Design Guide – Minnessota

*This guide contains specific information required to plan the installation of an **Ecoflo® Coco Filter.** The installation must be performed by an authorized installer. For more information, contact your local distributor or our customer service at **1 800 632-6356.***

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1. General Description of the System

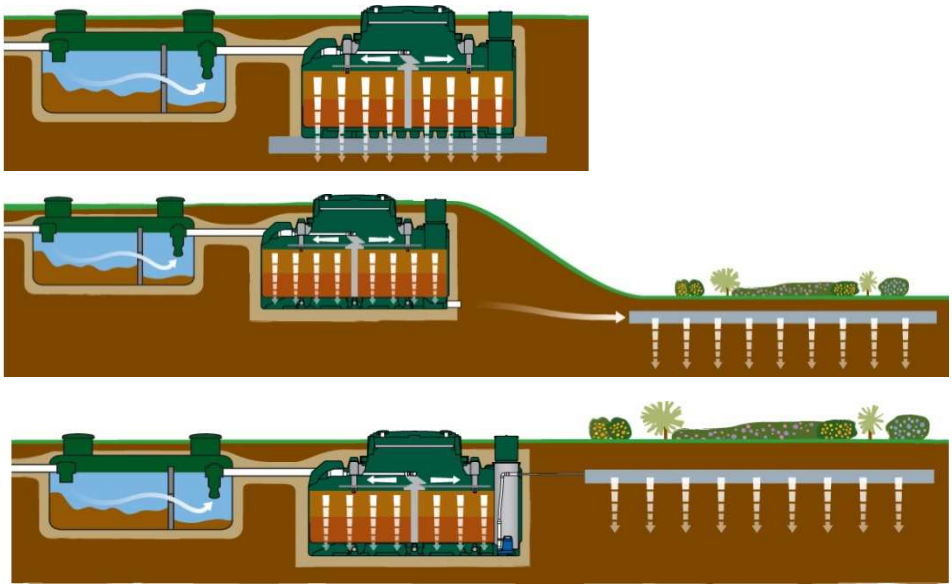
The Ecoflo Coco Filter is a biofiltration system designed to treat domestic septic tank effluent to an extremely high degree before final dispersal. A typical Ecoflo system consists of:

- Septic/Primary tank with a commercially-rated effluent filter connected to the tank outlet pipe
- Ecoflo Coco Filter where advanced treatment occurs due to physical, chemical and biological processes that are optimized in the 100% natural fibrous organic filtering media. The Ecoflo Coco Filter housed into different types of tanks (fiberglass, concrete, polyethylene)
- Site specific, final effluent dispersal system.

The Ecoflo Coco Filter system is based on simple, passive biofiltration principles. Once the wastewater has passed through the septic/primary tank, it then flows towards the Ecoflo® Coco Filter where a unique combination of physical, chemical and biological interactions between the effluent and the 100% natural fibrous organic filtering media takes place to treat the effluent.

Inside the biofilter, a tipping bucket equally scatters the wastewater on specially designed plates which evenly distribute the wastewater on top of the filtering media. The wastewater then trickles through the 100% natural fibrous organic filtering media, where the wastewater is treated aerobically by bacteria fixed into the filtering media via an optimized water/air (oxygen) mass transfer process. Treated effluent is then disposed of either by gravity or pumped to final dispersal/infiltration into the ground.

The Ecoflo Coco Filter has been tested, certified and listed by the National Sanitation Foundation International as meeting the requirements of NSF/ANSI Standard 40, Class 1. The Ecoflo Coco Filter is based on the same technological approach than the ECOFLO® peat-based Biofilter certified since 2005 under NSF/ANSI 40 Class 1 Standard and BNQ 3680-910. The Ecoflo Coco Filter is certified for a hydraulic loading rate (HLR) applicable to the surface of filtering media of 500 L/m^2-d (12.3 Gpd/ft^2).



2. Treated Effluent Quality

When treating domestic strength wastewater up to the design flows and loads, a properly maintained Ecoflo Coco Filter system will exceed the performance requirements of NSF Standard 40 Class 1. Actual test results established through analytical methods described in NSF/ANSI Standard 40 averaged 2 mg /L in $CBOD_5$ and 3 mg/L in TSS.

