

THE KRAKEN FILTER



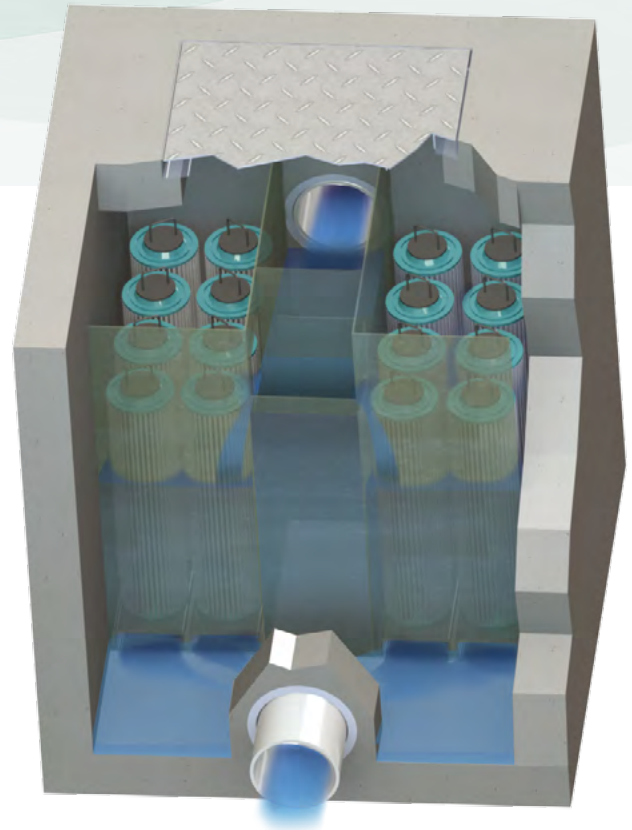
Overview

The Kraken Filter is the newest addition to Bio Clean Environmental's comprehensive line of stormwater BMPs. This state-of-the-art system utilizes advanced membrane filtration, ensuring a high level of removal for not only TSS, but also metals, trash, nutrients, and hydrocarbons. The Kraken membrane filter cartridge provides high flow rates and over 170 sq ft of surface area. This much surface area allows it to operate at a loading rate of only 0.05 gpm per square foot, to ensure maximum performance and minimum maintenance. The Kraken Filter's low loading rate successfully overcomes high maintenance requirements and frequent clogging issues often found in other filter systems advertising high loading rates.

Each membrane filter cartridge is lightweight, washable, reusable, and more sustainable than typical granular filled media cartridges. By eliminating the need to purchase new granular media and dispose of spent media, the Kraken Filter provides lower life-cycle and maintenance costs.

Each filter cartridge is equipped with easy to grab handles and is pressure fitted, allowing it to be quickly removed, washed clean and re-attached without the use of tools.

Kraken Membrane Filter Cartridge



Advantages

- No granular media to replace
- High flow rates & maximum surface area
- Loading rate of 0.05 gpm / sq ft, for minimal maintenance
- Membrane filter cartridges can be easily removed & cleaned by hand
- Built-in pre-treatment chamber captures trash, sediments, debris and hydrocarbons
- Filter cartridge dries out between storm events to prevent biofilm growth which can cause clogging and other performance issues

Performance

- 86% TSS Removal (NJ CAT PSD)
- > 50% Phosphorus Removal (Expected - varies with particle size)
- > 50% Total Metal Removal (Expected - varies with particle size)
- 90% TPH (Expected)
- 99% Trash Removal

Pre-Treatment Chamber

- Inflow Pipe
- Floatable / Oil Baffle
- Sediment Baffle
- Primary Separation Chamber

