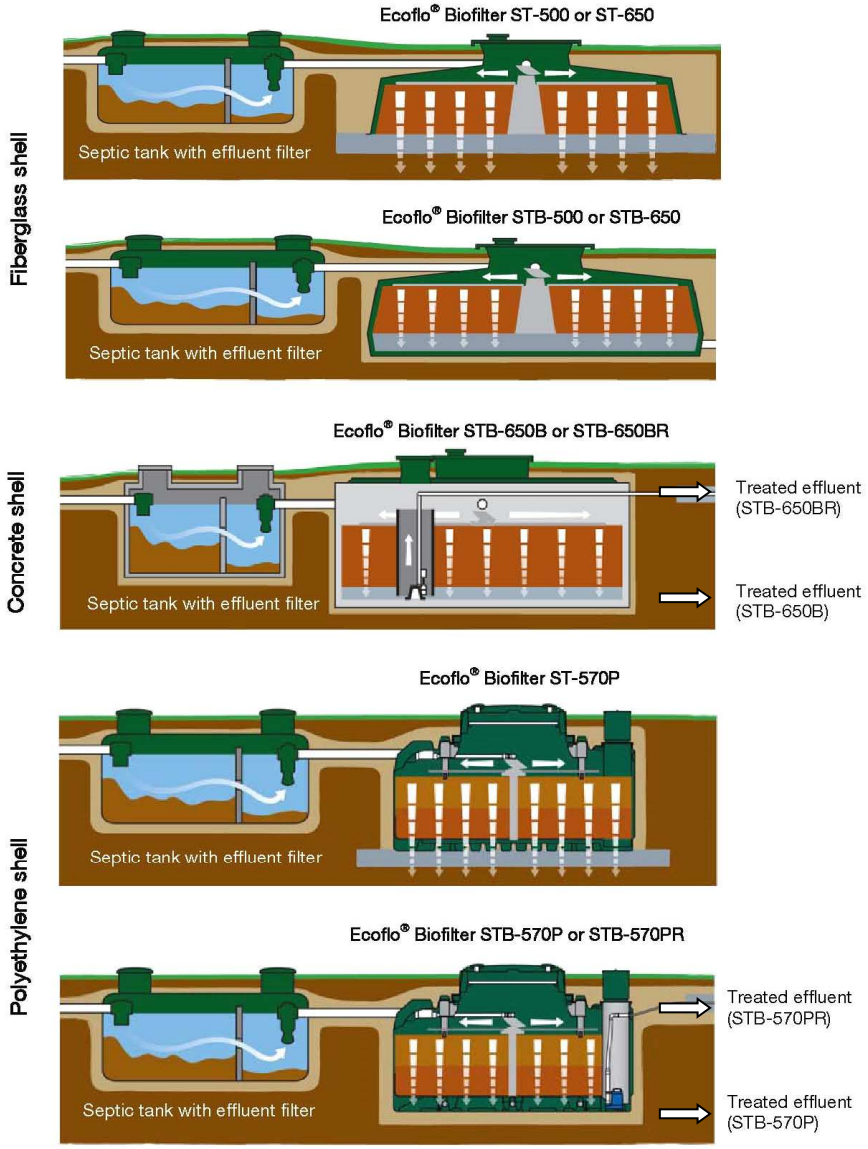
Model 500	450 GPD
Model 570	525 GPD
Model 650	600 GPD
Model 730	675 GPD
Model 750	695 GPD

Ecoflo® Biofilters
(With open bottom or collecting bottom)

Congratulations on your purchase of an **Ecoflo® Biofilter system** from **Premier Tech Aqua (PTA)**! With the **Ecoflo® Biofilter system**, you have wisely chosen to protect your health as well as the environment and the value of your property. This manual contains information on the system's operation and maintenance, plus guidelines for use and warranties for ST and STB Models Series **500, 570, 650, 730 and 750.** For additional information, please contact our customer service at **1 800 632-6356** or visit our website at **PREMIERTECHAQUA.COM.**

1. Operating Principle

The **Ecoflo® Biofilter ST/STB Models Series** are made of a durable shell enclosing a natural filtering media to treat the wastewater coming from a septic tank, before it is discharged into the environment.



The **Ecoflo® Biofilter's** operating principle allows the system to be used continuously or intermittently without requiring any particular precaution and without impacting the performance of the system. No action is required from

the owner to start the system.

Your complete **septic treatment system** includes a septic tank with an effluent filter, one or more **Ecoflo® Biofilters,** a dispersal/disposal component and, depending on the type of installation, a pumping station and/or a flow divider.

The model and the number of **Ecoflo® Biofilters** required are determined according to the number of bedrooms in the residence and/or the total daily flow of wastewater of the residence, or of domestic waters from other types of buildings.

2. Dos and Don'ts

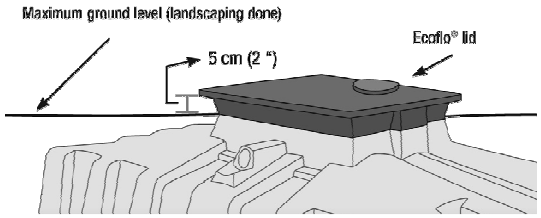
Type of wastewater that can be treated by an Ecoflo® Biofilter:
Domestic wastewater (e.g.: wastewater from individual residences)

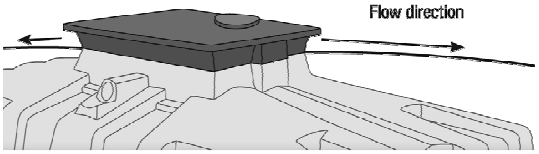
It is NOT RECOMMENDED to discharge any of the following substances into the septic system:

- Water softener backwash;
- Oil and grease (engine oil, cooking oil, etc.);
- Wax and resin;
- Paint and solvent;
- Petroleum products;
- Pesticides of any kind;
- Any kind of septic tank additive;
- Toxic substances;
- Anything not easily biodegradable (e.g. coffee beans, cigarette butts, sanitary napkins, tampons, condoms, cotton swabs, etc.).

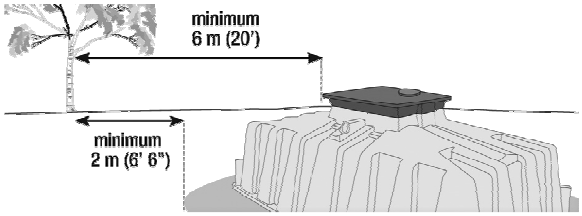
AND:

- **NEVER cover or bury the access lid of the Ecoflo® Biofilter;**



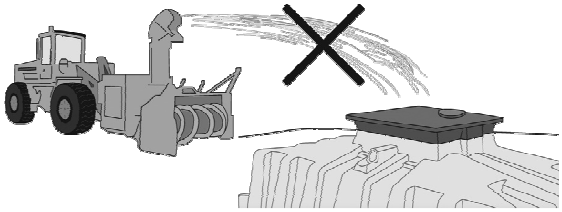


- **NEVER open or enter the Ecoflo® Biofilter without prior authorization;**
- **NEVER install a riser on an Ecoflo® Biofilter ST-500 or ST-650. For models STB-500 and STB-650 with collecting bottom, use <u>ONLY ONE (1)</u> PTA extension kit STR-080F if necessary;**
- **NEVER plant trees within 20' of the Ecoflo® Biofilter lid and within 6'6" of the absorption bed;**



- **NEVER connect a drain pipe or roof gutter or sump pump or air conditioner unit drain to the septic system;**

- DO NOT let anything accumulate on top of the septic system (e.g.: blown snow). The surcharge can cause damage to your system;



- NEVER discharge water coming from a spa or a pool backwash into any component of your septic system;
- NEVER discharge wastewater coming from a recreational vehicle (camping trailer, caravan, etc.) into any component of your septic system;
- NEVER use an automatic toilet bowl cleaner;
- NEVER use a garbage disposal or sewage pump (upstream of the septic tank). In this case, an EFT-080 effluent filter from PTA is mandatory. Call PTA's customer service for information.

