SPI Petro-Barrier™

SPI Petro-Barriers™ provide Storm Water Drainage for both new or existing substations and tank farms. They are designed to drain large volumes of water and they vary in size from 18" to 72" in diameter. SPI works with the customer to design anSPI Petro-Barrier™ that will work best for their application.

- 100% Passive Oil Spill Containment.
- Oil Has Never Escaped a SPI **Petro-Barrier™**.
- Excellent Drainage.
- 1000's Installed Across North America.
- Most Cost Effective Fool Proof System.
- Little to No Maintenance.

NEW INSTALLATIONS

RETRO FIT SYSTEMS

Patented Technology

Flow Rates:

18"**SPI Petro-Barrier™**	22 Gallons per minute
24"**SPI Petro-Barrier™**	28 Gallons per minute
36"**SPI Petro-Barrier™**	38 Gallons per minute

Flow rates will vary plus or minus 10%

A Drainage trench 12" deep runs around the south side of this substation for water drainage. The trench leads to two (2) 30" wide x 5' long storm water drains. Grating is installed in the drains and crushed stone is used in the trench to slow the water flow. The **SPI Petro-Barrier™** Media is installed and topped off with clean crushed stone. This system has been exposed to flooding since its installation with no drainage problems whatsoever.

SPI Professionally Installs the **SPI Petro-Barrier™** Media in Many Different Applications. If You Need Help, SPI Can Resolve Almost Any Containment Issues That Ever Arise.

SPI Petro-Barriers™ are used at Hydro Plants all over the country. These photos depict some of the critical systems we have installed. If an oil spill were ever released in this environment, the impact would be devastating as the spill traveled downstream. **SPI Petro-Barriers™** are used in many Hydro Dam Applications, providing excellent drainage and 100% Oil Spill Containment.

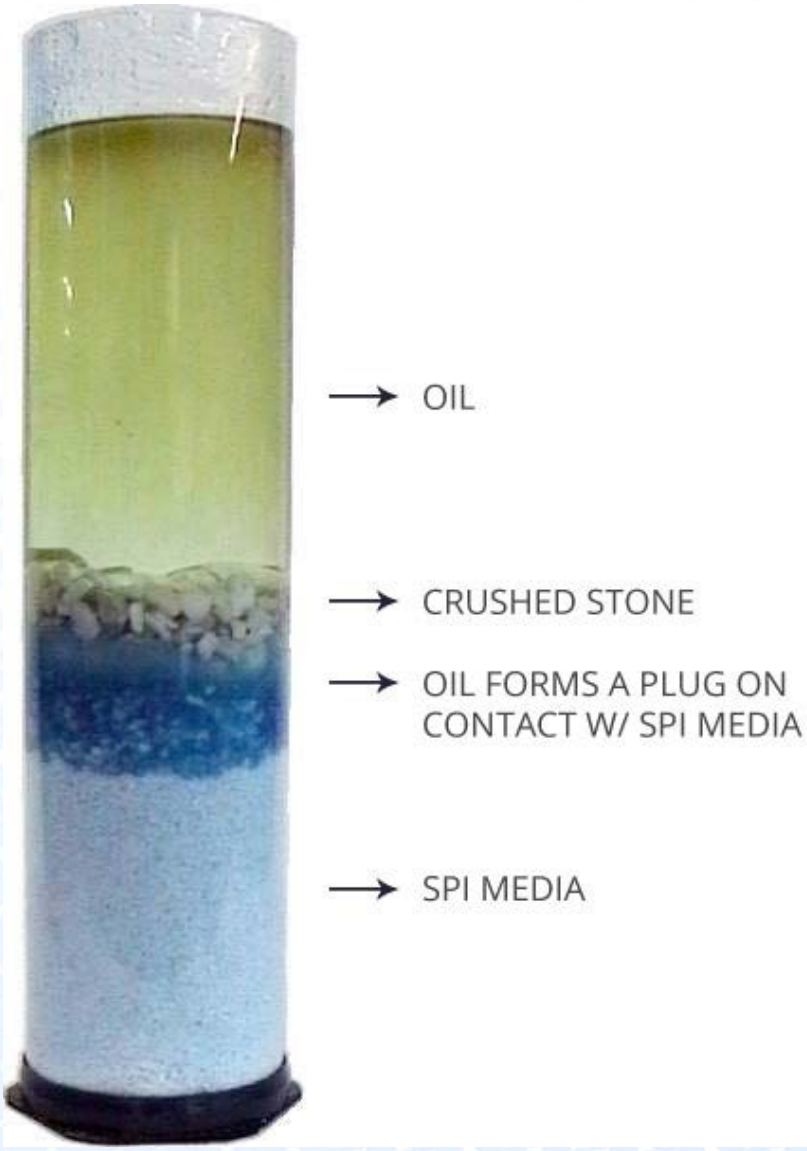
We go the extra mile. These **SPI Petro-Barriers™** were custom installed at a depth of 6'. Reinforced grating was bolted into the pipe and the **SPI Petro-Barrier™** Media was installed. This resolved an issue with the perforated pipe that had been previously installed.