Parameters	Influent	ECF effluent	Abatement	NSF Std 40 Avg, 30-day
TSS (mg/L)	216 ± 147	2.7 ± 3.0	98.8 %	30
CBOD5 (mg/L)	133 ± 59	2.2 ± 1.6	98.3 %	25
pH	7	7.1		6-9
D.O. (mg/L)	1.1 ± 0.7	7.4 ± 1.5		
Temperature (C)	20 ± 3	14 ± 5		

Additional NSF testing results are reproduced in the following table.

Parameters	Raw influent	Septic tank effluent (STE)	ECF effluent
Fecal counts - Geomean	103 059	128 356	1 305
Fecal counts - Median	1 080 000	105 500	1 265
Fecal counts – 80th percentile			8 500

The Ecoflo system has demonstrated its robustness over the years. The system does not require any acclimation/start-up period to consistently provide effluent quality demonstrated in the table above, which makes it the perfect system for secondary or seasonal home applications or any other intermittent use applications. Also, the Ecoflo system has been specifically developed and tested for cold climate applications. Treatment efficiency is not subject to significant variation with ambient air temperature fluctuation.

3. Wastewater System Component Design and Specification

3.1 System Configuration

The designer of an Ecoflo Coco Filter system will be responsible for proper configuration and sizing of the components of the system, pump and other peripheral component specifications as well as treated effluent dispersal or final disposal and construction details.

3.2 Design Flow

Applicable regulations usually define the daily flow based on the number of bedrooms or the number of occupants with a defined flow per person per day.

3.3 Septic/Primary Tank

The size and configuration of the septic/primary tank shall be in accordance with the NSF listing (as applicable) or State or Local requirements. The septic/primary tank shall have a usable volumetric capacity of at least 24 hours retention. The septic tank, risers and lids must be watertight.

Some Ecoflo Coco Filters housed into polyethylene tank are available into a monobloc configuration (PACK unit) that combines both, the septic/primary tank and the Ecoflo Coco Filter. Consult technical datasheets and respective installation guides for more information on this Ecoflo Coco Filter configuration.

Premier Tech Aqua provides a complete line of high-performance polyethylene septic/primary tanks ranging from 600 USG to 1530 USG. Consult Premier Tech Aqua's Septic Tank Promotional Guide at ***ptzone.premiertechaqua.com*** *for more information on these products.*

Buoyancy calculation for septic/primary tank should be performed when necessary.

3.4 Effluent Filter

The effluent filter extends the life of any treatment system by keeping solids in the septic/primary tank. The effluent filter is especially important if the household is equipped with a sewage pump or any other appliance that may increase the suspended solids content in the wastewater and thereby jeopardize the long term operation of the system and affect its performance. In situations where an effluent pump is required as part of the septic system, an effluent filter will also prevent solids from reaching the pump. **No garbage disposal unit should be installed on your septic system.**

Effluent filters to be used with the Ecoflo® Coco Filter shall have a minimal flow area of 9 in² and filter particles 1/16" and larger. While many different brands of effluent filters meet those specifications, Premier Tech Aqua highly recommends the use of the effluent filter PL-122 from Polylok.

Effluent filters are normally installed at the outlet of the septic/primary tank. *However, they may also be installed downstream of a septic/primary tank in Premier Tech Aqua's TLF-240 effluent filter container in accordance with local regulations. Please refer to Premier Tech Aqua's Effluent Filter Container Promotional Guide at* ***ptzone.premiertechaqua.com*** *for more information on these products.*

3.5 ECOFLO® COCO FILTER

The Ecoflo® Coco Filter is a biofiltration system designed to treat domestic wastewater. Once the wastewater has passed through the septic/primary tank, it then flows towards the Ecoflo® Coco Filter. Inside the biofilter, a central tipping bucket equally scatters the wastewater on both sides of the biofilter. Both sides are equipped with specially designed plates which evenly distribute the wastewater on top of the filtering media. The wastewater then trickles through the natural fibrous filtering media as its organic matter is decomposed by the microorganisms attached to the media. Finally, the treated effluent is discharged into the environment, either by infiltration in a soil absorption system, or in a watercourse, provided certain conditions are met. Where and when applicable, the treated effluent may be required to go through another treatment system before being discharged. It is important to note that final effluent dispersal method is site specific.

The site specific design will detail the final effluent dispersal method. Effluent may be – but not limited to – be either discharges directly to a pad located directly underneath the Ecolfo Coco Filter unit (open bottom models) or may have piped outlet for gravity discharge to trench, pressurised system, point discharge system or other effluent dispersal method, as applicable.

