

Stormceptor has TARP covered

TARP Tier I Approval Verifies Stormceptor's Superior Performance

What is TARP?

TARP (Technology Acceptance and Reciprocity Partnership) was established in 2000 as a standardized method of evaluating the performance of stormwater treatment technologies.

The TARP program is a three-tiered process that includes rigorous laboratory testing, field tests and regulatory permits. TARP standards are currently recognized by eight participating states - New Jersey, California, Illinois, Maryland, Massachusetts, New York, Pennsylvania and Virginia.

What does TARP do?

TARP's certification program provides scientific data on stormwater technologies and related performance claims, which helps:

- Regulators and engineers make sound decisions when addressing stormwater treatment needs.
- Spread technology performance data quickly, giving jurisdictions an opportunity to better meet their water quality objectives.

How was Stormceptor recognized by TARP?

In February 2005, Stormceptor received TARP Tier I interim certification from the New Jersey Department of Environmental Protection (NJDEP), verifying Stormceptor's ability to perform beyond normal operational capacity during extreme rainfall.

What does TARP test for?

TARP Tier I focused on the removal of total suspended solids (TSS) and scour testing under various operating rates and sediment loadings. Seven stormwater treatment technologies were tested, including the Stormceptor System.

Particle Size Distribution (PSD) testing

Stormceptor was one of only two units tested to utilize the NJDEP PSD testing – treating a sample of particles between one and 1,000 microns. Instead of following TARP standards, the other technologies opted to test a preferred particle size range that best suited their unit's performance (see TARP Tier I – Hydrodynamic Comparison Results) – testing coarser, larger particles that are easier to remove.

Of the devices tested, Stormceptor removed the broadest range of pollutants.

Total Suspended Solids (TSS) removal efficiency

TARP protocol required testing at varying TSS concentrations – 100 mg/L, 200 mg/L, 300 mg/L, with the unit filled to 50% of the recommended capacity before maintenance.

How did Stormceptor perform?

Of all the technologies tested, Stormceptor recorded the highest TSS removal while removing a significant portion of clay and fine silts (NJDEP PSD).

Stormceptor:	75% TSS removal, tested with NJDEP fine PSD
High Efficiency CDS:	73.7%, tested with a much coarser PSD than NJDEP PSD
Downstream Defender:	70%, tested with sand particles
VortSentry:	69%, tested with sand particles
Vortechs:	64%, tested with a much coarser PSD than NJDEP PSD
Aquaswirl:	60%, tested with sand particles
BaySaver:	51%, tested with NJDEP fine PSD

Not only did Stormceptor record the highest TSS removal, it did so removing NJDEP's specified PSD, meaning it removed both a higher percentage as well as a broader range of particles than the other technologies.

Scour test results

Stormceptor was one of only two technologies that completed the scour test as mandated by NJDEP. **Tests demonstrated Stormceptor did not scour with the unit loaded to design capacity.**

The calm *during* the storm

Stormceptor removes more pollutants from stormwater than any other separator. Stormceptor does not scour as the flow rate increases, maintaining a continuous positive treatment of suspended solids. Stormceptor is designed to remove a wide range of particles, as well as free oils, heavy metals and nutrients that attach to fine sediment. Units can also be designed to remove a specific particle size distribution.

With over 18,000 units operating worldwide, Stormceptor protects waterways every day in every storm.

