The Rain Events

January - February 2013
California Edition

Raising the Bar
Storm Water Treatment

"You have got to be kidding, right? Seriously, treat storm water? Why? It is just what comes out of the sky!" This type of statement we frequently hear uttered by frustrated Industrial General Permit holders who are having a hard time coming to the realization that treatment may be necessary to keep their facility in compliance with the permit. A review of the Industrial General Permit will show that treatment is not mandated. However, as we have discussed in past editions of *The Rain Events*, dischargers are required by the permit to have BMPs that meet the BAT/BCT standard. Years ago, when this permit was first issued in 1997, there was little talk in the industry of facilities needing to treat storm water. BMPs consisted mainly of good housekeeping, pollution prevention, and keeping things swept and covered. But not so today, although BMPs of this generation still include those basic control measures, more and more the focus has shifted to "treatment" of storm water. You are not alone if you feel like a high jumper who keeps having the bar raised, and justifiably so; because the BAT/BCT standard is a moving target. What was BAT/BCT compliant in 1997, does not necessarily meet the standard in 2013 because the storm water treatment technology has improved immensely over the last 16 years. In this edition of *The Rain Events*, we are going to look at three general types of storm water treatment. These include infiltration, drain inlet devices, and end-of-pipe treatment control measures. As we have discussed in a recent newsletter article, third party environmental organizations backed by sympathetic courts are making a case for benchmark exceedances being an indicator that a facility does not have BMPs meeting the BAT/BCT standard. If your facility has been experiencing benchmark exceedances, you may want to explore treatment options such as infiltration, drain insert devices, or end-of-pipe treatment systems.

The Terms have Changed Meaning

Sixteen years is a long time. Not only have BAT/BCT standards changed, but so have some of the storm water terms. The 1997 IGP states the following: "*BMPs may include a variety of pollution prevention measures or other low-cost and pollution control measures. They are generally categorized as* ***non-structural*** *BMPs (activity schedules, prohibitions of practices, maintenance procedures, and other low-cost measures) and as* ***structural*** *BMPs (treatment measures, run-off controls, overhead coverage.)*." Although structural BMPs are pretty much the same, non-structural BMPs mean something different than those listed above. Today, non-structural BMP means an infiltration device in which the volume of storm water run-off is decreased by percolating it into the subsurface of the facility; which is considered "treatment". In addition, one may also question the use of the word "low-cost" in the above definition.

The Compliance Corner . . .

Types of Treatment

Infiltration:

Treatment is not always made of tanks, hoses, pumps, and parts. Over the last ten years there has been a huge paradigm shift in the storm water community to focus more on the quantity of storm water run-off than only on the quality of the run-off. This has lead to concepts such as Low Impact Development and Hydromodification; the rationale being less discharge means less impact to the receiving water. So, with these concepts have come post-construction treatment control measures which primarily focus on non-structural (infiltration) treatment controls. In fact, projects applicable to the Construction NPDES General Permit and also projects in many municipalities are required to incorporate non-structural treatment measures preferentially over structural measures; and before using a structural measure the project designer must demonstrate to the agency that non-structural measures are infeasible. All that to say, infiltration is not only an accepted treatment option, but it is encouraged by the regulatory community.

How does this work out practically for an Industrial General Permit discharger? The majority of those facilities which utilize infiltration do so with an earthen retention pond. If you have the real estate, there are numerous benefits to having a retention pond. Not only are you providing "treatment" which helps meet the BAT/BCT standard; but you also will have less, and possibly no, discharges. This means less sampling, which means less opportunities to exceed benchmarks and less data to be scrutinized by the regulatory agencies and third party "sharks."

Retention basins are not the only non-structural option that industrial facilities can consider using. Other options include, rain gardens built into the landscaping of the facility, vegetated swales, permeable pavers / pavement, and rain water harvesting (to reuse in the facility).