SPI's Petro-Barrier™ completely protected this New York Substation against any oil escaping the contained area. Eighteen months after our installation, approximately 200 gallons of transformer oil leaked out of the mushroom on top of the transformer. All the oil made its way to the Patented **SPI Petro-Barrier™** and none of it ever leaked. The 2" high dark area at the base of the wall shows the depth of the oil before clean up. After the oil was cleaned up, we responded and cleaned up the remaining oil. The **SPI Petro-Barrier™** Media that had reacted with the oil was removed and the sump was repacked with new fresh media.

US Patents:
6485639
6503390
6841077
Other US & foreign patents pending

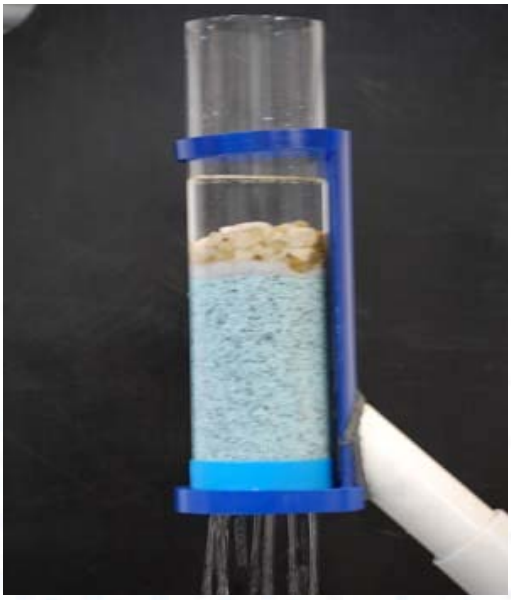
SPI Media Testing, How Does It Work?

Petro-Barrier™



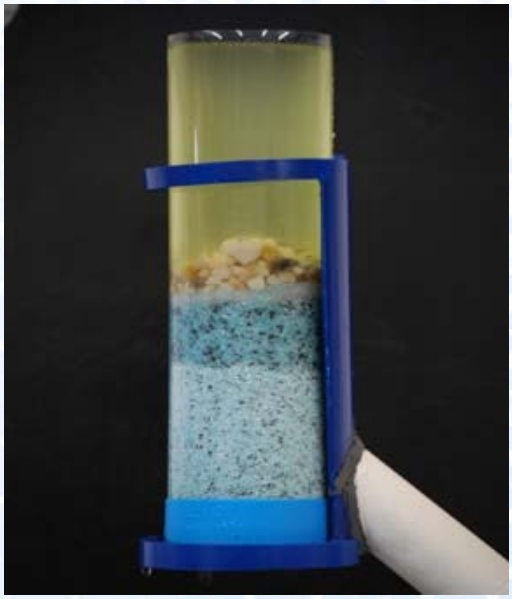
SPI Barrier Media allows water to flow rapidly discharge from a containment area. If oil comes in contact with SPI Media, it instantly forms a seal and prevents any oil or water from further discharge. **SPI Petro-Barriers™** are built with three different types of barrier media. They filter out oil sheen from leaking equipment and allow water to flow freely but they completely seal off when they detect a larger discharge of oil. Water enters through the top of the barriers and filters down through three different layers of filtration media, removing oil sheens to non-detectable levels. No other technology offers the reliability of water drainage and proven oil spill protection 24/7/365 without sensors, oil/water separators, pumps, or valves. SPI oil containment products and systems have been successful in thousands of applications since 1999. This technology can be used in the design of new oil containment projects or easily retro fit to oil tanks or transformers in order to comply with the Environmental Protection Agency's Spill Prevention Control and Counter-measures (SPCC) Regulations. The **SPI Petro-Barrier™**, **Petro-Pipe®**, and **Petro-Plug®** are all approved methods to provide oil spill containment required under SPCC regulations. With thousands of installations worldwide, **SPI Petro-Barrier™**, **Petro-Pipe®,** and **Petro-Plug®** Systems have undergone extensive field testing. No oil has ever escaped where any of these products have been installed. All SPI Products have been Independently Laboratory Tested, leading to recent certifications by the Florida Department of Environmental Protection and others allowing SPI's Patented Products to be used in all oil containment areas. Third-party testing of total petroleum hydrocarbons (TPH) found less than 1ppm or non-detectable TPH levels in oil contaminated water when tested in several different SPI Filters.