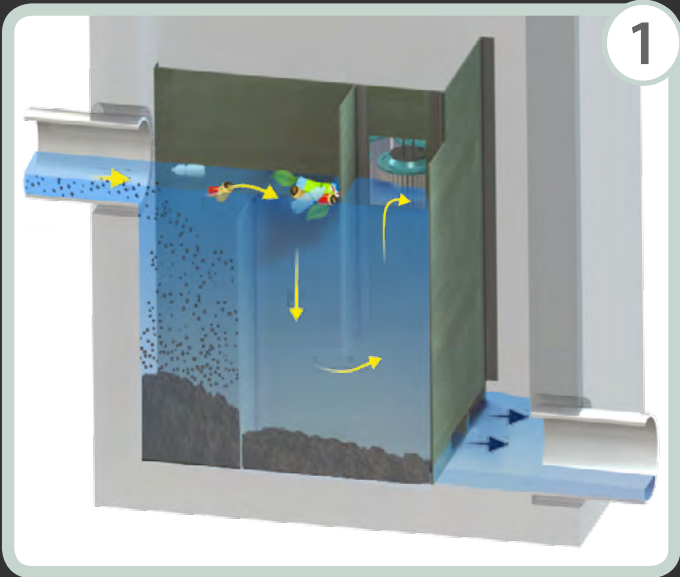
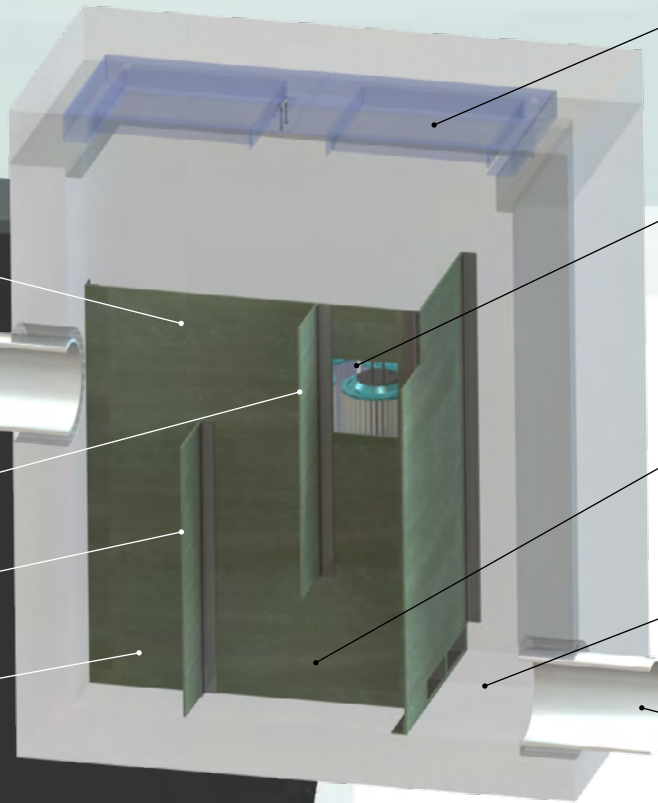
Access Hatch

Filter Chamber Orifice (Entry Point)

Secondary Separation Chamber

Discharge Chamber

Outflow Pipe

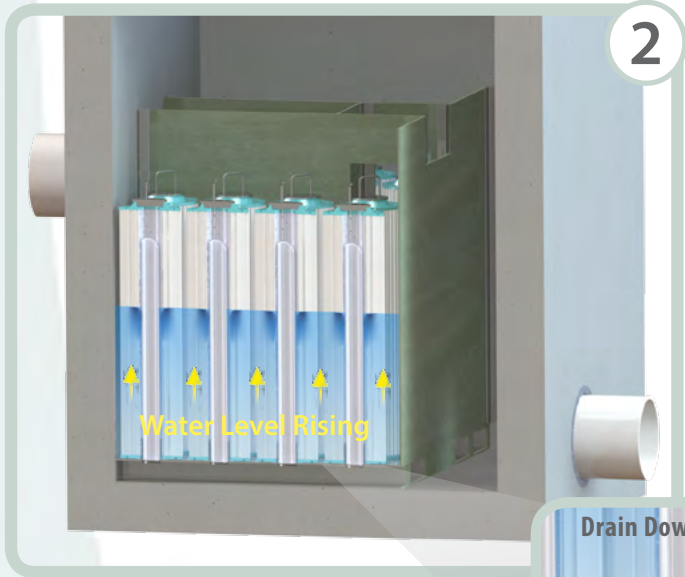


1

Pre-Treatment

To reduce loading on the membrane cartridge, runoff is initially passed through the pre-treatment chamber to capture trash, hydrocarbons and sediments. Once runoff is pre-treated it is directed to the filter chambers for primary treatment.