However, non-structural treatment does have limitations. Primarily, it requires space; many facilities do not have ample area available to install these infiltration measures. Another limitation is soil type and depth to groundwater. If your facility is on a bed of sand with deep groundwater, infiltration might be a great option. But, if the facility is built on clayey soils with shallow groundwater, infiltration will not work. Finally, another limitation to seriously consider, especially for industrial facilities, is the threat to groundwater quality. Does the water to be infiltrated contain contaminants that could negatively impact groundwater? This is something that should be carefully considered before using infiltration as a treatment control.

Drain Insert Devices:

Another option for treatment can happen right where water enters the drain … at the drain inlet. There is a wide variety of drain inserts available on the market today ranging in price from $50 to $2,000. Drain inserts vary from cone-shaped fabric bags to rigid devices containing a filter media. The type selected for a facility will depend upon the contaminants in the storm water. A bag insert may be acceptable for areas of the facility with only minor amounts of sediment and debris. However, if the contaminates include fine silts, metals, oil & grease, or hydrocarbons, then a structural drain insert containing filter media will be needed to remove the contaminants from the run-off.

This type of structural insert is a simple and effective storm water treatment device that fits under the drain grate. The unit may include a leaf strainer, stainless steel support, water deflector, large housing for sediment capture, and a vertical combination deep bed filter and absorbent media cartridge. This unit captures and removes sediment, debris, hydrocarbons, heavy metals and many other contaminants.