Barrier Media 4' Head Pressure Demonstration



Water has been flowing into the 3" tube for 30 days. Water easily flows through the SPI Media.

Oil is added to the test demo tube. As the oil is absorbed, the media starts to turn a darker color.



The media absorbs the oil, forming a seal that prevents any oil from discharging.

Unused media is removed, leaving only the total seal to illustrate the fact that no water can get through.

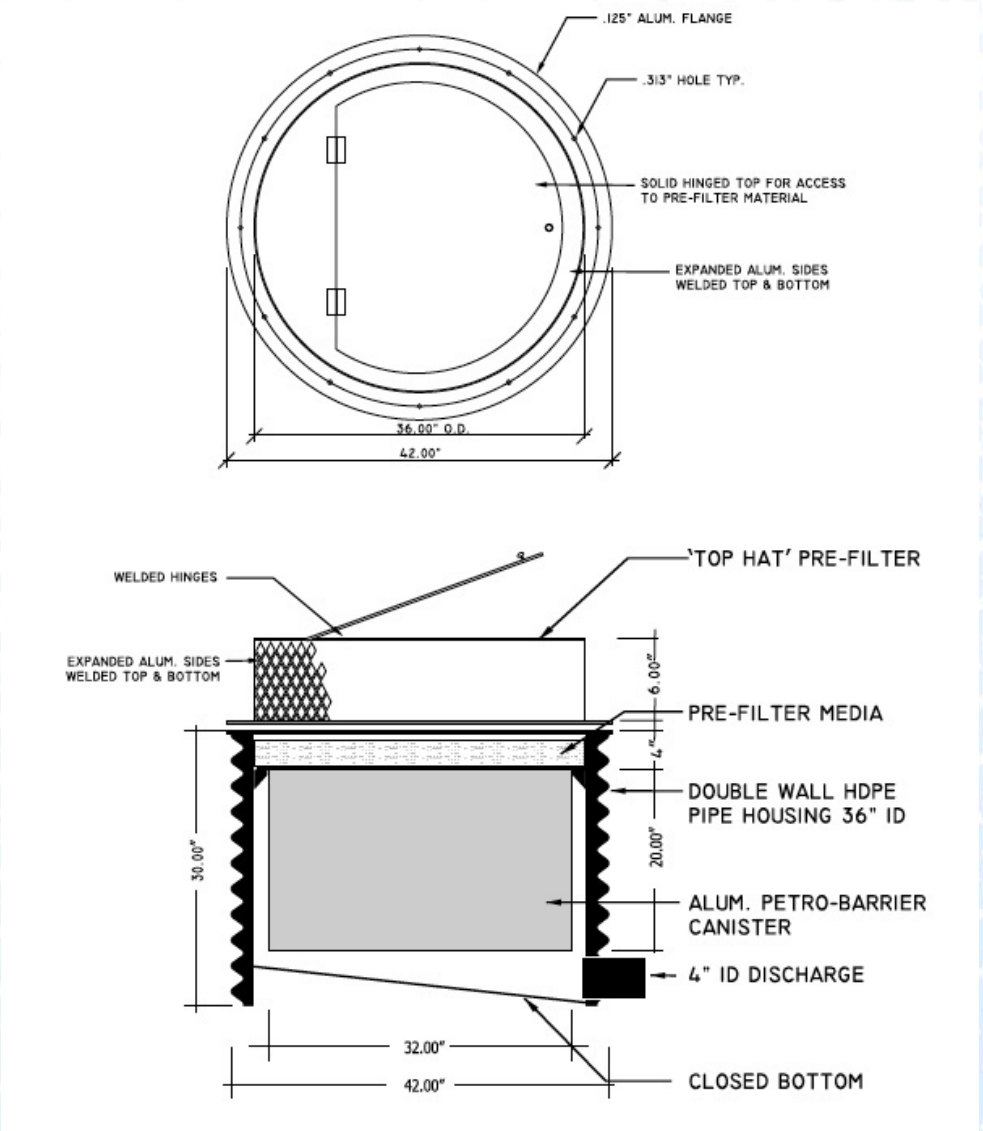
Third Party Laboratory Testing has been completed in Florida, Maine, Massachusetts and New York and SPI has been approved for use everywhere in those states.