Usually, the model and the number of Ecoflo® Coco Filters are determined either by the number of bedrooms in a home or by the total domestic wastewater flow per day. The selection of the model also depends (without limitation) on the available space, the topography of the lot, depth of seasonal high groundwater table, as well as the type, permeability and depth of the natural soil on site.

There are many different models of Ecoflo® Coco Filters and each model has different characteristics. The letters and numbers associated with the Ecoflo® Coco Filter specify the model's characteristics, as presented in the following table with model **ECP-450P PACK** as reference:

EC refers to the Ecoflo® model	**EC = Ecoflo® Coco Filter**
P refers to the material of the shell	C = Concrete F = Fibreglass **P = Plastic (Polyethylene)**
450 refers to the daily flow capacity	400 = Capacity of 400 US gallons per day **450 = Capacity of 450 US gallons per day** 500 = Capacity of 500 US gallons per day 600 = Capacity of 600 US gallons per day 750 = Capacity of 750 US gallons per day 860 = Capacity of 860 US gallons per day 970= Capacity of 970 US gallons per day
P refers to final dispersal method	G = Gravity O = Open bottom (perforated) **P = pumped**
PACK refers to configuration of the primary/septic tank and biofilter	**PACK = one piece monobloc configuration** No mention = In line

Therefore, according to this nomenclature, the ECP-450P PACK model refers to an Ecoflo Coco Filter, with a daily flow capacity of 450 US gallons, in a closed bottom polyethylene shell and an integrated pump in a one piece monobloc configuration including primary tank and biofilter together. The following table displays all the Ecoflo® Coco Filter models available on the market:



	Polyethylene Biofilter Shell	Concrete Biofilter Shell	Fibreglass Biofilter Shell
Open Bottom *	ECP-750O ECP-860O ECP-970O	N.A.	ECF-600O ECF-860O ECF-990O
Closed Bottom - Gravity discharge	ECP-450G (stand alone or PACK) ECP-750G ECP-860G ECP-970G	ECC-500G ECC-600G ECC-860G	N.A.
Closed Bottom - Pumped discharge	ECP-450P (stand alone or PACK) ECP-750P ECP-860P ECP-970P	ECC-400P ECC-500P ECC-600P ECC-860P	N.A.

** The use of Open bottom configuration may be allowed when it is used to alter existing malfunctioning systems. Under these circumstances, these systems may be approved by the local administrative authority, at their discretion. The location of the system must conform to all provision of Minnesota Rules.*

Consult the Technical Data Sheets at *ptzone.premiertechaqua.com* for additional information on these models, such as built-in storage and dosing capacities, dimensions, weight, etc.

The table below summarizes the principal design criteria for the Ecoflo Coco Filter (ECF).

	ECF
HLR	12.25 USG/ft^2-d
OLR	0.02 lbs $DOBC_5$/ft^2.d
FM height	26 in
Loading rate per volume of filtering media	5.87 USG/ft^3-d

The following table summarizes the system's capacity depending on the different Ecoflo® Coco Filter models.

Ecoflo® Coco Filter Series	Filtering media Surface (ft²)	Maximum Flow rate capacity (USG/d)	Premier Tech Aqua's recommended application
450	34	Up to 450	Up to 2-3 bedrooms
500	41	up to 500	up to 3-4 bedrooms
600	49	up to 600	up to 4-5 bedrooms
750	61	up to 750	up to 5-6 bedrooms
860	70	up to 860	up to 5-6 bedrooms
970	79	up to 970	up to 6 bedrooms or CC applications
990	80	up to 990	

NOTE: *The model and the number of Ecoflo® Biofilters are determined either by the number of bedrooms in a home or by the total domestic wastewater flow per day. No matter what the specifications for design flow rates are in a said jurisdiction, the design of the different Ecoflo® models developed by PTA are essentially based on the number of bedrooms.*

Buoyancy calculation for pump tank should be performed when necessary.

In order to ensure more stability and counter buoyancy force, unit shall be adequately anchored in place before backfilling following procedure detailed in each Ecoflo Coco Filter model's Installation Guide.

Please contact your local PTA representative for model availability and approvals in your area.

3.6 INFLUENT PUMPING STATION (WHEN APPLICABLE)

When the wastewater between the septic/primary tank and the Ecoflo® Coco Filter cannot be conveyed by gravity, a pumping station is then required. Like the septic/primary tank, the size and configuration of the pump tank shall be based on design flow and occupancy and per State or Local requirements. The pump tank, risers and lids must be watertight.