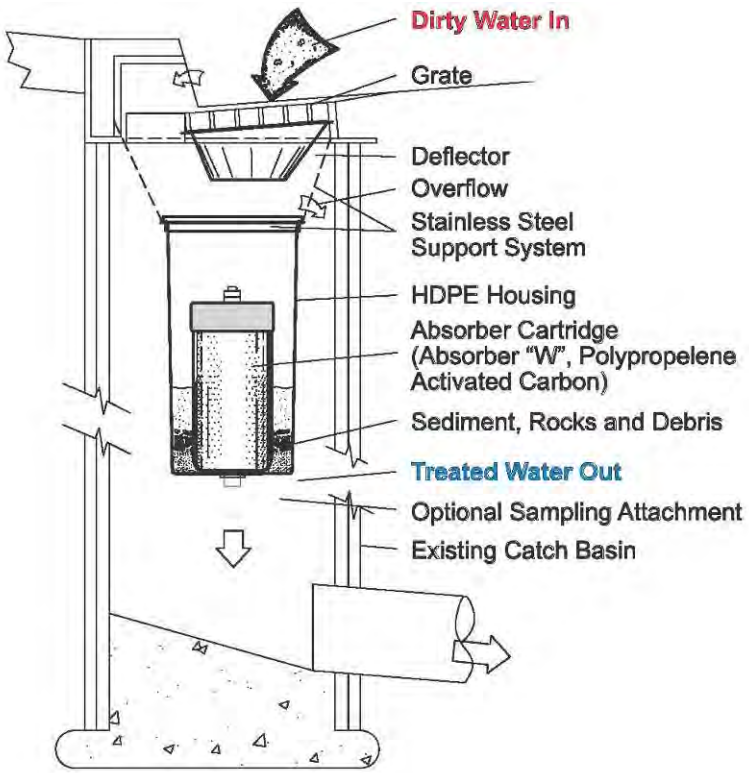


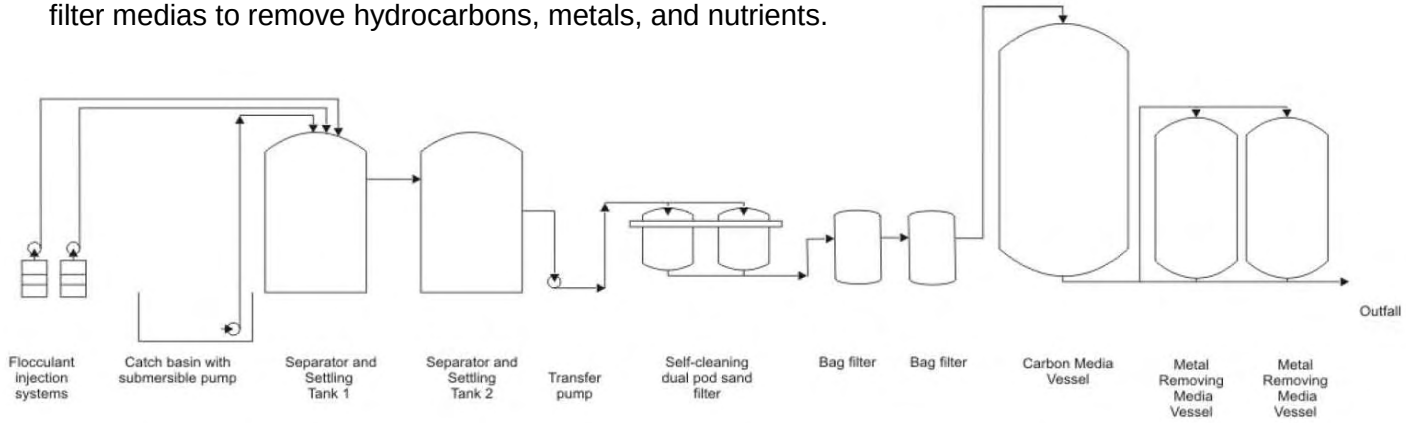
Diagram provided by Inventive Resources, Inc.; for more information go to www.wdfilters.com

Common medias include polypropylene oil-only sorbents, proprietary wood pulp, activated carbon, perlite, zeolite and other media. Site specific absorbent media can be provided to suit specific installations. Custom sizes and types are available to suit any flow rate. Variations includes aboveground treatment bins and below ground vaults.

Drain insert treatment devices also have some limitations. The primary consideration is the treatment capacity of the device in gallons per minute versus the actual flow that the drain receives from the drainage area. A 20 gpm device will not be effective for a drainage area producing 40 gpm. Most units come with a high flow bypass so that the device will not cause flooding during deluges. But, when the unit is sized appropriately it should be able to handle an 85th percentile storm which is typically defined as a 2-year 24-hour storm event. This size of a storm event will typically produce precipitation within the range of 0.5 to 1.0 inches of rain depending upon the location of the facility. Another limitation is the size and shape of the drain inlet. Although these devices can be custom fitted for many types of inlets, they still require a certain amount of depth and width which some drains do not have. Another limitation is the pollutant load. If the amount of contaminants is significant, the filter media will quickly become ineffective and need to be replaced. However, maintenance is much easier and less costly with a drain inlet device than with an underground vault. But, a vault will typically contain more filter media/square foot of drainage area and last longer before requiring maintenance.

End-of-Pipe Treatment:

Sometimes a facility has difficulty reducing concentrations to below benchmark levels even with the implementation of good housekeeping and pollution prevention measures, and the installation of drain insert devices. In these cases, it becomes necessary to go to what is called "end-of-pipe" treatment. The exact type of treatment will depend upon what contaminates are exceeding benchmarks, but treatment processes may include separation, flocculation, electrocoagulation, filtration, absorption, pH buffering, and/or the use of various filter medias to remove hydrocarbons, metals, and nutrients.



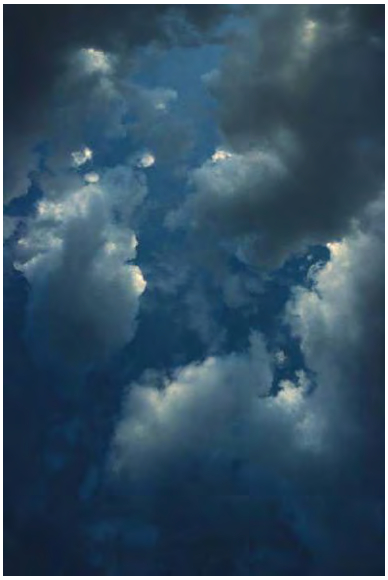
These treatment systems can be very effective for removing pollutants. A treatment system installed at a scrap metal recycling company in Los Angeles experienced the following removal rates using a system similar to the above diagram.