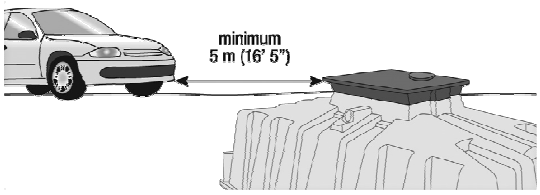
By respecting these guidelines, you contribute to the proper functioning of your septic installation and have better chances to increase the life span of the filtering media of your Ecoflo® Biofilter.

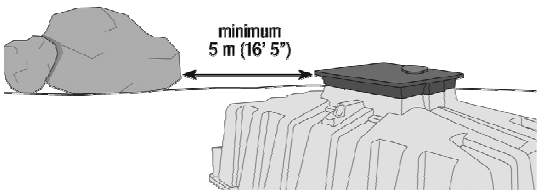
Owner's Responsibility

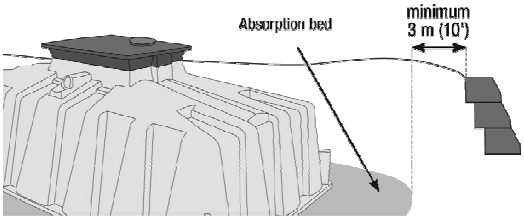
The owner must respect the local laws and regulations in force concerning the effluent quality of the system and its discharge into the environment. The owner must make sure that all components are readily accessible at the time of maintenance.

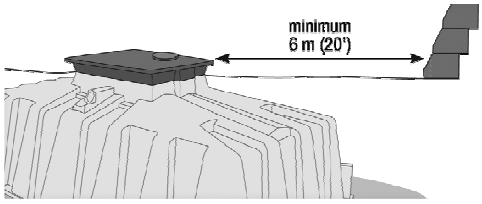
Keep heavy weights off your septic installation

Never drive vehicles or place objects weighing more than **500 lbs within 16'5" of your Ecoflo® Biofilter** system's lid. If you are planning to do some landscaping or any other type of work, **make sure you advise those involved** so they do not damage your septic system. **Do not shovel, blow or accumulate snow on top of the septic system**. The overload could cause damage. Mark or indicate the location of your system's components.









Warning

Electrical hazard: Some Ecoflo® models have an integrated pump station. Disconnect power before servicing. Flooded areas present an electrical hazard. Failure to do so may result in an electrical shock causing serious bodily injury or death. The unit is to be serviced by trained and certified Premier Tech Aqua partners and technicians only.

Biohazard: The septic tank may contain potentially hazardous gases and materials. Only trained and certified service technicians and partners can service your complete system.

Access to treatment system: DO NOT allow children to climb or play around this equipment. Failure to do so may result in falls or other accidents causing serious bodily injury.

Buried electric cables: DO NOT dig above or near the treatment system. Ask a trained and certified service provider to do it. Failure to do so may result in an electric shock causing death or serious bodily injury.

Service on Ecoflo®: Service on Ecoflo® or other components have to be performed by a Premier Tech Aqua authorized service provider. DO NOT attempt to service your wastewater treatment system yourself.

Ice around vents: Ice may form around vents in cold weather. Use caution when walking in these areas to avoid falling and being seriously injured.

Contact with wastewater: Anyone coming in contact with wastewater must remove any contaminated piece of clothing and thoroughly wash all body parts and clothes exposed to wastewater with soap and water. Then consult a physician to minimize the risk of illness.

About your home

Your home must be equipped with an air vent that is in proper working order and complies with the applicable standards. **Premier Tech Aqua** strongly recommends using a 4" Ø pipe for the air vent. Any change in the use or function of your home, or any modification to your **Ecoflo® Biofilter** must be authorized by local authorities, and **Premier Tech Aqua** must be informed. The warranty for the **Ecoflo® Biofilter** will be void if this condition has not been fully respected.

3. Maintenance

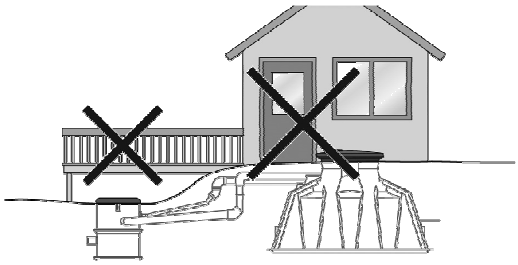
Ecoflo® Biofilter

The owner of a biofiltration system shall **follow the manufacturer's recommendations regarding the maintenance of the system.** For that purpose, he must at all times have a valid contract with a licensed service provider **According to local regulation, a copy of the contract may have to be filed with the authorities**. Premier Tech Aqua requires authorized service provider to be duly trained by Premier Tech Aqua and to enter report maintenance and inspection information into the Premier Tech Aqua maintenance and management program (database).

Annual maintenance performed as per manufacturer's specifications (following manufacturer's requirements) is essential to ensure the proper operation and performance of your **Ecoflo® Biofilter** and is essential to maintain its warranty on the filter media. Therefore, your **Ecoflo®** must be serviced annually for the entire duration of its useful life. Depending on the local regulation, more than one (1) visit per year may be mandated.

The maintenance of your **Ecoflo® Biofilter** must be carried out by **a local licensed service provider duly trained by Premier Tech Aqua. A list of Premier Tech Aqua authorized service providers in your area is available at PTZONE.PREMIERTECHAQUA.COM or by calling 1-800-632-6356**. The annual maintenance includes a visual inspection of all components, a verification of operation, as well as maintenance of the filtering media. **Easy access to**

your system's lid is essential for maintenance and for filtering media replacement purposes. You will be given a maintenance record after each inspection, which you should keep with this manual in a safe place. A video of main maintenance steps to be performed on the **Ecoflo® Biofilter** is available on Premier Tech Aqua's web site at www.premiertechaqua.com.



At the end of its 8-year life span, the filtering media of your Ecoflo® Biofilter should be replaced. Otherwise, its condition may reduce the treatment performance of the system. An analysis of the filter condition can be done upon demand from the owner or licensed service provider by PTA. PTA can do the filter media assessment for **free** only if it has annual reports and pictures coming from the Premier Tech Aqua maintenance program in its possession. The analysis can be done by assessing and comparing the evolution of the filter media condition every year.

The filtering media is easily pumped out with the help of a truck usually used to pump septic tank sludges. The installation of the new filtering media is performed by a local authorized agent or pumper.

If you need assistance or more information, we invite you to call our customer service at **1 800 632-6356** or to visit our web site at **PREMIERTECHAQUA.COM**.

4. Maintenance and reporting

Annual maintenance

Steps to follow for the maintenance of the Ecoflo® Biofilter

1- Localization of the Ecoflo® Biofilter

2- Inspection of the site and localization of the septic tank (report any problem observed with the septic tank, Dbox, flow divider or pumping station)

3- Inspection of the distribution system and the shell (report problem if inaccessible or if there are signs of infiltration)
   - Note serial number
   - Verify functioning of feeding bucket
   - Verify condition of shell
   - Clean up obstructed holes on the distribution plates

4- Inspection and maintenance of the filter media:
   - Verify condition of filter media. Verify level of compaction of filter media
   - Take pictures **(After raking)**

-  Picture with this angle required to see also the level of compaction
- Perform raking (minimum 6 inches deep, mix lower filter layer with the top layer and also mix with the good peat close to shell)
- Watch for presence of water on the surface of the filter bed (before and after raking)
- Watch for presence of standing water in infiltration zone (at the base of the Ecoflo® Biofilter)

5- Verification of the proper functioning of the system and installation of tie wraps (write initials and year)

6- Enter data in the **Premier Tech Aqua maintenance program** to ensure the follow-up of the treatment performance.

7- Give a maintenance proof to owner and highlight any corrective actions that may be required

Premier Tech Aqua maintenance and management program (database)

Premier Tech Aqua has its own database to report the information from every maintenance visit performed by service providers. Every authorized service provider trained by Premier Tech Aqua has access to this reporting program. This information constitutes a follow-up of the condition of the Ecoflo® system and insures the warranty on the filtering media performance.