The recommended dosing rate to the Ecoflo® Coco Filter should be between 8 to 10 gallons of wastewater every pump cycle.

Pump tank must have adequate venting to avoid buildup of harmful gases, air lock and corrosion. This can be accomplished using a separate vent pipe on the pump chamber or septic tank, by using a vented lid, or by connecting to the main building vent stacks.

Premier Tech Aqua offers several models of pumping stations (PSA-240, PSA-240L, PSA-240H, PSA-240NP, PSX-240) please consult Premier Tech Aqua's Pumping Station Promotional Guide which can be found at ptzone.premiertechaqua.com.

It is the designer responsibility to make sure that pumping stations configuration and sizing meet State Local requirements.

3.7 DISCHARGE PUMP (WHEN APPLICABLE)

As presented in table above, some Ecoflo® Coco Filter models housed into either concrete or polyethylene shells come into a closed bottom configuration including a discharge pump vault. It allows to pump the final treated

effluent towards the site specific final dispersal method. The integrated pump vault includes a pump, a float tree on which, an ON/OFF float, and alarm float are attached and an alarm box.

Each of the ECX-XXXP models listed below offer a certain built-in capacity for dosing and storage in case of emergency. These are presented on products respective technical data sheets.

Ecoflo Coco models		**Polyethylene Biofilter Shell**				**Concrete Biofilter Shell**		
		ECP-450 (Stand alone or PACK)	**ECP-750P**	**ECP-860P**	**ECP-970P**	**ECC-500P**	**ECC-600P**	**ECC-860P**
Maximum Applicable Flow Rate (USG/d)		450	750	860	970	500	600	860
Built-in effective dosing volume		175 gpd	260 gpd	320 gpd	395 gpd	265 gpd	To be determined case by case	375 gpd
Emergency built-in storage capacity (above alarm float)		530 gpd	695 gpd	805 gpd	945 gpd	535 gpd		860 gpd
Float adjustments		**Dosing volume provided (USG)**						
Factory setting	4”	70	100	125	150	100	To be determined case by case	145
Cut 1"	3”	90	140	170	210	140		200
Cut 2"	2”	115	170	210	260	170		245
Cut 3"	1”	135	200	245	300	200		285

Floats factory settings are set to provide 70 to 150 gallon per dose depending on models capacities. However floats can be adjusted on site according to information provided in table above if bigger dose is required depending on specific site conditions and design. For gravity distribution we recommend, theoretically, a dose volume of ¼ of daily design flow, 4 times a day. Otherwise, pressure dosing system can be design according to design procedure spelled out Minnesota Rules.

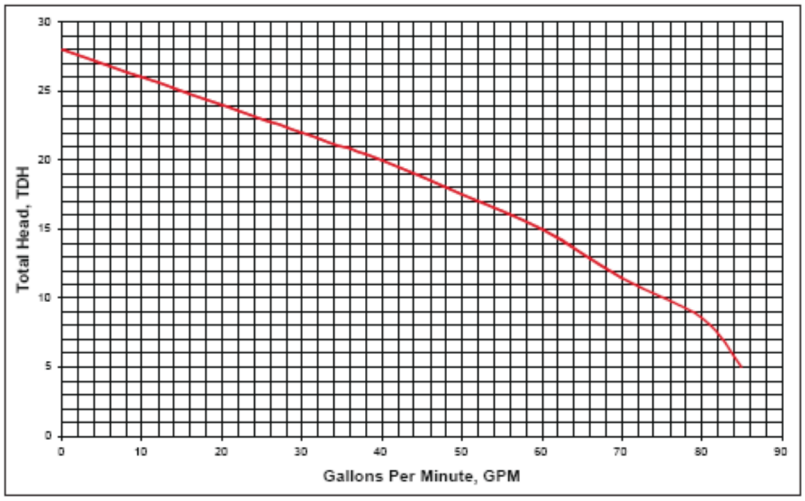
Depending on application and site conditions, additional volume for dosing and/or emergency may be required and provided with an additional independent dosing tank.

Consult the Technical Data Sheets at *ptzone.premiertechaqua.com* for additional details on integrated pump vault for these models, such as built-in storage and dosing capacities, dimensions, etc.