To learn more, please visit www.imbriumsystems.com

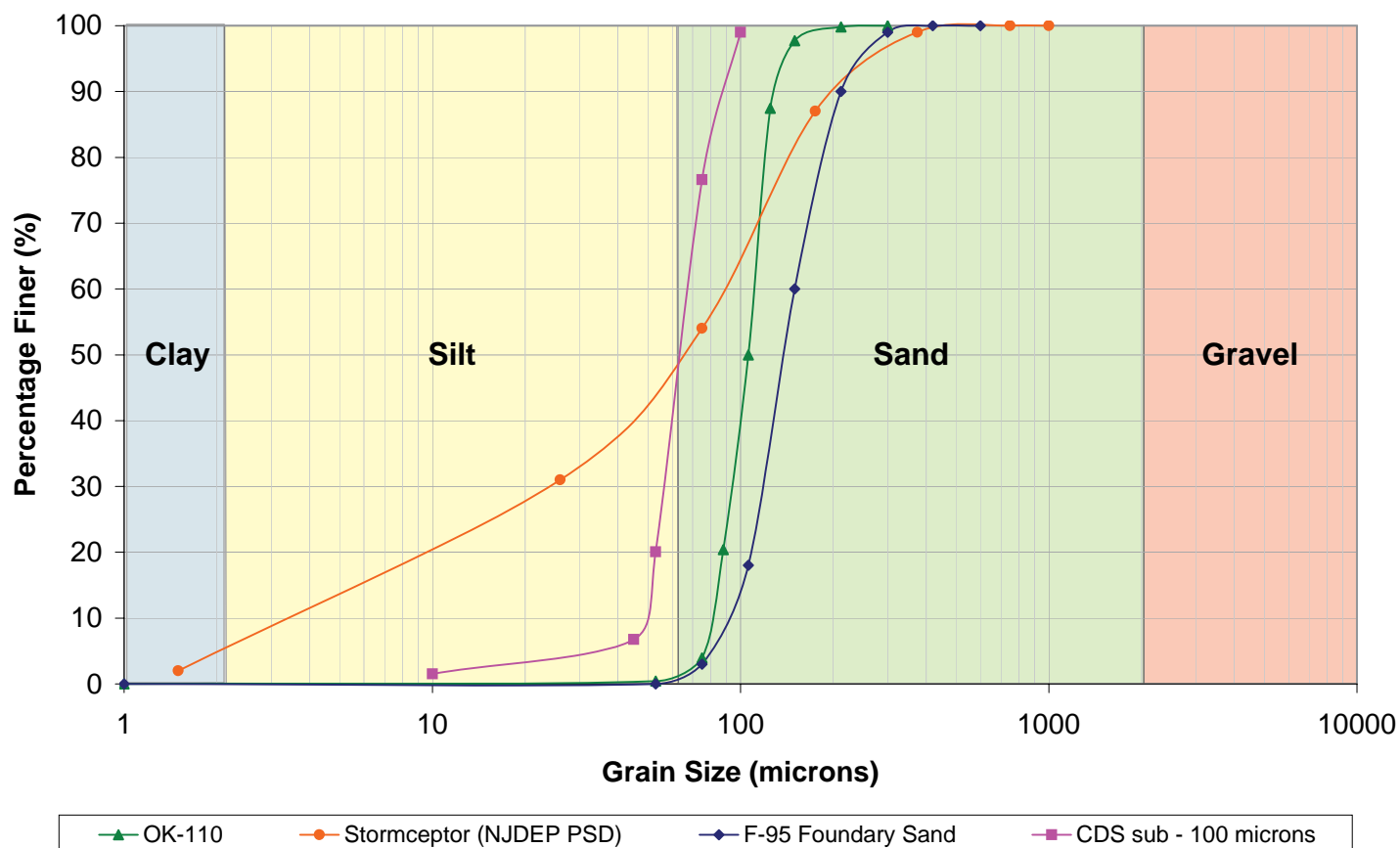
TARP TIER I - Hydrodynamic Comparison Results ¹										
HYDRODYNAMIC DEVICES										
DESCRIPTION	Stormceptor		High Efficiency CDS		Downstream Defender		VortSentry		Vortechs	
	Baysaver System		Aquaswirl		Vortechs		Vortechs		Aquaswirl	
MODEL TESTED	Model ID	STC 900	New Design: PMSU20_20_6 (tank diameter incr. by 1 foot, diff. baffle arrangement)	4-FT	VS40	Model 2000	AS-3	1K		
	Treatment Chamber Diameter (ID)	6 ft	6 ft	4 ft	4 ft	4 ft	2.5 ft	2 ft		
	Marketed Water Quality Peak Flow Treatment Capacity	n/a ²	1.1 cfs (31.1 L/s)	3.0 cfs (85 L/s)	1.1 cfs (31.1 L/s)	2.8 cfs (79.3 L/s)	1.8 cfs (51 L/s)	2.4 cfs (68 L/s)		
	100% Operating Rate Tested	0.64 cfs (18 L/s)	1.1 cfs (31.1 L/s)	1.1 cfs (31.1 L/s)	1.1 cfs (31.1 L/s)	1.12 cfs (32 L/s)	0.9 cfs (30.6 L/s)	1.1 cfs (31 L/s)		
	Original Physical Design Tested	YES	NO (New Design: Increased Tank Volume & Changed Baffle Arrangement)	YES	YES	YES	YES	YES		
PARTICLE SIZE USED	Used NJCAT Specified PSD	YES	NO	NO	NO	NO	NO	YES		
	PSD Range	NJCAT PSD Tested	10-100 µm (i.e. fines washed out of sediment samples used via plankton nets)	53 - 300 µm	53 - 300 µm	38 - 75 µm	50 - 150 µm	NJCAT PSD Tested		
	PSD Name		sub-100 PSD	F-95 Sand	F-95 Sand		OK-110			
		Refer to Particle Size Distribution (PSD) Chart for details & differences between the distributions used								
NJCAT VERIFICATION	100% Operating Rate Tested	YES	YES	YES	YES	NO	NO	NO	NO	NO
	125% Operating Rate Tested	YES	NO	YES	YES	(Up to 40% of operating rate tested)	(Up to 60% of operating rate tested)	(Up to 46% of operating rate tested)		
	Pre-loaded unit at 50% Sediment Capacity prior to evaluating performance	YES	NO	NO	YES	NO	NO	NO		
	NJCAT Verification For TSS Removal	75 % TSS (up to 125% of operating rate)	73.7 % TSS (up to 100% of operating rate)	70 % TSS (up to 125% of operating rate)	69 % TSS (up to 125% of operating rate)	64 % TSS (up to 40% of operating rate)	60 % TSS (up to 60% of operating rate)	51 % TSS (up to 46% of operating rate)		
SCOUR TEST RESULTS	Scour Test Performed	YES	NO	NO	YES	NO	NO	Yes - in second chamber only		
	50% Sediment Loading Capacity at 125% Operating Rate	NO SCOUR	Not Tested	Not Tested	NO SCOUR	Not Tested	Not Tested	SCOUR		
	100% Sediment Loading Capacity at 125% Operating Rate (Level where maintenance is recommended)	0 ppm			0 ppm			11 ppm		
		NO SCOUR ³	Not Tested	Not Tested	SCOUR	Not Tested	Not Tested	SCOUR		
		3 ppm			8 ppm			16 ppm		
TARP TIER I INTERIM APPROVAL	NJDEP Accepted NJCAT Verified Value for TSS Removal	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS	Interim Approval set at 50% TSS		
		YES	NO	YES	YES	NO	NO	NO		
			Only the "new" high efficiency design can be used. Original CDS design not approved.							
	Original Design Approved by NJDEP									