10.22.16

US Patents:
6485639
6503390
6841077
Other US & foreign patents pending

Installation For Petro-Barrier's 36", 24" 18" & 12"

When the Pre-Fab Petro-Barrier is shipped it will be assembled on a pallet and will need to be disassembled for installation. The drawing below has all the different parts to the Pre-Fab Petro-Barrier. All our Pre-Fab Petro-Barrier are built the same way but different dimension sizes. The Pre-Fab Petro-Barrier housing is what needs to be installed first either backfilled with dirt in liner application or set into concrete for moat oil containment systems. If the Pre-Fab Petro-Barrier is installed assembled, dirt and debris will clog the water drainage and other potential damage will occur. The following instructions will detail the steps that need to be followed.

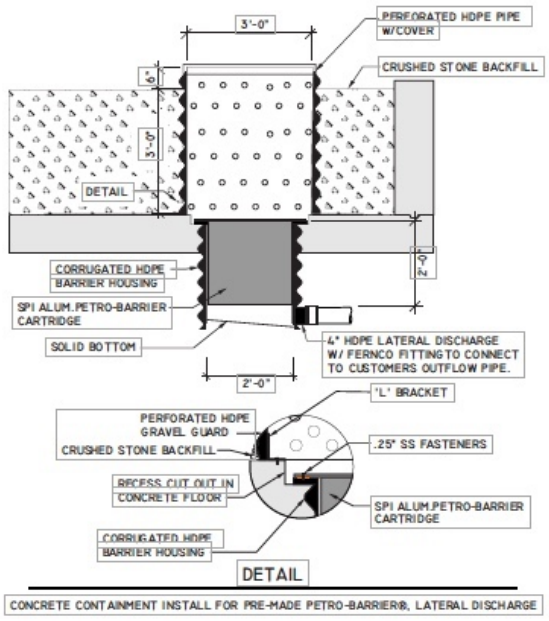


SPI 36" PRE-FAB BARRIER WITH TOP HAT PRE FILTER

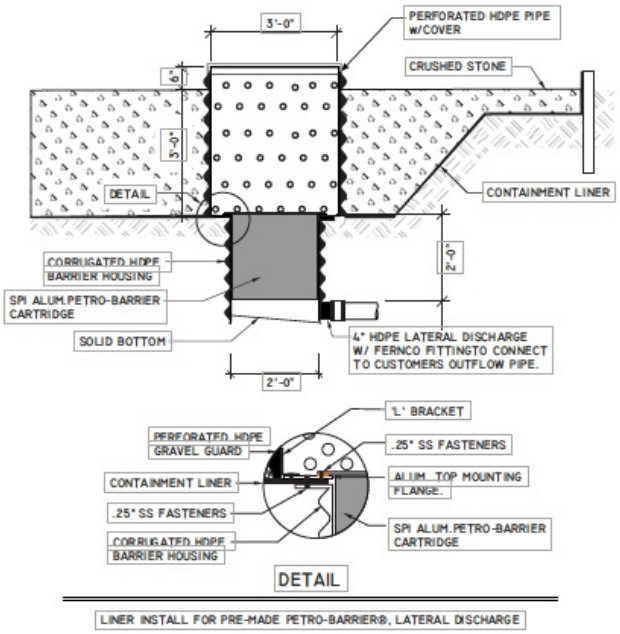
Prior to installation remove the Top-Hat-Filter from the Pre-Fab Petro-Barrier by removing the 2 Hex Head brackets that hold the THF in place.

