

TARP TIER I - Hydrodynamic Comparison Results¹

DESCRIPTION		HYDRODYNAMIC DEVICES								
		VortSentry	Vortechs	High Efficiency CDS	Baysaver Separator System	Downstream Defender	Aquaswirl	Stormceptor		
MODEL TESTED	Model ID	VS40	Model 2000	New Design: PMSU20_20_6 (tank diameter incr. by 1 foot, diff. baffle arrangement)	1K	4-FT	AS-3	STC 900		
	Treatment Chamber Diameter (ID)	4 ft	4 ft	6 ft	2 ft	4 ft	2.5 ft	6 ft		
	Marketed Water Quality Peak Flow Treatment Capacity	1.1 cfs (31.1 L/s)	2.8 cfs (79.3 L/s)	1.1 cfs (31.1 L/s)	2.4 cfs (68 L/s)	3.0 cfs (85 L/s)	1.8 cfs (51 L/s)	n/a ²		
	100% Operating Rate Tested	1.1 cfs (31.1 L/s)	1.12 cfs (32 L/s) (40 % of Original)	1.1 cfs (31.1 L/s)	1.1 cfs (31 L/s) (46 % of Original)	1.1 cfs (31.1 L/s)	1.08 cfs (30.6 L/s) (60 % of Original)	0.64 cfs (18 L/s)		
	Original Physical Design Tested	yes	yes	NO (New Design: Increased Tank Volume & Changed Baffle Arrangement)	yes	yes	yes	yes		
NJCAT VERIFICATION	PARTICLE SIZE USED	Used NJCAT Specified PSD	NO	NO	NO	yes NJCAT PSD Tested	NO	NO	yes NJCAT PSD Tested	
		PSD Range	53 - 300 µm	38 - 75 µm	10-100 µm (i.e. fines washed out of sediment samples used via plankton nets)		53 - 300 µm	50 - 150 µm		
		PSD Name	F-95 Sand		sub-100 PSD		F-95 Sand	OK-110		
	Refer to Particle Size Distribution (PSD) Chart for details & differences between the distributions used									
	TSS REMOVAL RESULTS	100% Operating Rate Tested	yes	NO (Up to 40% of operating rate capacity tested.)	yes	NO (Up to 46% of operating rate capacity tested.)	yes	NO (Up to 60% of operating rate capacity tested.)	yes	
		125% Operating Rate Tested	yes	NO	NO	NO	yes	NO	yes	
		Pre-loaded unit at 50% Sediment Capacity prior to evaluating performance	yes	NO	NO	yes	NO	NO	yes	
		NJCAT Verification For TSS Removal	69 % TSS (up to 125% of operating rate capacity)	64 % TSS (up to 40% of operating rate capacity)	73.7 % TSS (up to 100% of operating rate capacity)	51 % TSS (up to 46% of operating rate capacity)	70 % TSS (up to 125% of operating rate capacity)	60 % TSS (up to 60% of operating rate capacity)	75 % TSS (up to 125% of operating rate capacity)	
	SCOUR TEST RESULTS	Scour Test Performed	yes	NO	NO	Yes - in second chamber only	NO	NO	yes	
		50% Sediment Loading Capacity at 125% Operating Rate	NO SCOUR	Not Tested	Not Tested	SCOUR	Not Tested	Not Tested	NO SCOUR	
0 ppm			11 ppm			0 ppm				
100% Sediment Loading Capacity at 125% Operating Rate (Level were maintenance is recommended)		SCOUR	Not Tested	Not Tested	SCOUR	Not Tested	Not Tested	NO SCOUR ³		
	8 ppm	16 ppm			3 ppm					
TARP TIER I NJDEP 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		
	Original Design Approved by NJDEP	yes	NO Must reduce original flow capacity marketed in literature by 60%.	NO Only the "new" high efficiency design can be used. Original CDS design not approved.	NO Must reduce original flow capacity marketed in literature by 54%; Must increase tank surface area by 44% to 79% for design safety.	yes	NO Must reduce original flow capacity marketed in literature by 50%.	yes		

