



STORMWATER POLLUTION PREVENTION *For Sports Facilities*

pacific northwest
POLLUTION PREVENTION
resource center



BEST MANAGEMENT PRACTICES (BMPs)

Topic 3: Storm Drain and Catch Basin

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INTRODUCTION

To prevent pollutants from reaching surface waters, sports facilities need to properly manage stormwater, wash water, and their catch basins. Presented below are source reduction opportunities in catch basin and storm drain management that can minimize or prevent stormwater pollutants from reaching surface waters. The suggestions are provided as applicable to outreach, source control, and storm system management.



STORMWATER SOURCE REDUCTION

Pollution Prevention Outreach Strategies

- Label all storm drains to remind guests, vendors, and employees that anything entering the storm drain flows untreated to surface waters.
- Develop a list of site-relevant reasons why storm drain protection is important at the facility. Relate those impacts in ways that resonate with guests, staff, and concessioners.
- For guests and visitors, strategically post educational kiosks with interpretive signage around the site to emphasize the importance of protecting water quality and simple ways to do so. Possible suggestions for visitors include: asking them not to litter or dump food or drinks on the ground or down storm drains; and making sure their cars are not leaking any fluids.

- Place spill kits and post related signage around the property in several different areas of parking lots, and especially near vehicle maintenance areas and any fuel storage tanks.
- Educate site maintenance contractors, and concessioners in ways they can help prevent pollutants from reaching storm drains. Depending on their scope of work, topics for concessioners might include:
 - Spill preparedness and location of spill kits.
 - Avoiding improper dumping, including food or drinks, and fats, oils, and grease on site grounds and especially not directly down storm drains.
 - Ensuring transport vehicles are not leaking oil or other fluids.
 - Anti-idling policy while on the premises, with the exception of refrigerated trucks.
 - Proper containment and spill prevention during transfer of bulk materials or fuels to onsite locations.

Topics for landscaping or construction or other site service contractors might include:

- Spill preparedness and location of spill kits.
- Avoiding zinc- or copper-containing products at the site, such as paints and coatings, de-icers, moss control, and fertilizers (if possible).
- Blowing debris and landscaping waste away from drains, and ensuring this type of debris is picked up and disposed of properly, with landscaping materials going to clean green and trash and recycling in respective dumpsters.
- Containing paints, pesticides, and fertilizers, especially liquids, during transfer.

Prevention / Source Control

- Place spill kits around the site, especially in high use areas such as docks, and near equipment containing fuels or other liquid materials. Notify staff and site contractors of location and use.
- If a spill occurs, report it to site management and immediately take measures to contain it and prevent spread.
- Install and maintain filtration inserts for protection in or around catch basins (see "Filtration" below). Catch basin filtration systems range in complexity, and are best if designed for specific contaminant(s) capture. For example, oyster shells used as filtration media have an affinity for trapping copper, while textile filters contain sediments and suspended solids.

The [South Philadelphia Sports Complex installed Inceptor filters in 12 catch basins](#) after the city instituted new stormwater regulations.

Their Interceptors were custom sized for the site inlets and consists of stainless steel cages with filters, which hang from the frames around the inlets.

The system captures approximately 90% of the pollutants which are mainly trash and hydrocarbons – and in the winter, chemicals from the salt used during snow removal. The Interceptor filter is oleophilic to attract oil and grease, and hydrophobic to repel water. It captures and coalesces pollutants then filters out the oil, grease, silt, sediment, and heavy metals in the 70 to 100 percentile range. The typical filter weighs 1 pound but can trap 25 pounds of oil.

- Schedule consistent sweeping of areas contributing runoff to stormwater drains, as described in the [BMP for Parking Lot Maintenance](#).
- For wash water, snow melt with a heavy debris load, or other polluted water flows to catch basins, do one of the following:
 - Place absorbent socks, or filters around the inlet to remove some of the pollutants before the water reaches the inlet.
 - Divert the majority of the water to other retention and filtrations areas using berms or temporary drain covers.
 - Temporarily install a sump and pump in the basin, and pump water out to a landscaped area that can uptake the water, or use a vacuum to remove the water before or while it enters basin.



*Biochar "sock" around basin inlet
(Photo courtesy of EarthLite)*

Cleaning & Maintenance

- Routinely inspect the stormwater drain system for flow and significant sediment built up or clogging. Quarterly inspections are suggested, but may need to be more frequent depending on the severity of storm events and the tendencies of construction sites, and/or basins to trap sediments.
- Ensure there is more than six inches of clearance from the top of the debris surface to the invert or the top of the basin.
- Areas with relatively flat grades or low flows should be given special attention because they rarely achieve high enough flows to flush themselves¹. A study in Bellevue, Washington, concluded that catch basins could trap and retain sediments up to about 60% of their total basin volume given appropriate placement of catch basins within the drainage area. However, large storm events often flush out the trapped sediments and convey them downstream². If sediments are found to be retained at any catch basins at your site, staff can clean out drains periodically with shovels or vacuums as needed, especially after large storm events.
- If there are any outfalls on the property, inspect for scour or soil erosion.
- Document inspection findings and immediately schedule any necessary interim cleanouts, filtration media replacement, or other maintenance.
- Have storm drain professionals with vector trucks, or trained staff, clean catch basins on a regular basis to remove sediment and flush lines. A minimum of twice per year is suggested but



Municipalities can hire professional plumbing services to remove trapped sediment and debris from storm drains with periodical flushing (Source: Drain Patrol, no date)

(Image courtesy of Drain Patrol).

perform as needed based on inspection findings. Routine cleaning reduces backflow onto the property and the amount of pollutants, trash, and debris both in the storm drain system and in receiving waters. It also increases dissolved oxygen, reduces levels of bacteria, and supports in-stream habitat.

- During line cleaning, prevent any discharge of wash water by collecting the water in a vacuor truck or by other means.
- Dispose of collected sediments and liquids from catch basins according to local requirements. As an example, Washington State provides guidance for disposal of Street Wastes, which by definition includes stormwater cleanout solids and liquids.³

Available Filtration Systems for Catch Basins **(Low-Technology and Lower-Cost Options)**

These filtration systems are designed for catch basins, and are provided for reference only, to demonstrate some of the options available. A few of the links are available as videos. (DISCLAIMER: PPRC and GSA do not endorse nor recommend any products suggested below. The information is provided for exemplary purposes only).

- [Sustain-A-Drain](#) (Developed by college students)
- [Drain Guard](#) (Commercial product)
- [Stormwater Inceptor](#) (Commercial product currently in use at South Philadelphia Sports Complex, see Case Study)
- [Innovative Stormwater BMP: Oyster Shells](#) (Video for a do-it-yourself system using oyster shells as filtration media)
- [Water Decontaminator Insert](#) (Commercial product)
- [Curb Style Inlet Sock](#) (Commercial product)
- [Ultra-Curb Guard Plus®](#) (Commercial product, modular/additive)
- [Storm Sentinel](#) (Commercial product)
- Absorbent storm drain & curb socks

REFERENCES

1. Ferguson, et al. 1997. Rouge River National Wet Weather Demonstration Project Cost Estimating Guidelines: Best Management Practices and Engineered Controls. Rouge River National Wet Weather Demonstration Project, Wayne County, MI.
2. Mineart, et al. 2000. [The Value of More Frequent Cleanouts of Storm Drain Inlets](#). Technical Note #35 from Watershed Protection Techniques. 1(3): 129-130.
3. Washington State Department of Ecology. 2005. [Recommendations for Management of Street Wastes, Appendix IV-G](#) (of Stormwater Management Manual for Western Washington).