

# Ready For The Storm: Bar Screens That Are At Their Best During Nature's Worst

Pump stations play a critical role in keeping communities safe from [flooding during storms](#). This is particularly true of those situated near coasts, rivers, and lakes. Bar screens and trashrakes are commonly employed to protect these pumps, but not just any screen will work in these scenarios. With this in mind, Duperon has developed its stormwater line of products. The FlexRake® HD, Harvest Rake, and Self-Cleaning Trashrack (SCT) were each developed with unique needs of stormwater applications in mind.

## What Makes Stormwater More Difficult

Screening stormwater means tackling two unique challenges. The first is unpredictable debris. With open bodies of water, nearly anything can find its way against the bar screen. This can include tree stumps and branches, shopping carts, and all manner of vegetation. As such, the bar screen must be strong and durable enough to remove debris of any size and shape, including tires and even fallen trees. Duperon's stormwater products are capable of handling from 1,000 to 3,000 pounds of debris at a time.

The second is long idle periods. Major storms only happen periodically or seasonally, which means the bar screen can sit idle for months at a time. When a storm does occur, the bulk of debris typically hits in the first 20 minutes of the peak flow. As such, the system has to be ready to perform without advance preparation. Duperon has learned from existing installations and modified the design over time with lessons learned to ensure minimal maintenance while enabling the technology to react at a moment's notice.

## How To Build A Stormwater Bar Screen



An ideal stormwater solution should have the following qualities:

**Resiliency.** To endure the demands of a major storm, the screen must be made of durable material. The [FlexRake HD](#) and [Harvest Rake](#), for example, utilize investment cast links (Figure 1). Each link weighs nearly 5 pounds and is connected by a pin on either side. This ensures the links won't stretch, causing jams or other problems. In addition, all Duperon products come with high-performance motors engineered to handle far greater work than is typically needed. This minimizes the risk of the motor experiencing problems during start-up or operations due to being overtaxed.

**Minimal Maintenance.** A bar screen needs to be engineered for simplicity.



**Figure 1.** The investment cast links on the FlexRake HD and Harvest Rake function as a frame, lower sprocket, and connection point for scrapers. Since they are not limited to a fixed path of travel, in addition to eliminating the risk of jams, the links also allow the raking mechanism to pivot and capture large or irregular shaped debris.

All Duperon products are designed with few moving parts. Ultra-high molecular weight polymer bearings eliminate the need for lubrication. The lack of submerged sprockets or gears means operators never have to perform underwater maintenance.

**Redundancy.** On the FlexRake HD and Harvest Rake, multiple scrapers are placed at strategic intervals to ensure that if one cannot adequately grasp an object or clump of debris, the ones that follow will. In addition, in the unlikely event that a scraper is damaged or needs to be taken offline, it will not affect the performance of the remaining scrapers. Similarly, the SCT's lifting cars are attached to multiple chain strands pulled by a single drive shaft. If an individual chain strand becomes snagged, a trip mechanism can cause the cars to disengage from the debris while the remaining chains continue the cleaning process.

**Safety-first design.** The safest place for operators during a storm is inside. As such, all operations of SCT, FlexRake HD,

and Harvest Rake can be managed from the control deck. The low-maintenance and redundant design ensures operators will not have to attempt repairs during an extreme weather event.

#### How To Choose Your Stormwater Solution

The right stormwater bar screen will depend on a range of factors. For example, consider the common types of debris encountered during storms. The Harvest Rake was designed with deep-penetrating scraper teeth ideal for grabbing long and stringy or matted vegetation. The bent scoop shape of the scrapers, combined with a front-clean, rear-return design, ensures debris can self-discharge without additional mechanical intervention. The Harvest Rake is available in ¼" up to 4" bar openings depending on the debris requirements for each site.

The SCT was built with maximum durability in mind. The 2" to 3" bar opening makes it ideal for fast-moving water where debris can arrive with a lot of momentum. Lifting cars, rather than scrapers, can

remove some of the largest objects weighing up to 3,000 pounds.

The FlexRake HD excels as a front-clean, front-return system with bar openings from 1" to 4". The flexible links allow the scrapers to flex away from the screen to lift oversized objects like 5-gallon pails, smaller tree stumps, and 55-gallon drums, then easily move back into place to tackle fine debris. What really makes the FlexRake HD stand out is the ability to retrofit the system onto an existing bar screen. Also known as the FRO (FlexRake Only) HD, it is designed to work with any stationary bar screen, regardless of manufacturer, providing all the benefits of a brand-new stormwater solution without the added cost and construction associated with a brand-new screen.

Protecting a community from rising stormwater means protecting the pump station from harmful debris. With Duperon's stormwater products, site managers can rest assured their bar screens will be able to perform at their best when the weather is at its worst. ■