The pump provided with those models presents the following characteristics:

0.5 HP
8.5 Amps
1 phase, 60 Hz, 115 V

The figure on the right represents the performance curve of the pump supplied with the Ecoflo® Coco Polyethylene with integrated pump. Note that this curve was obtained with clear water, the pump might not perform as well with wastewater. If you have questions about the interpretation of this curve, please do not hesitate to contact Premier Tech Aqua.



The pumping unit uses 0.25 kWh per day.

The maximum length of the pressurized pipe (flexible pipe) from the pump's outlet, using a 25 mm (1") Ø pipe, depends on the head (difference in elevation between the base of the pump and the end of the pressurized pipe). The maximum length of the pressurized pipe (flexible pipe) from the pump's outlet, using a 38 mm (1½") Ø pipe, is limited by the volume of water that returns to the Ecoflo® Coco Polyethylene once the pump has stopped running.

The following table presents the different allowable pipe lengths:

Head height	7,5 m (25')	6 m (20')	4,5 m (15')	3 m (10')	1,5 m (5')
Maximum length of the Ø 25 mm (1") pipe	---	18 m (60')	21 m (70')	24 m (80')	27 m (90')
Maximum length of the Ø 38 mm (1½") pipe	30 m (100')	30 m (100')	30 m (100')	30 m (100')	30 m (100')

It is the designer responsibility to make sure that pumping stations configuration and sizing meet State Local requirements.

3.8 Flow dividers (when applicable)

When an installation consists either of two Ecoflo® Coco Filter units which cannot be fed by gravity or of 3 or more Ecoflo® Coco Filter units, a special attention shall be given to even flow distribution between the units.

Premier Tech Aqua offers several pressurized flow dividers. For more information on Premier Tech Aqua's pressurized flow divider, consult the Peripherals Section at ***ptzone.premiertechqua.com****.*

3.9 Commercial Application

The Ecoflo® Coco Filter can also be used for commercial, institutional, communal or municipal applications when the wastewater to be treated is comparable to domestic wastewater. Please contact Premier Tech Aqua's customer service for more information on these applications.

3.10 Life Span of Filtering Media

The effective life of the Ecoflo Coco Filter filtering media is estimated to a minimum of 8 years under the following conditions:

- System has been operated at or under design flow and loadings
- System has been designed and installed in accordance with Premier Tech Aqua guidelines
- System has been maintained in accordance with Premier Tech Aqua guidelines, by a Premier Tech Aqua trained service provider, been operated under an ongoing service contract and is in compliance with all Administrative Authority permit conditions

After 8 years, the filtering media is analyzed by one of Premier Tech Aqua authorized agents. Under normal usage, if the filtering media has not been abused and the operating guidelines have been respected, the filtering media may not have to be replaced and can be used for some additional years. However, the Ecoflo® Coco Filter's filtering media must be replaced before the system's treatment capacity and performance begins to deteriorate. The filtering media is easily pumped out using a truck adapted to pump out septic tank sludge. The new filtering media is then installed by an authorized agent or the pumper.

3.11 FINAL DISPERSAL

The final dispersal system must be designed in accordance with State or Local regulations and Premier Tech Aqua guidelines spelled out in section 5 below.

4. Location of Wastewater System Components

4.1 SEPTIC/PRIMARYTANK/PRIMARY INSTALLATION CONDITIONS

The septic /primary tank, equipped with an effluent filter, must be located:

- Where there is no motorized vehicle traffic;
- Where it is accessible at all times for maintenance and emptying;
- In an area that is not likely to be flooded and where it will not be submerged (depending on the situation, a drain may be required around the septic/primary tank to prevent installation in groundwater).

The septic tank /primary must be installed as specified by the manufacturer. The septic/primary tank must be watertight and be used for disposal of domestic wastewater only (i.e. no roof water, surface water or discharge from footing drains). The septic installation must be installed in accordance with the minimum clearance prescribed by State or Local regulations.

4.2 ECOFLO® COCO FILTER INSTALLATION CONDITIONS

The Ecoflo® Coco Filter must be installed according to the following recommendations:

- NEVER cover or bury the lid of an Ecolfo® Coco Filter;
- The lid of the Ecolfo® Coco Filter must be at least 2" above the surface of the landscaped lot;
- NEVER plant trees or bushes within 20' of the lid of the Ecoflo® Coco Filter and/or within 6.5' of the infiltration area;
- NEVER connect a drain pipe, roof gutter, sump pump or air conditioning drain to your septic system;
- NEVER operate a vehicle or place an object weighing more than 500 lb within 16.5 ft of the lid of the Ecoflo® Coco Filter;
- ALWAYS ensure a minimum horizontal setback of 10' from the Ecoflo® shell to any upslope retaining walls or the toe of a slope (where slope bottom meets level ground) AND ensure an upslope interceptor drain is installed to direct surface and/or groundwater away from the Ecoflo® module and soil absorption system;
- Make sure the ground cover grows back quickly to prevent soil erosion.