Storm water sample results from December 26, 2012

Component	Unit	Benchmark	In	Carbon	Metal Removing	Reporting Limit
Aluminum	mg/L	0.75	1.3	0.16	0.041	0.01
Copper	mg/L	0.0636	0.41	0.025	ND	0.002
Iron	mg/L	1	2.5	0.23	0.062	0.02
Lead	mg/L	0.0816	0.33	0.019	ND	0.001
Zinc	mg/L	0.117	0.61	0.064	ND	0.02
Copper, Dissolved	mg/L		0.19	ND	ND	0.002
Lead, Dissolved	mg/L		0.025	ND	ND	0.001
Zinc, Dissolved	mg/L		0.12	ND	ND	0.02
HEM (O&G)	mg/L	15	8.9	ND	ND	4.8
TSS	mg/L	100	46	ND	ND	10
pH	--	6-9	7.57	8.58	7.77	0.1
COD	mg/L	120	220	ND	ND	20

Table and diagram provided by H_2O Storm Water Systems; for more information go to www.StormWaterSystems.net

Those are excellent removal results and would certainly demonstrate that the facility is meeting BAT/BCT. End-of-pipe treatment systems come in a wide variety of configurations including below ground vaults, aboveground modular treatment skids, gravity flow through systems, and computer controlled systems including pumps, tanks, and monitoring equipment. Of course there is a cost to this equipment; but when you consider that many third party lawsuits are settling for $75,000 to $150,000, plus requiring the facility to install a treatment system, all of a sudden the economics of proactively installing one of these systems starts to make sense.



We Have a December Contest Winner!

Larry Eshelman submitted the winning answer!

The question was …

What is the definition of a "qualifying storm event"?

The answer is …

- *Preceded by 3 days of dry weather;*
- *Occurs during normal daylight business hours; and*
- *Has enough precipitation to produce run-off.*

Larry wins $25 to IN-N-OUT BURGER to treat his sample team to animal style fries and burgers.

"To Do List" for February:

- Perform the 3rd Quarter Non-Storm Water Observation (Forms 2 & 3) by March 31.
- Get your second qualifying storm event sample if you have not yet done so. If you haven't gotten your first sample, you are way behind.
- Perform and document your monthly storm water inspections (Form 4).

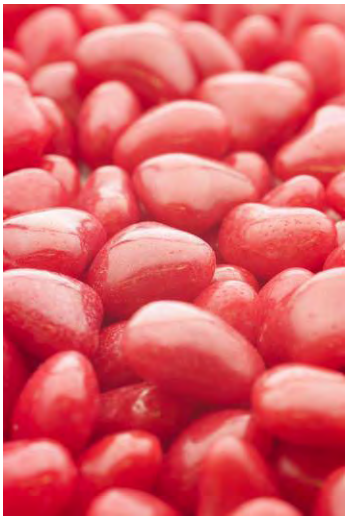
Girl Scouts Win for Treating Storm Water

Girl Scout Cadette Troop #2225 of Modesto won the regional Future City Competition and is moving on to the national competition. The Future City Competition is a national, project-based engineering competition where students in 6th, 7th, and 8th grade imagine, design, and build cities of the future. Students work as a team with an educator and engineer mentor to plan futuristic cities. This year's competition focus is on storm water run-off. John Paoluccio, of Inventive Resources, Inc., mentored the troop meeting weekly with them since September to help design swales, vaults, rain gardens, roof top gutter filters, catch basin inserts, and many other storm water devices throughout their simulated city.