Basic inspection guidance for other components

Other system components to be inspected	Inspection recommended	Licensed service provider has to inspect and maintain according to local jurisdiction
Septic tank	Sludge measurement	Report any failure or problem to owner and authorities (if applicable)
	Effluent filter clean and functional	
	Tank condition	
Flow divider	Distribution device at level	Report any failure or problem to owner and authorities (if applicable)
	Even distribution of the flow between the units	
	Look if there's break on the pipes.	
Pumping station	Verify floats and pump function	Report any failure or problem to owner and authorities (if applicable)
	Look if there's infiltration	
	Tank condition	
Dispersal area	Look if there is presence of water surfacing	Report any failure or problem to owner and authorities (if applicable)
	Look for any seepage (breakout)	

Evaluation of the filtering media

The evaluation of the filtering media is a critical step of the maintenance to be performed. The Ecoflo® Biofilter's filtering media has to meet specific criteria and the evaluation of its evolution requires training and experience. The evaluation tools service providers work with help them in the assessment of the deterioration level of the filtering media. Those tools are given to the service provider at the training session.

Premier Tech Aqua always improves its products and maintenance procedures. An annual update is required for a service provider to get the latest tools and learn about the improvements brought by Premier Tech.

Hydraulic overload could affect the life span of the filtering media. It is the owner's responsibility to make sure that the system receives wastewater of domestic source only.

When a licensed service provider determines a filtering media has to be changed before it has reached 8 years of age, Premier Tech Aqua will confirm service provider's decision by assessing maintenance reports and pictures of the filtering media taken during maintenance activities duly recorded in the Premier Tech Aqua database. Premier Tech Aqua will communicate its evaluation and recommendation to the service provider and the owner.

If the service provider is not using the Premier Tech Aqua maintenance reporting tool and database, an hourly fee will be charged for the analysis of the document and information submitted by the service provider.

Filtering media replacement

The filter bed is pumped by septic tank pumpers who are authorized by Premier Tech Aqua. The replacement filter must be installed by a Premier Tech Aqua authorized agent.

Premier Tech Aqua's wastewater service team prepare a listing of every filtering media at the end of their normal useful life. A letter is then sent to the owner when the filtering media has to be replaced. A listing of authorized partners habilitated to perform filtering media replacements is attached to this letter. The owner can then select who will perform the filtering media replacement. In order to get the new filtering media, the owner has to communicate with the authorized partners (pumper). The authorized partners will order the quantity of filtering media they need to perform the replacement schedule with customers. Customers and partners must order before end of April to get a reduce transportation price. After this date the transportation price can be higher to get the pallet of filtrering media.

The new filtering media will be delivered directly to the site by the authorized partners to the owner. New filtering media, pumping and spent filtering media disposal fees will be charged by the authorized partner to the owner. Approximately, it takes between 45 minutes and 1 h 15 minutes to pump out the spent filtering media, under normal conditions of installation and deterioration. It takes approximately 20 minutes to install the new filtering media. A video is available on PTA's web site **PREMIERTECHAQUA.COM.**

Sampling

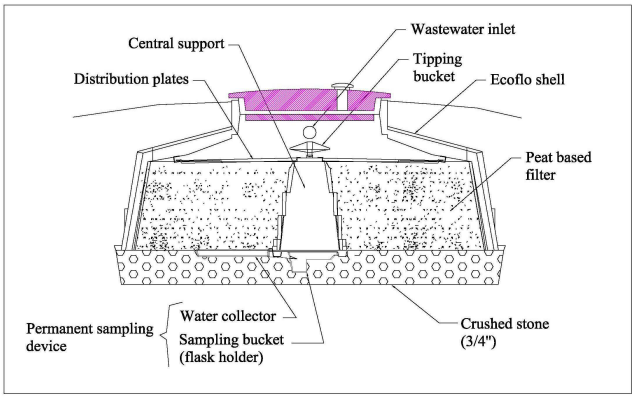
The Ecoflo® Biofilter is equipped with a filtering media which acts as physical barrier providing robustness for the system to be used continuously or intermittently. This physical barrier protects the infiltration area. When a sample is required by the local regulation, the service provider can collect the sample from the sampling tray located under the filtering media (ST model). The sampling tray is accessible through the central support. Depending on water usage, sampling can take a certain time due to the sponge effect created by the filtering media. Service providers must be experienced in collecting samples and must follow the manufacturer's procedures to ensure the representativeness of the sample and prevent any cross contamination.

Equipment required

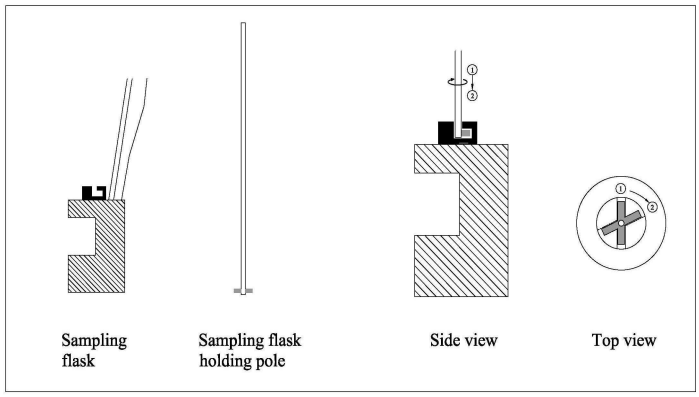
- Clean ECOFLO SAMPLER G-2. (sampler available on demand to Premier Tech Aqua)
- Special weighed tubing with quick connect
- Liquid waste container
- Combo-container cleaned by a laboratory or equivalent
- Cooler
- Frozen ice-packs or ice cubes
- Laboratory sample bottles for analysis (ex.: TSS, BOD_5, NH_4^+, fecal coliforms, etc.)
- Clean water (for the cleaning of the sampler after the sampling)
- Flashlight

ST Model: Open bottom (See Appendix 1)

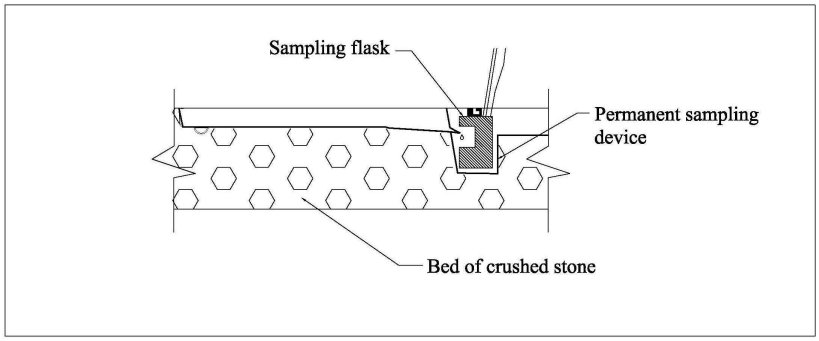
The Ecoflo® Biofilter ST model is equipped with a sampling tray located under the filtering media and accessible through the central support.



Sampling device made by Premier Tech



Location of the sampling device in the sampling tray



Take care not to touch the lip of the sampling tray with the sampling device when installation and removal.

STB Model: with Collecting bottom (See Appendix 2)

The sampling for the Ecoflo® STB model is made by the pumping station. Service provider has to use proper tools and bottles to collect the sample without contaminating it. Never take water from the bottom of the pumping station. Keep the bottle in the upper part of water and never remove particles accumulated at the bottom of the pumping station.

Other equipment

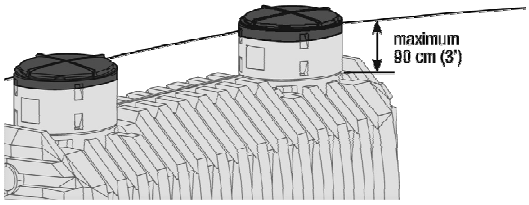
It is possible for the service provider to enter information about other equipment before and after the Ecoflo® Biofilter. The Premier Tech Aqua maintenance program has script to enter this information in the database.

Septic tank

Pumping out accumulated sludge from your septic tank on a regular basis helps to keep your septic system in proper working conditions. The septic tank sludge pumping frequency and requirements are prescribed in local jurisdiction and must be respected. If your home is equipped with a garbage disposal or a sewage pump, we strongly

recommend emptying your septic tank more frequently. The use of this kind of equipment increases the amount of sludge in the septic tank.