In addition to those recommendations, some additional models specific consideration are detailed in the table below:

<table>
<tr><th colspan="2">Ecoflo Coco Filter models</th><th>Risers</th><th>Consideration to high ground water table</th></tr>
<tr><td rowspan="2">Open bottom:</td><td>Fiberglass:
ECF-600O
ECF-860O
ECF-990O</td><td rowspan="2">NEVER install a riser</td><td rowspan="2">- Must be installed in a location that is never likely to be flooded or submerged by groundwater
- Make sure that at ALL time the seasonal high ground water level is at least 12” (30 cm) below the bottom of the 8”stone layer underneath the Ecoflo unit and not less than 6” if permitted locally to be less than one foot</td></tr>
<tr><td>Polyethylene:
ECP-750O
ECP-860O
ECP-970O</td></tr>
<tr><td rowspan="3">Close bottom
Gravity discharge:</td><td>Polyethylene:
ECP-750G
ECP-860G
ECP-970G</td><td>NEVER install a riser</td><td>- Shall not exceed the pipe outlet level
- Unit shall be adequately anchored in place before backfilling following procedure detailed in section 2.2. of the Installation Guide to ensure maximum stability</td></tr>
<tr><td>Polyethylene:
ECP-450G
ECP-450G (PACK)</td><td>Maximum two 6 inches additional risers (for a total of 3 risers and 18 inches))</td><td rowspan="2">Shall not exceed the pipe outlet level</td></tr>
<tr><td>Concrete:
ECC-500G
ECC-600G
ECC-860G</td><td>Maximum one 8 inches additional riser</td></tr>
<tr><td>Close bottom
Pumped discharge:</td><td>Polyethylene:
ECP-750P
ECP-860P
ECP-970P</td><td>NEVER install a riser</td><td>- Shall not be installed in fully saturated soil
- Shall not exceed 1 foot from the bottom of the unit
- Unit shall be adequately anchored in place before backfilling following procedure detailed in section 2.2. of the Installation Guide to ensure maximum stability</td></tr>
</table>

Ecoflo Coco Filter models		Risers	Consideration to high ground water table
	Polyethylene: ECP-450P ECP-450P (PACK)	Maximum two 6 inches additional risers (for a total of 3 risers and 18 inches))	- Shall not exceed the shoulder of the unit - Unit shall be adequately anchored in place before backfilling following procedure detailed in section 2.1. of the Installation Guide to ensure maximum stability
	Concrete: ECC-500P ECC-600P ECC-860P	Maximum one 8 inches additional riser	Shall not exceed the pipe inlet level

It is very important to advise everyone involved (installer, landscaper, owner, snow removal service, etc.) of the above recommendations so they do not damage the components of the wastewater treatment system.

By respecting these guidelines, you are contributing to the proper operation of your wastewater treatment system.

5. Effluent Discharge

IMPORTANT! THIS IS A CRUCIAL STEP FOR EVERY SEPTIC INSTALLATION.

The Ecoflo® Coco Filter provides a variety of disposal/dispersal methods of the treated effluent. The final dispersal system is site specific and must be designed in accordance with State or Local regulations and Premier Tech Aqua guidelines.

5.1 HYDRAULIC CONDUCTIVITY

Site assessment and soil conditions are critical to determine the appropriate type of treated effluent discharge. An accurate assessment of the soil's hydraulic conductivity is essential in planning any septic installation. This assessment should be performed in accordance with local regulations. Adequate sizing of the soil absorption system relies on the determination of the soil's infiltrative capacity and will ensure adequate infiltration of the treated effluent into the soil at all times. The soil's infiltrative capacity is often expressed as a percolation rate (average time in minutes that is required for water to drop one centimetre in the soil), which can be determined by a qualified individual through a field permeability test, a laboratory soil particle-size analysis, or any other method approved by local regulations. Soil permeability and analysis is most important within the horizon intended to be the point of application of the treated effluent.

Once the soil characteristics have been established, the size of the soil absorption system required to receive the treated effluent of the Ecoflo® Coco Filter can be determines. The shape of the soil absorption system may vary depending on site constraints.