Next on the top of the aluminum Petro-Barrier Canister remove the Hex-head screws from flange, then using the Eye Bolts & lift the canister out of the corrugated housing and put with the Top Hat filter and replacement dirt filters for use after the HDPE housing has been installed.

The next step is to connect the drainage pipe to the lateral discharge this is done with a Fernco fitting, connect the 4" HDPE discharge pipe to a 4" drainage pipe tighten down the stainless Steel clamps and drain to the intended dry well or discharge point. (Note some Pre-Fab Barriers are ordered with larger lateral drains)

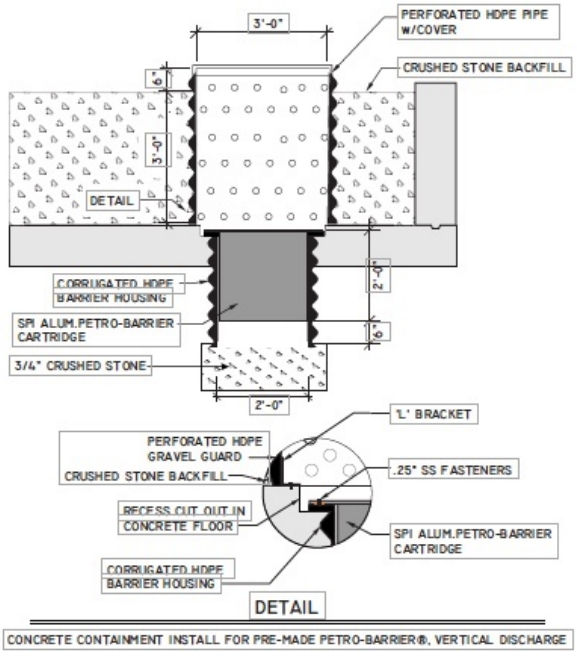


CONCRETE CONTAINMENT INSTALL FOR PRE-MADE PETRO-BARRIER®, LATERAL DISCHARGE

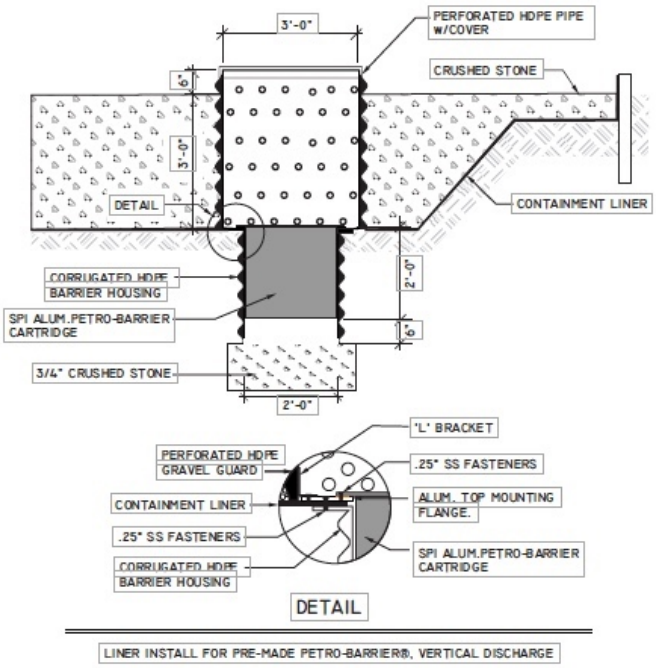


LINER INSTALL FOR PRE-MADE PETRO-BARRIER®, LATERAL DISCHARGE

In the drawings below the Petro-Barriers drain directly into the ground, it is important that the percolation rate will keep up to the drainage rate in heavy storms. This method is popular in well draining soils and sandy areas.