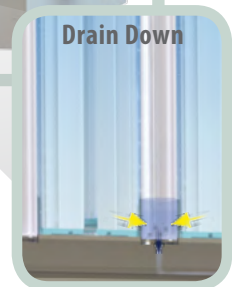
Patent Pending



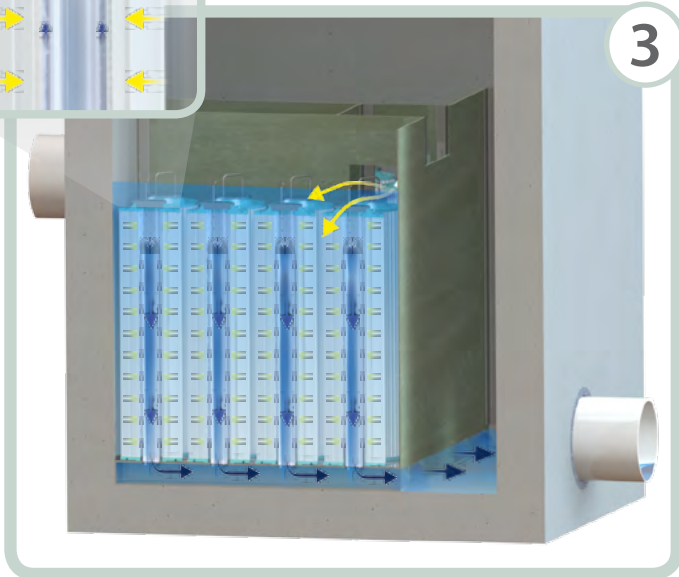
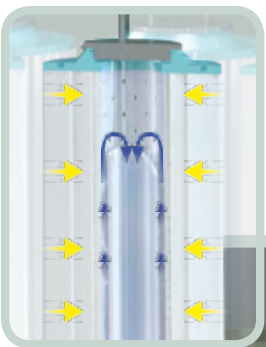
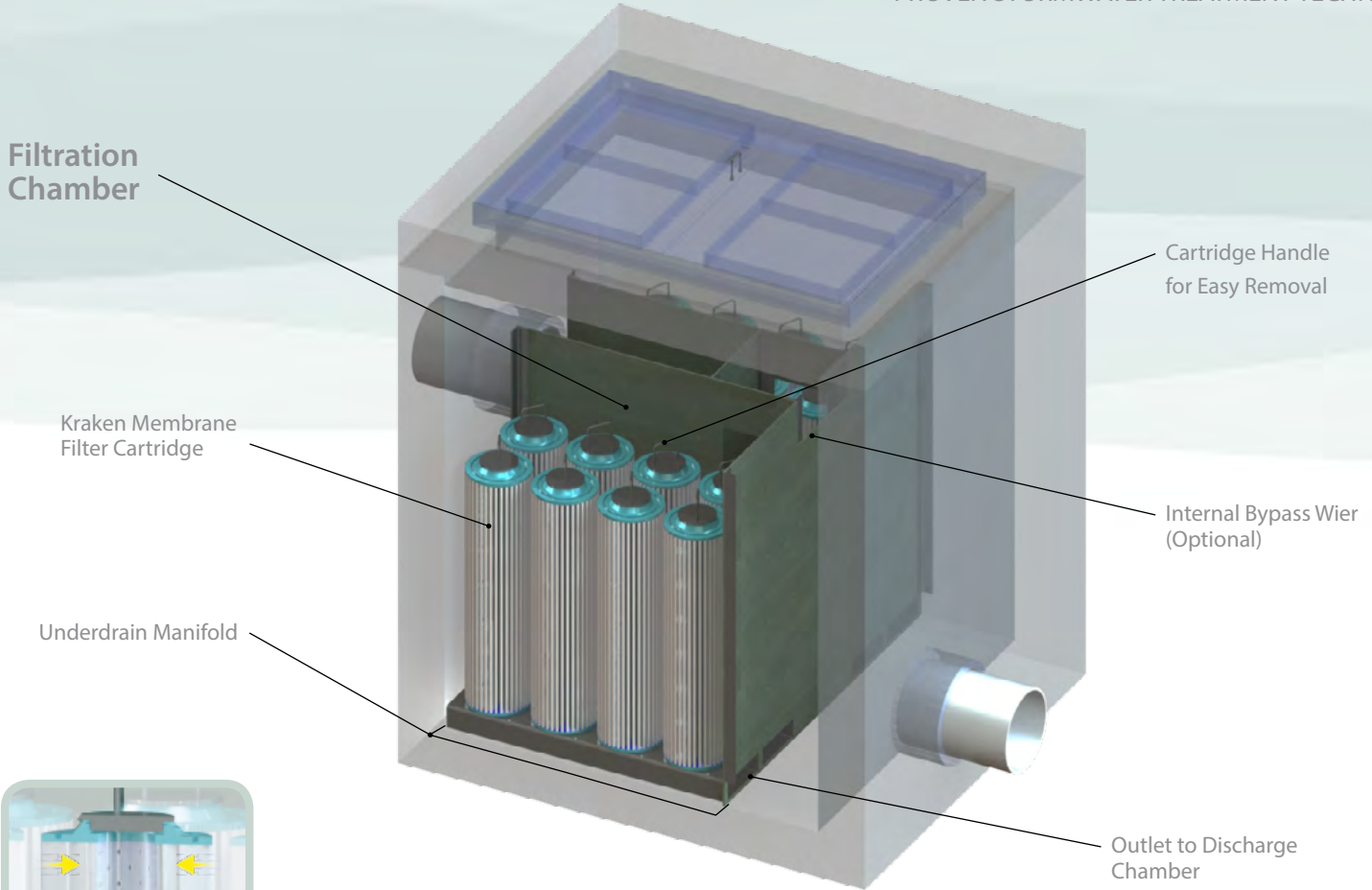
2

Membrane Filtration - Fill Up

During the fill up process a riser tube prevents flow through the membrane cartridge until the water level nears the top of the cartridge. This ensures loading is evenly distributed over the vertical height of the cartridge - maximizing efficiency.