The Ecoflo® Coco Filter treated effluent can be:

- Subsurface discharged towards trenches, infiltration bed or pad, a drip dispersal system or any type of gravel-less system

5.2 Sizing of Soil Dispersal System

Premier Tech Aqua suggests to use loading rate factors presented in the table below but soil loading rates provided by State or Local regulation usually prevailed unless approved other way.

The following table presents the minimum recommended area sizing for some of the options mentioned above.

Minimum recommended soil absorption system area sizing factor

Percolation Rate	Premier Tech Aqua's recommended loading rate for dispersal area
T min/in	(ft^2/Gpd)
< 3	0.44
3 to 5	0.44
6 to 15	0.44
16 to 30	0.56
31 to 45	0.83
46 to 60	1.18
61 to 90	1.67
91 to 120	2.22
120 to 150	2.50
151 to 180	2.86

5.3 Soil Depth Required Under the Clean Stone

The vertical distance between the absorption bed and the limiting layer (groundwater, rock or impervious layer) must be in accordance with the State or Local regulations. Premier Tech Aqua recommends however that the minimal vertical distance between the base of the clean crushed stone (distribution layer of the dispersal bed) and the limiting layer be at least of 300 mm (12") for average to low permeability soils (4-25 min/cm and 25-45 min/cm). Under high permeability soil conditions (<4 min/cm), a vertical distance of 600 mm (24") is recommended.

Always consider the following when designing a soil absorption system:

- Soil assessment must be performed in accordance with local regulations in order to determine the type of soil as well as the depth of any limiting layer (groundwater, rock or impervious layer);
- When referring to groundwater, the Seasonal High Groundwater Level (SHGL) must be taken into account;
- The profile of the lot must be such that runoff water flows away from the septic system;
- The shape of the soil absorption system may vary according to site conditions;
- Various means can be used to promote infiltration in low permeability soils. Contact Premier Tech Aqua for suggestions.

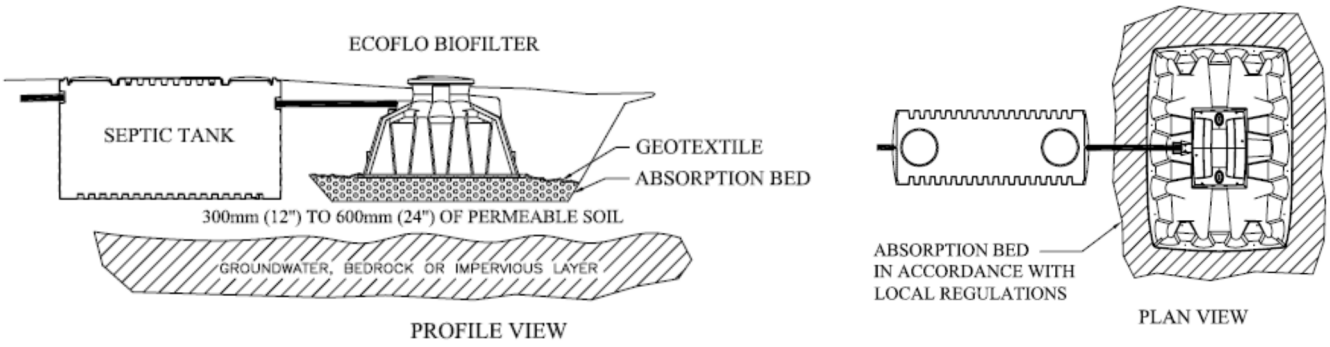
Please consult the technical drawings which can be found at ***ptzone.premiertechaqua.com*** for several typical installations.

5.4 OPEN BOTTOM CONFIGURATION

For **open bottom** Ecoflo Coco Filter configuration the treated effluent is infiltrated by gravity into a dispersal/seepage bed installed directly underneath the unit.

It is the designer responsibility to make sure that open bottom configuration are approved in its jurisdiction and meet State or Local requirements.

The absorption bed/dispersal area has a minimum of 8" of 1/2" to 2" (3/4" recommended) of clean crushed stone overlaying natural occurring soil as shown in figure below.



It is recommended to maintain a minimum of 1 foot vertical separation of unsaturated soil or fill material to any limiting layer.