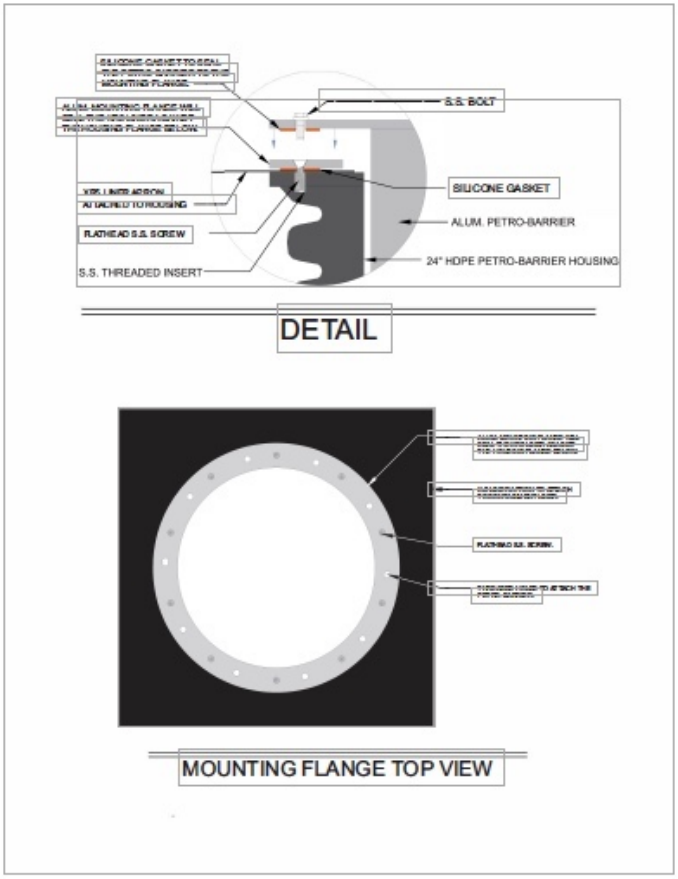


CONCRETE CONTAINMENT INSTALL FOR PRE-MADE PETRO-BARRIER®, VERTICAL DISCHARGE



LINER INSTALL FOR PRE-MADE PETRO-BARRIER®, VERTICAL DISCHARGE

In some installations using concrete, crushed stone is not used so the gravel guard is not required. In those applications only the Top-Hat-Filer is used. When No crushed stone is used in the containment area.



Next is to backfill the containment area and drainage piping. The area should be backfilled with soils or crushed stone and compacted to the height to accommodate the thickness the concrete or if a liner is used to the level of the liner flange (**as shown above in the drawing**). At this time the top of the Petro-Barrier Housing needs to be covered and the top flange screw holes for the Petro-Barrier canister need to be duck taped to prevent any dirt or concrete from clogging them.

When using Concrete make sure the concrete level stays below the top flange of the canister. When the Petro-Barrier housing is recessed below the floor all water drains from the floor providing a dryer containment area that helps to stop algae growth in the pit.

After the concrete has cured and all of the construction is complete; the containment area must be throughly cleaned either with pressure washing or sweeping and then vacuuming all of the cement dust, dirt and debris. The Petro-Barrier canister is then reinstalled into the housing pipe and secured in place with the Hex-head screws (**Do not use a drill they need to be tighten using a wrench until snug (DO NOT OVER TIGHTEN).** Re-install the top hat filter using the 2 - Hex-head screws.

For liner applications the backfill should also be to the top of the HDPE housing. The liner is then installed in the containment area and the liner flange will be welded into the liner floor. When the liner is fully installed and all seams are checked remove the covering of the Petro-Barrier Housing pipe and remove the tape from the nut plates on the HDPE flange. The Petro-Barrier canister is then reinstalled into the housing pipe and secured in place with the Hex-head screws (**Do not use a drill they need to be tighten using a wrench until snug DO NOT OVER TIGHTEN).** Re-install the top hat filter using the 2 - Hex-head screws.