We recommend that you keep proof of pumping (invoice) with this Operation and Maintenance manual so as to keep a complete record of your septic system maintenance. It is the owner's responsibility to keep the septic tank accessible for inspection and sludge pumping.



Effluent filter

Effluent filter must be cleaned every time the septic tank is pumped, or as per manufacturer's specifications or local jurisdiction requirements. PTA recommends that the effluent filter be inspected at least once a year and, if required, cleaned before being put back in place.

Pumping station (when applicable)

The pumping station may be required to convey water from the septic tank to the Ecoflo® Biofilter or convey water from the Ecoflo® Biofilter to the dispersal component, when gravity flow is not possible. Like the septic tank, the pumping station must also be watertight to prevent groundwater infiltration. If the pumping station capacity exceeds 300 gallons, Premier Tech Aqua recommends using a TPA-300 timed dosing unit to control the pump (Premier Tech Aqua dosing recommendation is 8 to 10 gallons per dose. Refer to the PSA-240 installation guide for more information). The pumping station must be inspected annually, and flow calibration validated at that time.

Dbox or flow divider (when applicable)

Any model of Dbox or flow divider must be checked on an annual basis to ensure even distribution of water

Timed dosing unit TPA-300 (when applicable)

The TPA-300 and other acceptable timed dosing units control the release of wastewater to the Ecoflo® Biofilters (see TPA-300 installation guide). All commercial installations with 3 or more **Ecoflo® Biofilters** should be installed with a timed dosing unit and an overall pumping totalizer, or with a flow meter.

For all those other components of the treatment train reporting of malfunction, maintenance required, or corrective actions done must be reported to the owner.

General troubleshooting on Ecoflo® after maintenance

Items	Question from maintenance forms	Answers	Problems	Troubleshooting	Actions
1	Access to the biofilter on the property	No	No access to the property	N/A	Letter sent to the home owner by the service provider and notification to PTA and local authorities.
2	Equipment accessibility	No	No access to open the lid	See if the obstacle can be removed	Letter sent to the home owner by the service provider and notification to PTA and local authorities.
3	Water in the infiltration zone (1)	Yes		See troubleshooting chart	
4	Water in the infiltration zone	Yes	Less than 6 inches of water from the bottom of the sampling tray (this situation is not critical but can be addressed)	If it's clear water, see if the situation happens every year (permanent)or if the level of water increases.	Offer the owner to come back when there's a dry period to see if there is still water inside. Also inform the designer and/or installer.
	Water in the infiltration zone	Yes	Less than 6 inches of water from the bottom (this situation is not critical but can be addressed)	If it's dirty water, see if there's infiltration in the soil for ST model. For STB, if the pump is running properly.	Offer a soil test to determine the permeability of the soil layer where the absorption bed is installed. Inform the designer and installer.
	Water in the infiltration zone	Yes	4-36 inches (19-91 cm) of water from the bottom of the stone layer.	If it's clear water that means the water table or surface water infiltrates the system	For the water table, install the system higher than the water table layer. For better infiltration, make the drainage to have water table drain from the infiltration zone. Call designer and installer to evaluate possible solutions. Inform the owner.
	Water in the infiltration zone	Yes	4-36 inches (19-91 cm) of water from the bottom of the stone layer.	If it's dirty water, see if there's infiltration in the soil for ST model. For STB, see if the pump is running properly.	Inform owner. Inform designer and/or installer. Relocation and new soil test will be required.
	Water in the infiltration zone	Yes	More than 36 inches (more than 91 cm) of water from the bottom of the stone layer.	Clear water or dirty water system becomes dysfunctional. Verify soil permeability	Inform owner. Inform designer and/or installer. Relocation and new soil test will be required.
5	Tear drop vent condition	Obstructed	No proper aeration in the system	Remove material over the vent of the lid. See if there's grease biomat due to lack of aeration. See if there's a good vent on the house (4-inch pipe).	Install an independent aeration on the septic tank. Inform the owner to keep the aeration on the lid free. Clean the biomat on the tipping bucket and distribution plates. New visit to verify if aeration reduces biomat in the system (not included in the normal maintenance fees).

Items	Question from maintenance forms	Answers	Problems	Troubleshooting	Actions
6	Shell condition	Broken	Structure of shell affected (depending on the urgency)	Take pictures of the breaks. Take pieces of fiberglass and send to PTA (Quality control). Indicate zones where pieces come from with diagram. Verify if there's more than one riser (note how many risers there are). Verify if there are styrofoam pads installed with riser. Verify if there is overcharge or a wall close to the system. Verify if there are traces of vehicles passing over the system. Verify if snow has accumulated on the system.	Ask PTA if break is under warranty. Inform owners (letter by PTA or ORC). Offer repair to customer or change shell. Repair shell.
7	Tipping bucket condition	Broken	Distribution in the system impossible (Urgent repair)	See if it's possible to repair temporarily.	Call Premier Tech to know if it's warranted. Partners must have tipping bucket spare parts with them. Change the tipping bucket for a new one. If it's not warranted, inform the customer to have is authorization.
8	Distribution plates condition	Broken	Distribution in the system affected (repair is urgent)	See if the peat needs more raking because of compaction.	Ask PTA if it's warranted. Replace distribution plates. Partners must have distribution plates with them. If it's not warranted, inform the customer to have is authorization.
	Distribution plates support condition	Broken	Plates not angled adequately Water will be more distributed at the end of peat.	Lift up distribution plates with support screw at the end of distribution plates and put on peat (made with 4-inch pipe shape as a triangle)	Put back the distribution plates with support described previously. Put a note in the folder for the pumper to change the plate supports on peat replacement. Every year, verify if the temporary support has to be adjusted.
9	Water on peat before raking	Yes	Less than 50% (no problem)	Ref: see troubleshooting chart	Rake the peat. Check if there are signs of infiltration or hydraulic overload.
			More than 50% (can be a problem if caused by a hydraulic overload)	Verify if peat is at grade or if there is more peat on one end of the shell which forces water to infiltrate by the center part. Evaluate infiltration or hydraulic overload. Look at tipping bucket counter if it required in the system to see the flow use in the system.	Rake the peat. Water should infiltrate (if so, no problem). If water does not infiltrate and pounding water stays at 50 % and more, evaluate the peat condition with the criteria process.
10	Water on peat after raking	Yes	Less than 50% (follow-up of the situation at next maintenance)	Verify if peat is at grade or if there is more peat on one end of the shell which forces water to infiltrate by the center part. Evaluate infiltration or hydraulic overload. Look at tipping bucket counter if it required in the system to see the flow use in the system.	Rake the peat. Water should infiltrate. (If so, no problem). If water does not infiltrate and ponding water stays at 50% and more, evaluate the peat condition with the criteria process

Items	Question from maintenance forms	Answers	Problems	Troubleshooting	Actions
11	Filtering media condition	Deteriorated	Before 5 years of age	Look at flow counter if available. Investigate for water infiltration or hydraulic overload. Look at aeration of the system and vent of the house. Peat can be affected by lack of aeration.	Evaluate the peat condition with the criteria process. Ask PTA to give an analysis result. (Charge this service to customer if before end of contract date.)
		Very deteriorated	Before 8 or 10 years of age (depends on the date of installation)	Look at flow counter if available. Investigate for water infiltration or hydraulic overload. Look at aeration of the system and vent of the house. Peat can be affected by lack of aeration.	Evaluate the peat condition with the criteria process. Ask PTA to give an analysis result. Replace the peat,
		Important biomat presence	Affect the flow distribution in the system. Migration to infiltration zone. Chance of clogging on the long term. Maintain aerobic condition into the filtering media?	Evaluate aeration of the system. Analyze water from septic tank (oil and grease). Look at effluent filter condition and TSS in septic tank (not included in the maintenance fees).	Make a visual inspection of tear drop on Ecoflo lid, vent of the house or independent vent for septic tank. Perform a smoke test for better aeration results. Take sample of wastewater from the septic tank and house (not included in the maintenance fees). Inform customer of this situation, obtain his authorization to investigate.
12	Filter bed important compaction	Compaction > 50%	Risk of chanelling. Maybe caused by system hydraulic abuse of system flooding due a malfunction of discharge pump.	Ref: see troubleshooting chart	Ref: see troubleshooting chart
13	Roots in the peat	Some or many	Difficulty to rake peat. Difficulty to remove old peat.	Evaluate the distance of trees around the system. Evaluate condition of the peat following point 10.	Look if trees or bushes can be relocated. Cut the roots when replacing peat.
14	Flow Divider	Does not work properly	Water not distributed in every system equally	Look if system at level (gravity). Look if the flow divider is broken or clogged (gravity or pressure)	