1. The Technology Acceptance and Reciprocity Partnership (TARP) is a workgroup of the Environmental Council of States (ECOS) that was originally made up of California, Illinois, Maryland, Massachusetts, New Jersey, New York, Pennsylvania and Virginia. Source of all NJDEP & TARP documented information: www.state.nj.us/dep/dsr/bscit/CertifiedMain.htm .

2. Stormceptor is marketed and designed to achieve water quality objectives, rather than sizing primarily for flow-based criteria.

3. Indicated in the NJDEP interim-certification letter (Feb. 15, 2005) which can be obtained from the below web link, Stormceptor did not scour at a 125% operating rate and 100% unit sediment loading. 3 ppm is considered to be within the tolerance of the testing error.

Comparison of Particle Size Distributions (PSD) used in TARP Tier I Testing



TIER I - Lab Testing Protocol

1. Measure TSS Removal Efficiency

- Influent concentrations: 100, 200, 300 mg/L
- Five operating rates (25, 50, 75, 100, 125%)
- 50% pre-loaded with sediment

2. Measure Scouring / Re-suspension

- 50% and 100% pre-loaded at 125% operating rate

3. Utilize Pre-defined NJDEP Particle Size Distribution

- 5% clay / 40% silt / 55% sand

Source of all NJDEP and TARP documented information, go to: <http://www.state.nj.us/dep/dsr/bscit/CertifiedMain.htm>