Finally replace the Top Hat Filter back onto the top of the aluminum Petro-Barrier Canister flange with the supplied screws do not over tighten. There is not a gasket on the Top Hat filter. Finally remove the filter floss from the plastic bag and place it around the inside of the Top Hat Filter. The installation is now complete. As long as the area is throughly cleaned before the Petro-Barrier-Canister and dirt filter are installed maintenance should be minimal.

If a HDPE perforated gravel guard is used place in the center of the installed Petro-Barrier then backfill the containment area with clean washed stone type #57 or similar (**DO NOT USE UNWASHED STONE**). Install the solid cover over the housing pipe and the installation is complete.

Maintenance Procedure for Replacing Dirt Filters

X This containment area drained well for 5 months and then slowed down. The dirt filters were never checked and changed causing the slow drainage.

X This containment area was never cleaned before installing the Petro-Barrier Canister and instead of backfilling with clean washed stone dirty stone was used. Making the Petro-Barriers inoperable.

Maintenance is very important for proper operation of the Petro-Barriers. In the above pictures in-proper or no maintenance was performed leading to poor or no drainage. After installation the drainage should be checked after the first few rainfalls this is when the initial dirt will get into the dirt filters. Even if clean crushed stone is used the rain will still get dirt into the filters.

On top of the Petro-Barrier Canister loosen the hex-head screws and slide the 4 - tabs off of the diamond plate grate. Remove the grate.

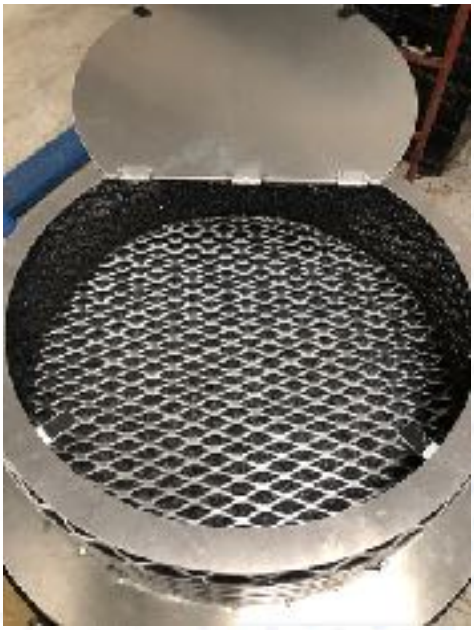
The first layer filtering is flow-free plastic mesh which collects large dirt and prevents it from getting into the next filter. The flow free can be washed and reused.

The flow-free mesh is removed from the Petro-Barrier Canister .

Next filter is 2” thick polyester batting which collects the finer dirt. The top layers can be removed until the complete batting is dirty and requires replacement.

Next is the SPI Micro Mesh that covers the Petro-Barrier Media.

When the Micro Mesh is lifted showing the Petro-Barrier Media. **The purpose of all the dirt filters is to not let dirt into the Media.**



Top-Hat-Filters are attached to the top of the Petro-Barrier Canister with 2 hexed screws and inside the lid is the bags of filtering floss that is then packed into the THF. Flow-free black mesh is attached inside the Top-Hat-Filter, when the floss is installed the lid is closed and is held shut with velcro tape.

After the Petro-Barriers are installed they are accessed by removing the solid cover that is on the HDPE Gravel Guard. The gravel guards are backfilled with clean washed stone to limit as much dirt and debris as possible from getting into the Petro-Barrier dirt and debris filters.

The Petro-Barriers can now be accessed and the dirt filters can be checked and replaced as needed. Maintenance is determined by the location of the containment area. In areas with excessive rain or trees and shrubs the Petro-Barriers should be visually checked at least quarterly.

After a new installation the Petro-Barriers filters should be checked to ensure drainage after the first 1 - 2 months after install, this is when they will be the dirtiest.

For any questions call SPI before dismantling any products. If proper Maintenances is performed the Petro-Barriers will work for the 5 year useful Life with little maintenance while draining the water and protecting the containment Area from an OIL RELEASE.

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