The troop received 1st place at the regional competition in San Jose. The team will be traveling to Washington DC in February to compete among 36 other regions in this exciting competition.

The Rain Events wishes them the best and will be rooting for these future storm water designers! For more information on the Future City Competition, go to www.futurecity.org.

February Storm Water Contest



Try it out! You can win!

By **February 28, 2013**, submit a response for the following question by email to jteravskis@wgr-sw.com.

Regular Question: What are the benchmarks for pH, oil & grease, and total suspended solids?

Bonus Question: What are the benchmarks for aluminum, copper, iron, and zinc?

All persons submitting the correct answer will be placed in a drawing. The winner will receive 3 boxes of Girl Scout cookies. If the winner answers the bonus question, they will receive a 4th box of cookies.

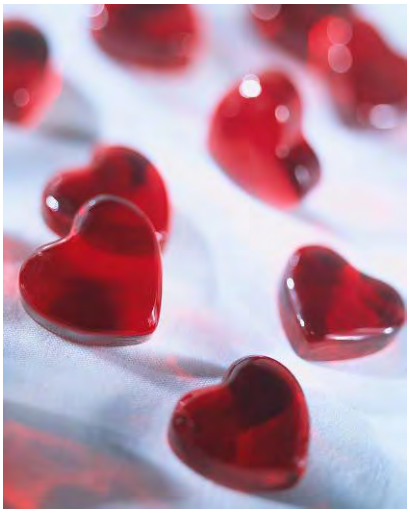
The Rain Events February Coupon

BAT/BCT Evaluation

For a fixed cost of $750*, WGR will come to your facility to evaluate your storm water compliance program and make an assessment of whether your facility is meeting BAT/BCT. The assessment will include an inspection of the facility, a review of the SWPPP, a review of recent storm water inspection and analytical data, and a final written BAT/BCT evaluation report.

For more information, contact Aaron Ortiz at aortiz@wgr-sw.com .

*Offer does not apply to prepaid compliance programs and facilities must be within 60 miles of Lodi or Los Alamitos, CA. For facilities more distant than 60 miles, contact us for a quote.



Please contact us if you have any questions …

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(209) 334-5363 ext. 110

Technical Questions about Storm Water Compliance? Call …
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John Teravskis, jteravskis@wgr-sw.com, (209) 649-0877
John Ripley, jripley@wgr-sw.com, (310) 629-5259