5.5 CLOSE BOTTOM CONFIGURATION

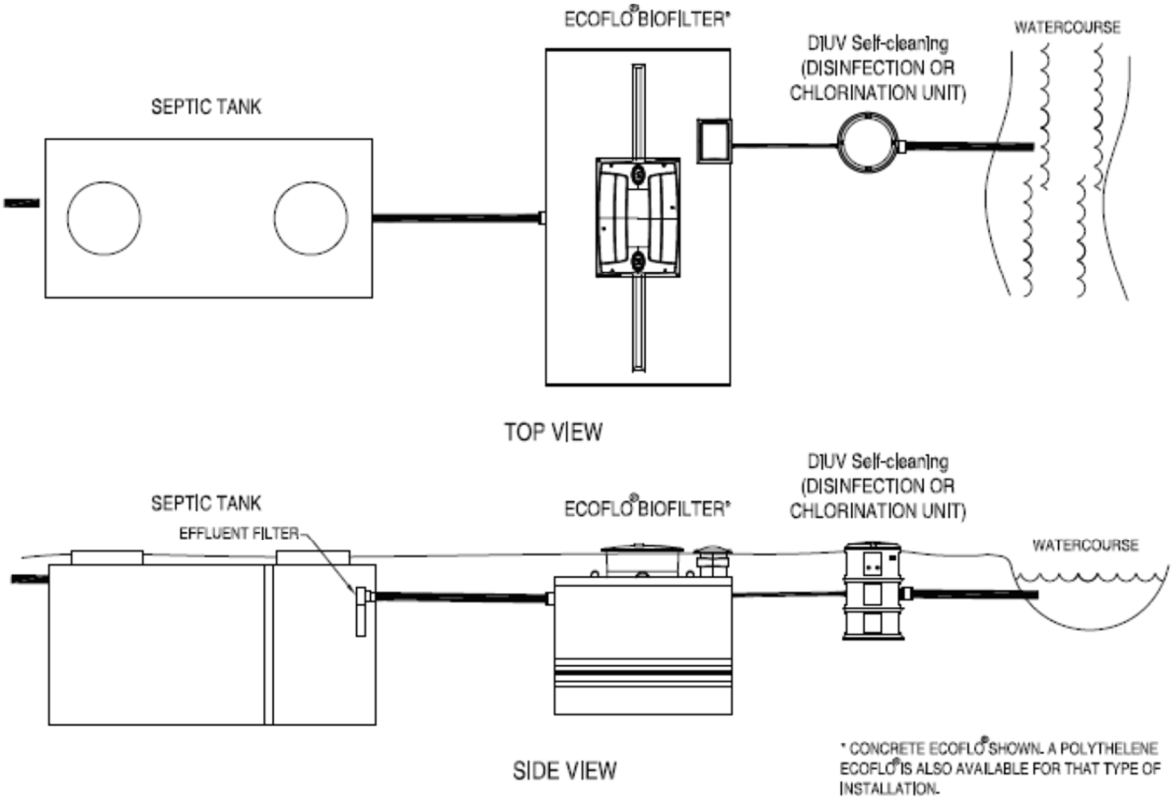
For **close bottom** Ecoflo Coco Filter configuration the treated effluent is collected at the bottom of the unit and can be directed either by gravity or pump to the dispersal methods in accordance with State or Local regulations and Premier Tech Aqua guidelines.

The close bottom Ecoflo® Coco Filter models (STB models) offer a wide range of treated effluent dispersal methods into the soil. The Ecoflo® Coco Filter treated effluent can be discharged in an:

- Infiltration pad;
- Trenches;
- Infiltration chambers or other gravel less systems;
- At-grade absorption area;
- Drip dispersal system;
- Individual residential spray irrigation system (IRSIS);
- Etc.

5.6 SURFACE DISCHARGE

Depending on State or Local regulations and jurisdictions, the Ecoflo® Coco Filter effluent could be discharged into a watercourse. Requirements for such applications vary from one jurisdiction to another. Contact your local PTA representative to know if it is allowed in your area.



5.7 Final Polishing Process

When required and if State or Local regulations permit it, the Ecoflo® Coco Filter can be combined with Premier Tech Aqua's disinfection unit (DiUV) or other UV disinfection system to reduce the fecal coliforms concentration below 200 UFC/100 mL to allow direct surface or groundwater discharge. For more information on PTA's DiUV, please consult ***ptzone.premiertechaqua.com***.

If you have any questions or comments, do not hesitate to contact Premier Tech Aqua at 1 800 632-6356.

PREMIER TECH AQUA

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