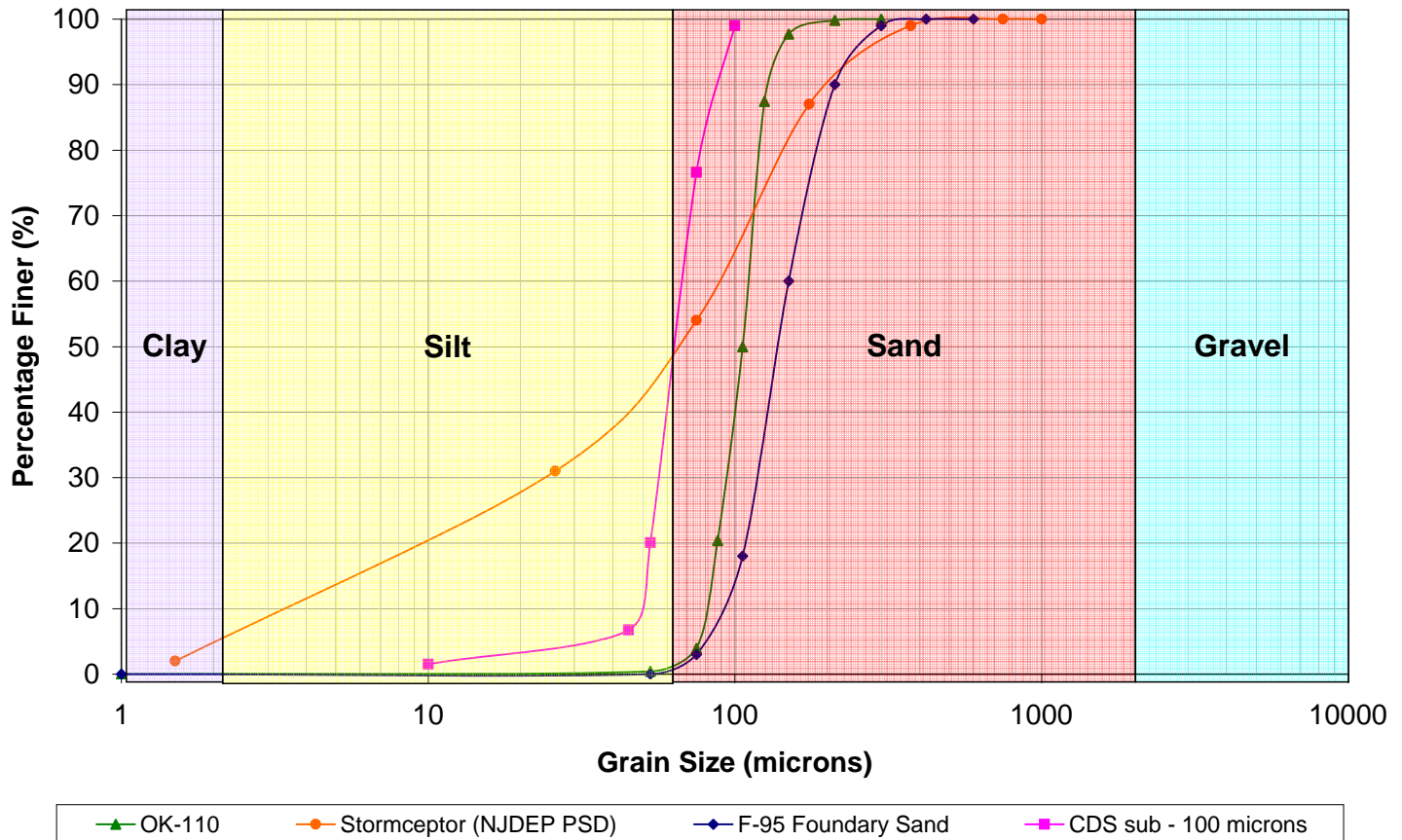
1. The Technology Acceptance and Reciprocity Partnership (TARP) is a workgroup of the Environmental Council of States (ECOS) that was originally made up of California, Illinois, Maryland, Massachusetts, New Jersey, New York, Pennsylvania and Virginia. Source of all NJDEP & TARP documented information: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

For NJDEP Interim Certified Stormwater Technologies go to: <http://www.state.nj.us/dep/dsr/bscit/CertifiedMain.htm>

**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 Flow Rates
(25, 50, 75, 100, 125%)
- 50% Pre-loaded Sediment Chamber

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 & TARP documented information, go to:

<http://www.state.nj.us/dep/dsr/bscit/CertifiedMain.htm>