The WATER DECONTAMINATOR

Catch Basin Insert

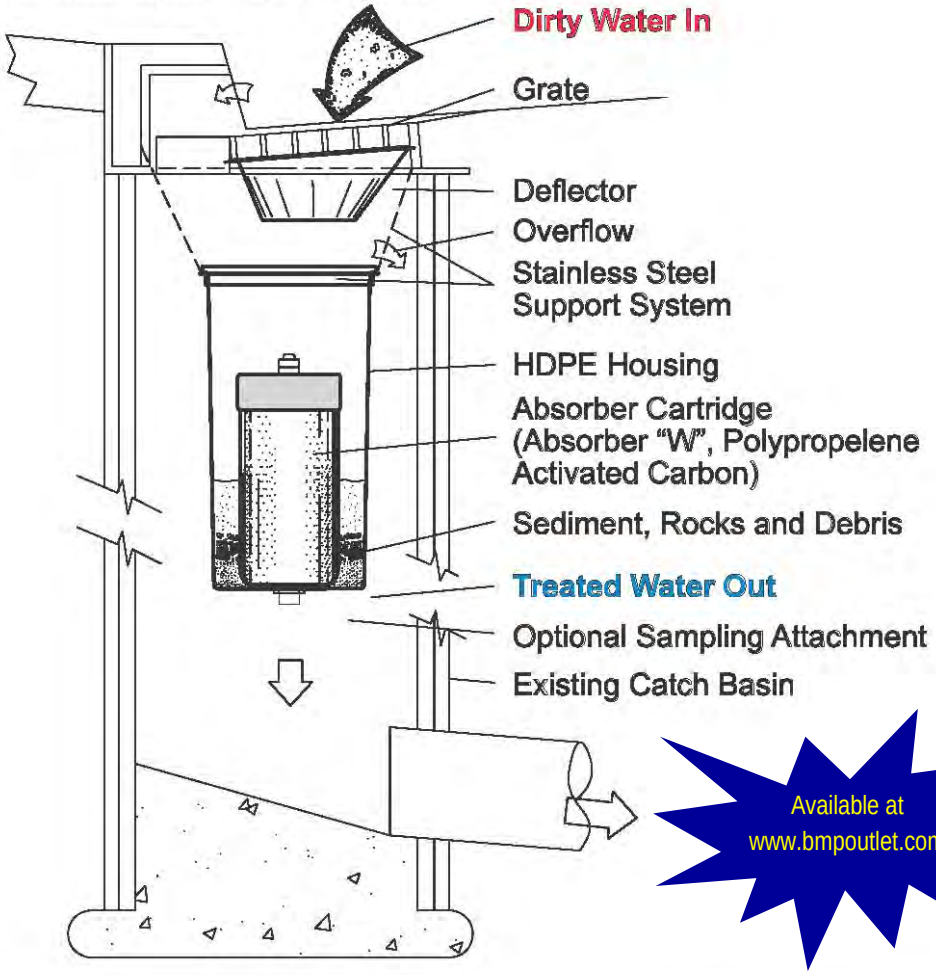
www.wdfilters.com

The Water Decontaminator is a patented, environmental product that is placed under a catch basin grate to help remove oil and contaminants from dirty water. Oil and contaminants are captured in a disposable cartridge. The absorber cartridge uses recycled waste products, essentially fighting pollution with pollution. An above grade Water Decontaminator is also available.

Applications include removal of oil and contaminants from water run-off sources:

* Urban run-off
* Roadways
* Parking lots
* Oil & fuel spills
* Military bases
* Airports
* Industrial sites
* Factories
* Maintenance areas
* Sumps
* Fire water run-off
* Equipment wash-down

Cleans parking lot run-off, catch basins, ponds, sumps and spills. Cleans dirty water run-off by separating dirt, debris and other solids into a sediment trap. Oils and chemicals are absorbed in a disposable cartridge.



Available at www.bmpoutlet.com

The Water Decontaminator is engineered and patented for the treatment of stormwater run off to meet National Pollutant Discharge Elimination System (NPDES) permit requirements. We can assist you with EPA compliance with a total solution system. Call us for a free assessment.

Inventive Resources, Inc.
P.O. Box 1316
5038 Salida Blvd. Salida, CA 95368
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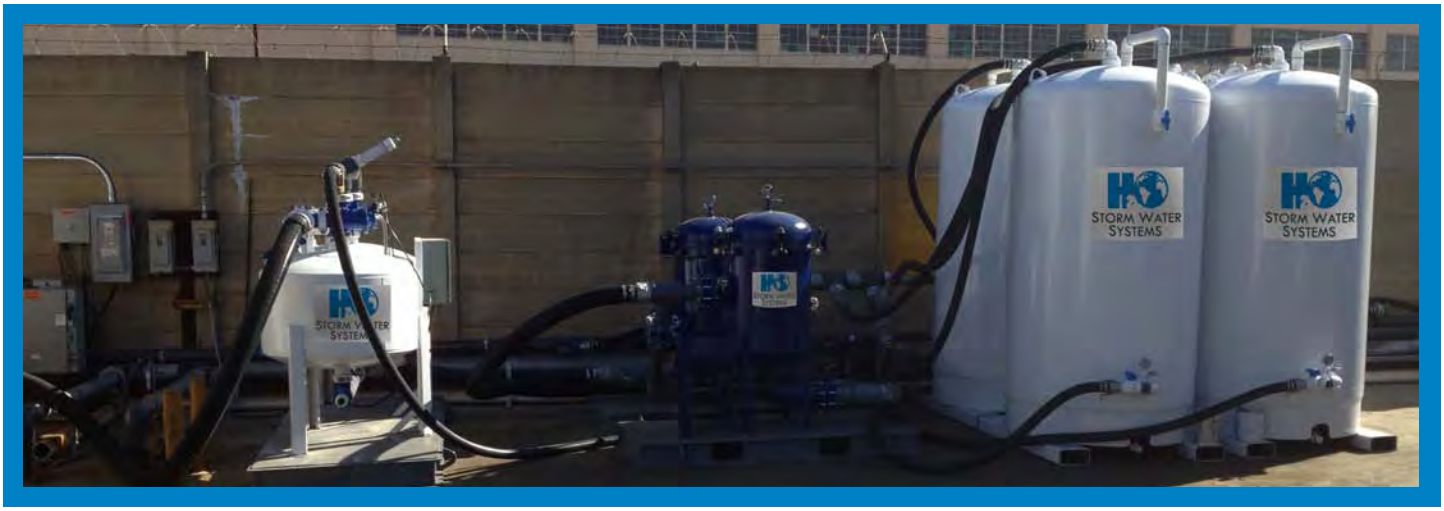