What to do in case of…

Flooding

Certain sites are prone to flooding or have a high groundwater table level. This can lead to a malfunction of the **Ecoflo® Biofilter** or any other septic system. If this happens, contact **your service provider and installer.**

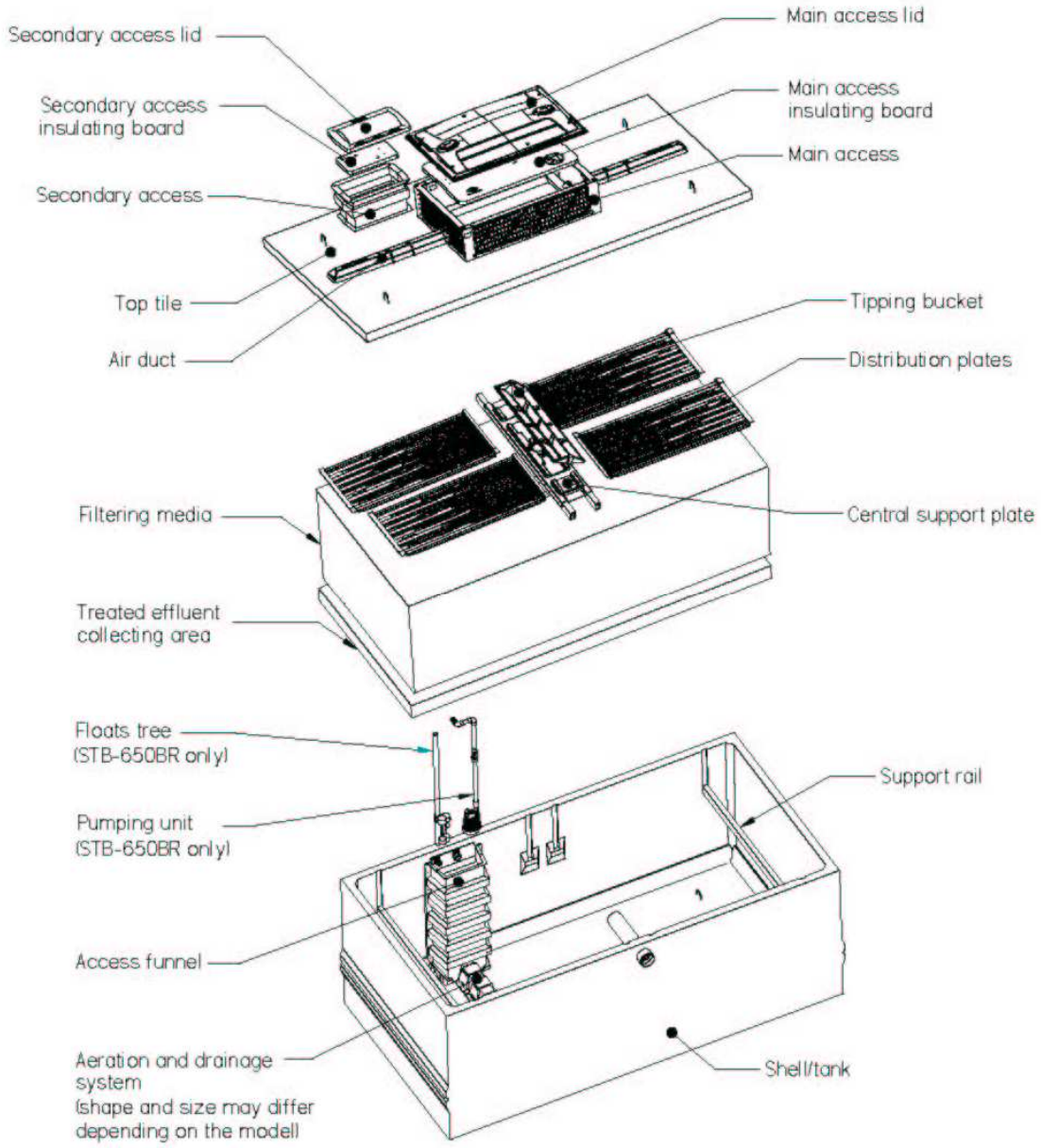
Backflow

Backflows rarely occur in homes. It is generally caused by poor septic tank maintenance. Your septic system installer or septic tank pumper can usually take care of the situation.

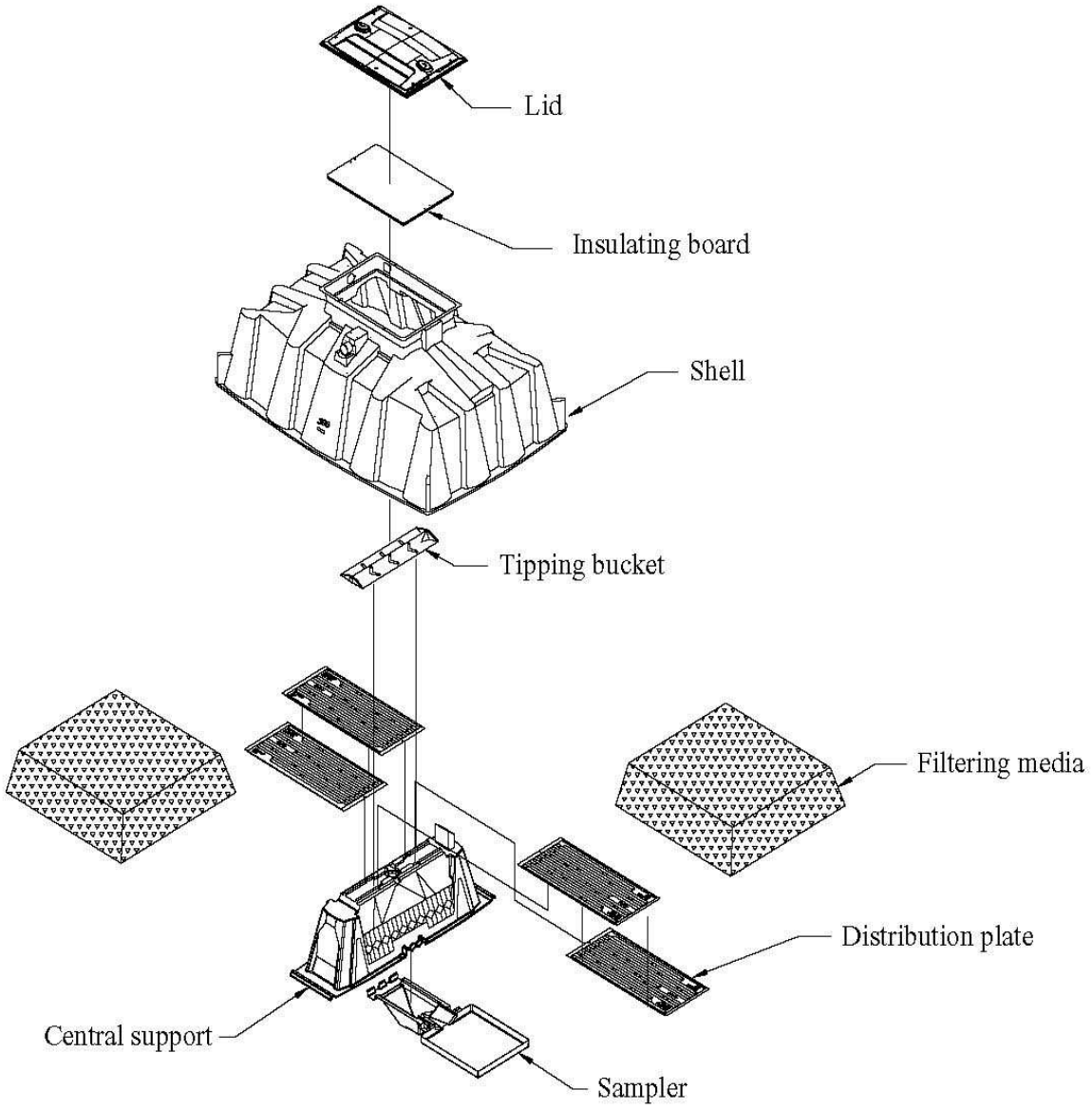
Odours

The position of the air vent of the house, as well as other factors unrelated to the **Ecoflo® Biofilter**, can prevent proper dispersion of septic gases and lead to odours. If this happens, contact your **service provider** for solutions.