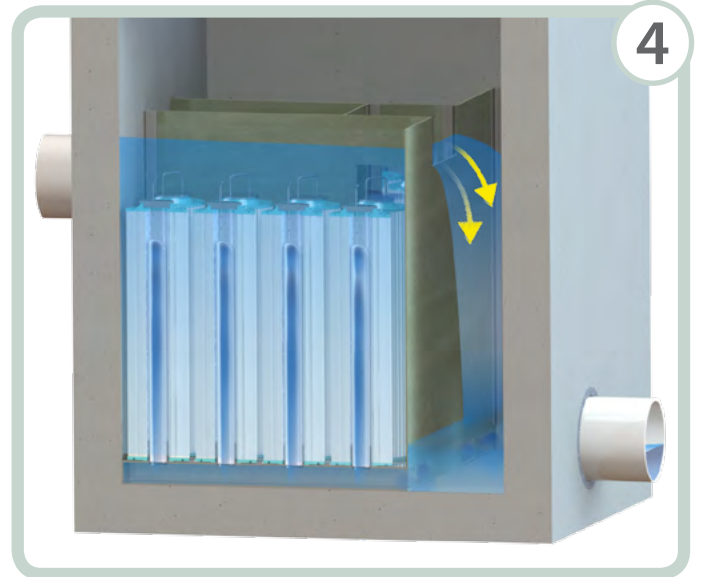


An orifice in the bottom of the riser tube in the front row of cartridges, allows the chamber to slowly drain down, eliminating standing water after the storm event.



Membrane Filtration - Peak Capacity

As the water level reaches the top of the membrane cartridges, flow through will begin. The riser tube creates an upward flow path within each cartridge to increase performance. Treated water then passes down the riser tube and collects in the underdrain manifold and flows to the discharge chamber.



Bypass

An optional internal bypass is available with most system configurations. When flows exceed the treatment capacity of the system the water level rises and goes into bypass. High flows are conveyed from the pre-treatment chamber directly to the discharge chamber to prevent scouring of fine sediments captured within the filtration chamber.

Specifications

Filter Cartridge Flow Capacity

Cartridge Type	Cartridge Height (in)	Cartridge Surface Area (sf)	Treatment Capacity per Cartridge (gpm/cfs)	System Fall Requirement (ft)
Standard	30.75	170	8.5/0.02	2.86
Low Profile	19.5	90	4.5/0.01	1.92

Flow rate is orifice controlled for treatment longevity.

Maximum fall requirement. Can be configured with less fall.

Model Sizing

Model #	Structure Size (ft x ft)	Cartridge Capacity	Max Media Surface Area (sq ft)	Treatment Flow Capacity (cfs)
KF-2.5-4	2.5' x 4'	4 to 8	1360	0.15
KF-4-4	4' x 4'	9 to 16	2720	0.30
KF-4-6	4' x 6'	17 to 24	4080	0.46
KF-4-8	4' x 8'	25 to 32	5440	0.61
KF-8-8	8' x 8'	33 to 48	8160	0.91
KF-8-10	8' x 10'	49 to 65	11220	1.25
KF-8-12	8' x 12'	67 to 78	13260	1.48
KF-8-14	8' x 14'	79 to 96	16320	1.82
KF-8-16	8' x 16'	97 to 114	19380	2.16
KF-10-16	10' x 16'	115 to 152	25840	2.88

Based on Max Cartridge Capacity

See design manual for list of all models. Many other models and structure sizes are available for higher flows. Please contact us for more details.

Installation

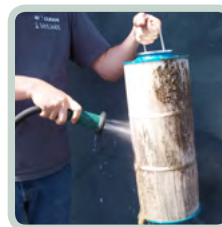


Small footprint reduces installation and shipping costs.



No deep sump chamber as found with tentacle-type systems. Reduces excavation costs.

Maintenance



- Lowest life-cycle cost of any media filter
- Fast and simple maintenance procedures



- Easily cleaned with a standard vacuum truck
- Reusable cartridge can be cleaned with a standard garden hose

2972 San Luis Rey Rd
Oceanside, CA 92058
p 760.433.7640 f 760.433.3176
www.BioCleanEnvironmental.com