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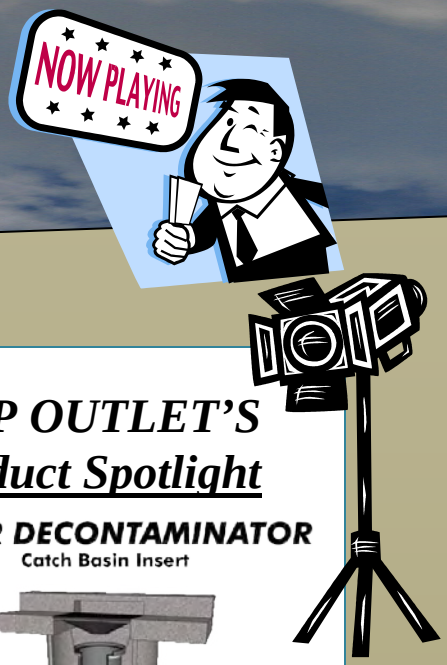
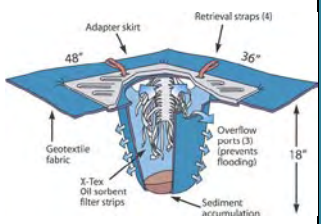


February Special

StreamGuard Oil, Grease & Sediment



Overstock Special $49.99

Normally $94.60 ea, price limited to stock on hand

Oil, Grease & Sediment Insert Part No. #3001

• Made of geotextile fabric that absorbs oil and grease and retains sediment • Keeps oil and other contaminants from stormwater drains • Made of geotextile fabric that absorbs oil and grease and retains sediment while allowing water to pass through freely • X-Tex filter strips offer total capacity of 1.38 gallons of hydrocarbon removal • Holds up to 40lbs. of sediment • Easy install and removal • Lightweight, affordable storm drain protection-avoid costly fines from runoff

*** The total water flow rate through the insert when new is in excess of 500 gpm. The bypass rate is approximately 700 gpm.**

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WATER DECONTAMINATOR

Catch Basin Insert

Applications include removal of oil and contaminants from water run-off sources:

* Urban run-off
* Roadways
* Parking lots
* Oil & fuel spills
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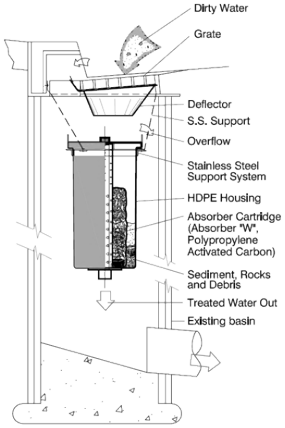

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