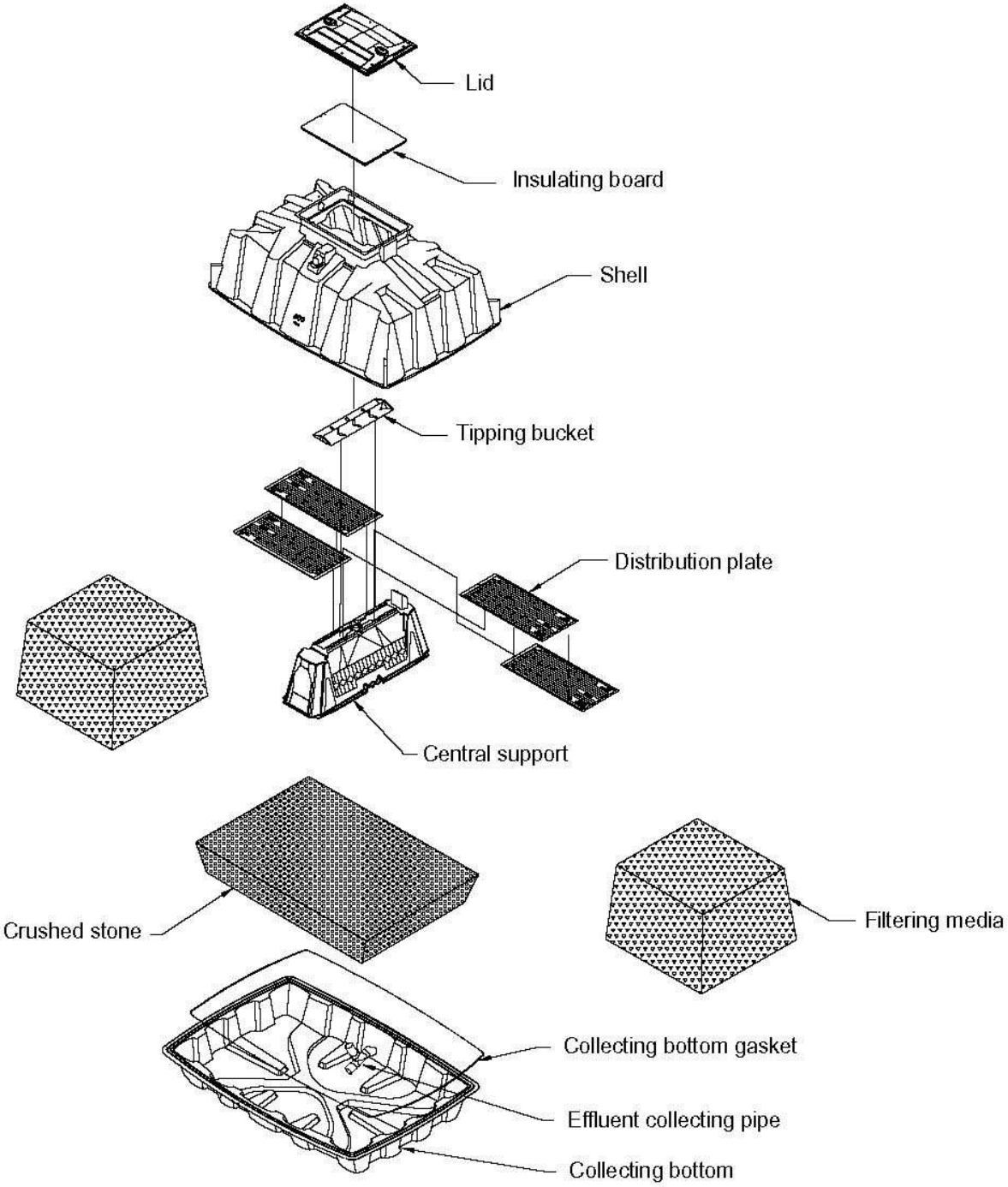
FOR ANY PROBLEM, QUESTION OR COMMENT,
DO NOT HESITATE TO CONTACT OUR CUSTOMER SERVICE
AT 1 800 632-6356



Exploded view of the system
Concrete models



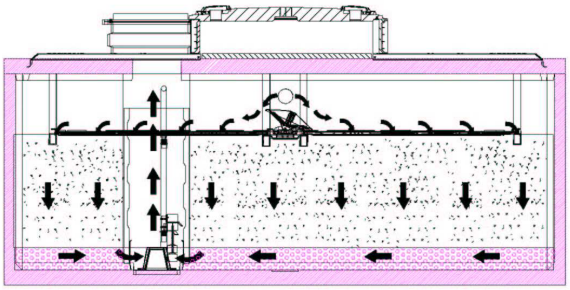
Exploded view of the system
ST fiberglass models

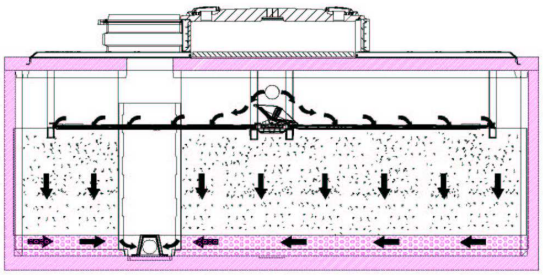


Exploded view of the system
STB fiberglass models

Ecoflo Biofilter process

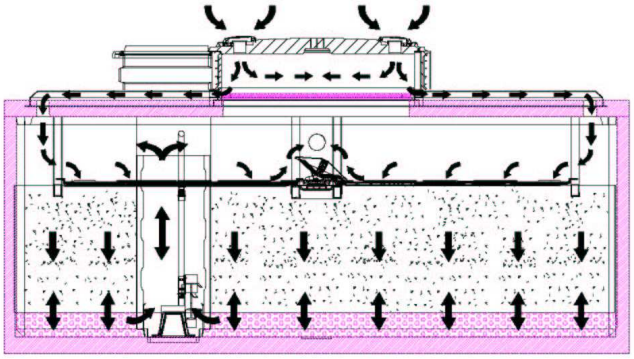
The overall function of the **Ecoflo® Biofilter** is to treat domestic wastewater after a primary treatment. It is done via a water and air (oxygen) management inside the system. Wastewater is treated aerobically by bacteria fixed in the filtering media.





Water flow diagram
(STB-650B discharge by gravity)

To be treated, the wastewater first goes into the septic tank where it is submitted to a primary treatment and then it enters the **Ecoflo® Biofilter**. Once inside the **Ecoflo®**, the water is directed into the tipping bucket and split equally over the distribution plates located on both sides of the central support plate. These plates include channels with holes that distribute the influent evenly over the filtering media. Afterwards, wastewater trickles down through the filtering media where its organic content is consumed by bacteria. The treated effluent is collected in the gravel bed and discharged by gravity (STB-650B) or with an integrated pump (STB-650BR).

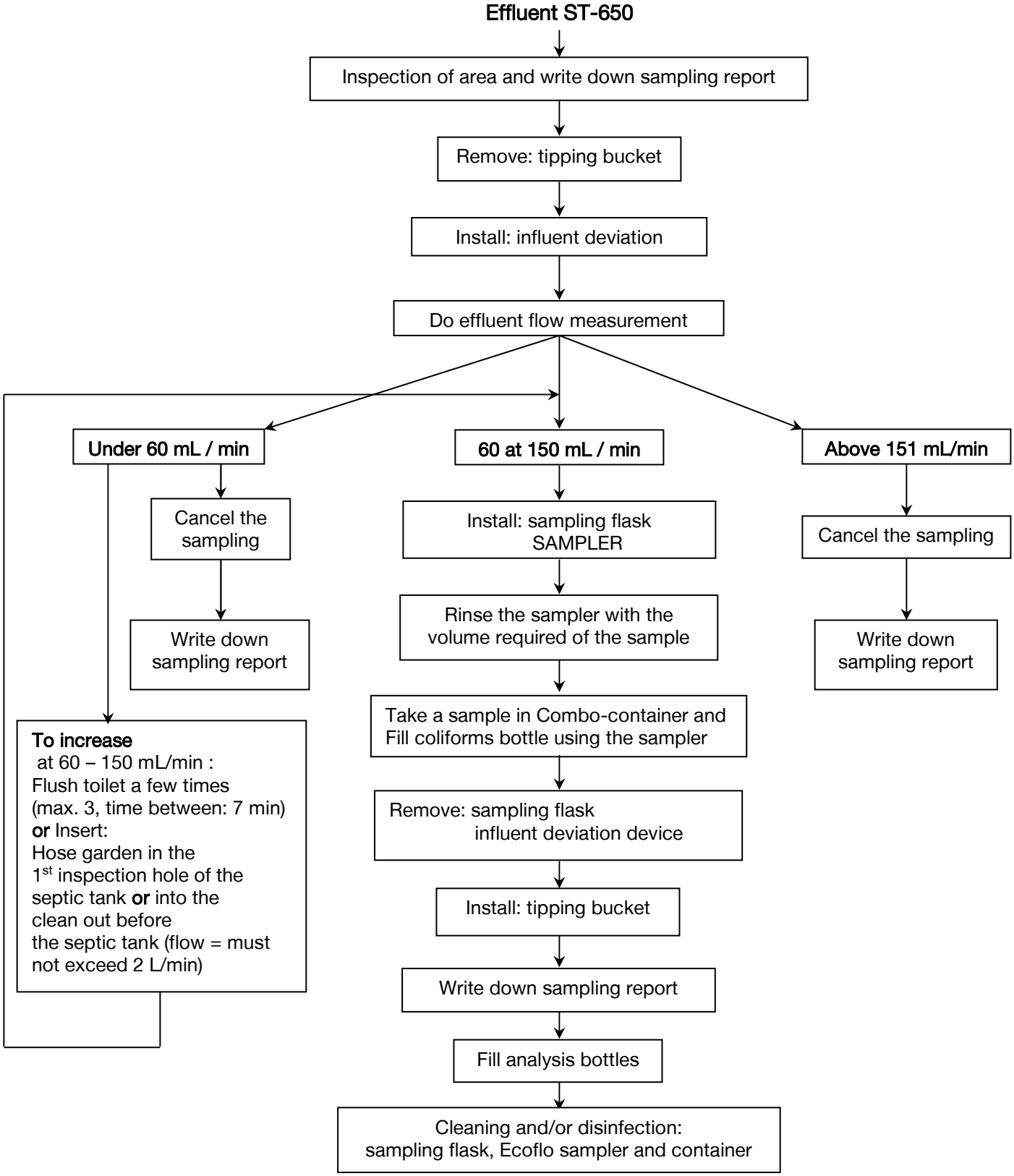


Airflow diagram

To be efficient, the system requires enough oxygen for the filtering media's bacteria do their work. In order to achieve this goal, the filtering media is fed in oxygen by air flowing both at the top and at the bottom of the filtering media. Air enters the system through the intake located on the main access lid. Then, it goes to the extremities of the filter bed via the top tile's air ducts. Air flows at the top of the filtering media, which is located underneath the distribution plates, and enters the filtering media via the water infiltration that takes it to the bottom. Moreover, a gas exchange occurs at the top and at the bottom of the filtering media promoting its oxygenation. The opening located in the access funnel allows for air circulation between the top and the bottom of the filtering media. Finally, air circulation in the system is made by convection to the home’s air vent (or independent vent) via the inlet pipe and the septic tank.

Appendix 1

Grab sampling of ECOFLO ST-650



Appendix 2

Grab sampling of ECOFLO STB-650

Effluent STB-650

↓

Inspection of area and write down sampling report

↓

Before opening the access lib of the pump station:
clean the area around

↓

Pump 1 to 2L in liquid waste container (rinsing water).

↓

Turn off the sampler

↓

Take sample in the combo-container.
Fill coliforms bottle.
(**Don't put in the tube in the container**)

↓

Turn off the sampler

↓

Fill analysis bottles

↓

Write down sampling report

↓

Re-install: lid

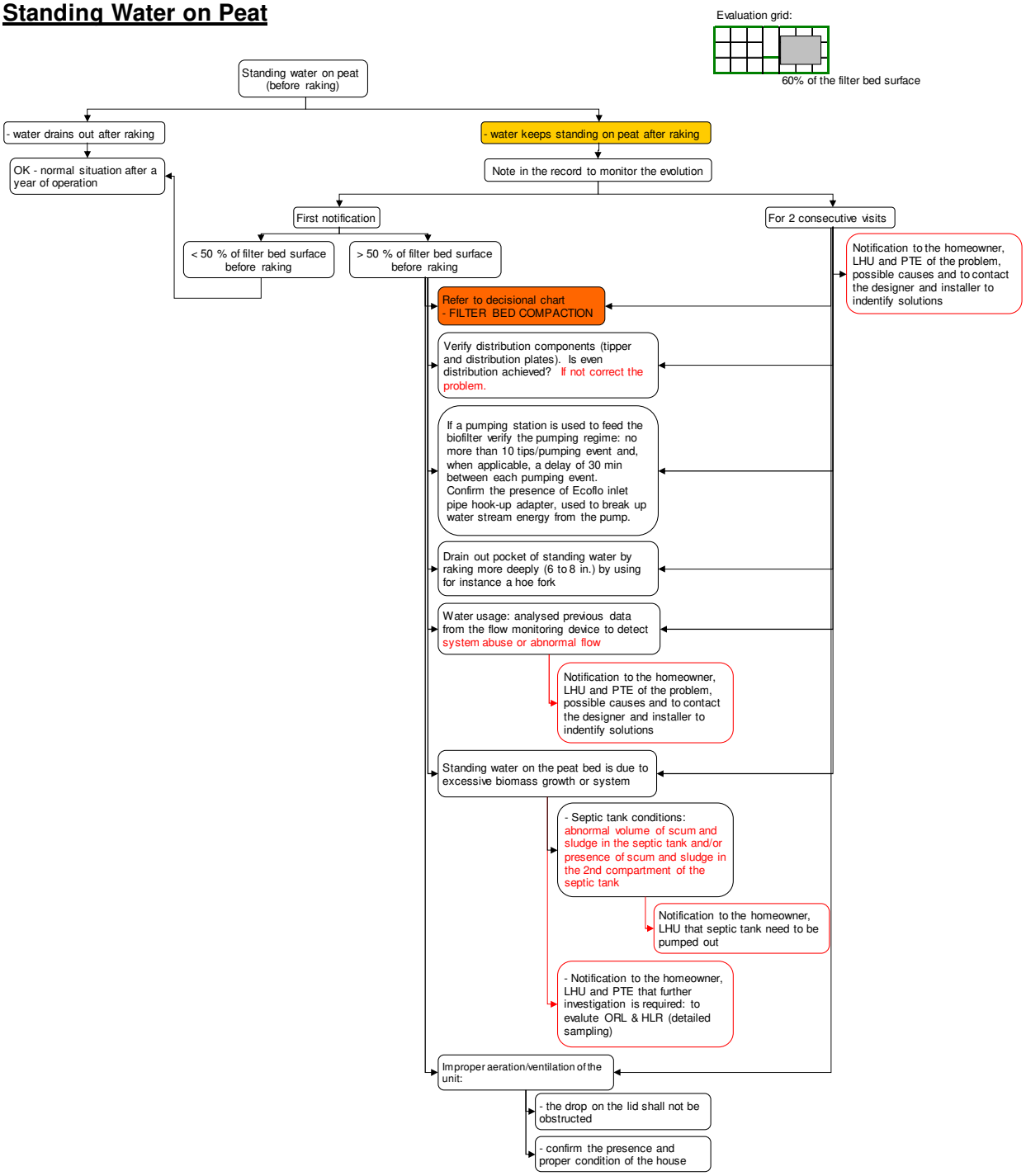
↓

Cleaning and / or disinfection:
Sampler, tubing and container.

Appendix 3

Troubleshooting chart

Standing Water on Peat



Possible causes of standing water on peat:

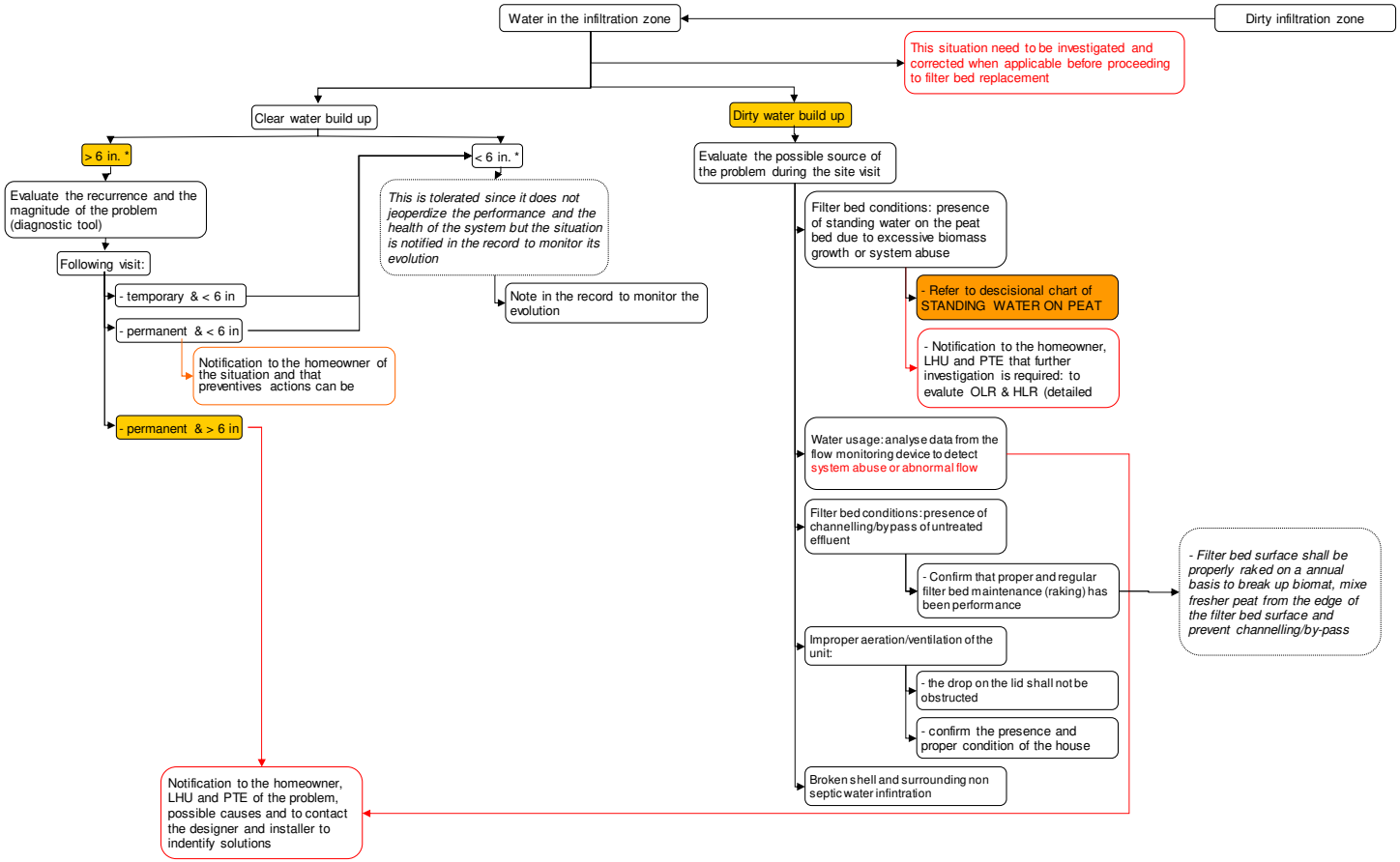
- water flow to the system, design vs real flow
- ponctual and recurent high water flow event
- too much biomass growth caused by unusual ORL and/or HLR and/or inadequate maintenance of the septic tank
- level of peat degradation related to the age of the system
- system has been flooded due to a improper design and/or installation
- uneven water distribution
- improper system ventilation/areation
- water quality causing premature ageing or clogging of the filter bed; unusual water chemistry, toxic spills, household cleaning products, household appliance (garbage grinder), etc.

Consequences:

- on long term, decrease of system hydraulic performance and treatment efficiency
- abnormal compaction of the filter bed
- reduced ventilation/aeration within the filter bed profil, reduced biomass degradation

Troubleshooting procedure

Water in the Infiltration Zone



Diagnostic tool: Iron oxyde redox stick

Possible causes of water in the infiltration:

- improper soil & site evaluation was performed and consequently the design of the infiltration zone is inappropriate
- installation, not according to design
- infiltration zone/ soils got compacted during installation
- improper evaluation of high seasonal ground water table
- landscaping alteration & modification of the drainage (surface and sub surface) surrounding the property
- water flow to the system design vs real flow (septic and parasite water)
- unusually high and sustained precipitation period

Consequences:

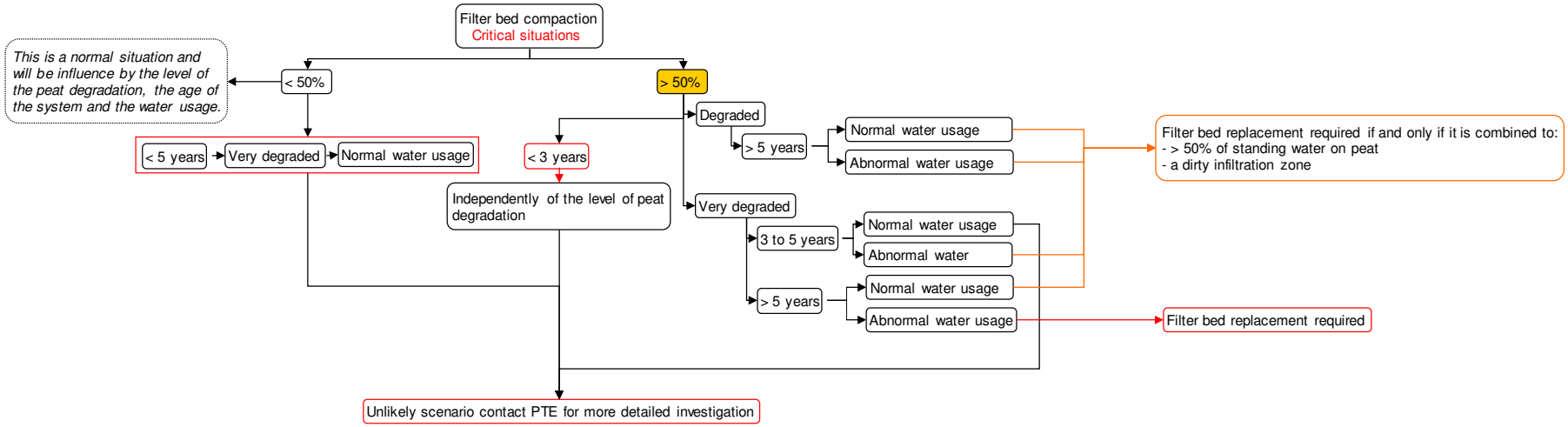
- if permanently > 6 in., impact on the air flow into the system which will affect over time the overall efficiency of the system
- if < 6 in., no real impact but need to be monitored

Note:

* For close bottom system since there is no sampling device to measure the level of water into the infiltration zone, simply determine if the stone layer is 1) saturated, 2) no visible standing water at gravel bed surface

Troubleshooting procedure

Filter Bed Compaction



Possible causes of compaction of the filter bed:

- water flow to the system, design vs real flow
- ponctual and recurent high water flow event
- too much biomass growth caused by unusual ORL and/or HLR
- level of peat degradation related to the age of the system
- system is periodically flooded due to a improper design and/or installation

Consequences:

- on long term, decrease of system hydraulic performance and treatment efficiency
- impact on the capability of the system to deal with peak flow