



# State of New Jersey

## DEPARTMENT OF ENVIRONMENTAL PROTECTION

**PHILIP D. MURPHY**  
*Governor*

DIVISION OF WATERSHED PROTECTION AND RESTORATION  
BUREAU OF NJPDES STORMWATER PERMITTING & WATER QUALITY MANAGEMENT

**SHAWN M. LATOURETTE**  
*Commissioner*

**SHEILA Y. OLIVER**  
*Lt. Governor*

P.O. Box 420 Mail Code 501-02A  
Trenton, New Jersey 08625-0420  
609-633-7021 / Fax: 609-777-0432

[www.njstormwater.org](http://www.njstormwater.org)

**January 27, 2023**

Greg Williams, Ph.D., P.E.  
Director of Water Quality Technology  
Storm Trap LLC  
1287 Windham Parkway  
Romeoville, IL 60446

Re: MTD Lab Certification  
Storm Trap, LLC, StormSettler Hydrodynamic Separator  
Online Installation

### **TSS Removal Rate 50%**

Dear Dr. Williams:

The Stormwater Management rules under N.J.A.C. 7:8-5.2(f) and 5.2(j) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Storm Trap LLC, has requested a Laboratory Certification for the StormSettler Hydrodynamic Separator (StormSettler).

The project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology" dated August 4, 2021. The applicable protocol is the "New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device" dated January 1, 2021.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Verification Report with the Verification Appendix (dated December 2022) for this device is published online at <http://www.njcat.org/verification-process/technology-verification-database.html>.

**The NJDEP certifies the use of the StormSettler by Storm Trap LLC at a TSS removal rate of 50% when designed, operated, and maintained in accordance with the information provided in the Verification Appendix and the following conditions:**

1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5.
2. The StormSettler shall be installed, using the same configuration reviewed by NJCAT, and sized in accordance with the criteria specified in item 6 below.
3. This device cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.
4. Additional design criteria for MTDs can be found in Chapter 11.3 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual, which can be found online at [www.njstormwater.org](http://www.njstormwater.org).
5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the StormSettler, which is attached to this certification. However, it is recommended to review the maintenance website at <https://stormtrap.com/wp-content/uploads/2022/08/StormSettler-IM-Manual.pdf> for any changes to the maintenance requirements.
6. Sizing Requirement:

The example below demonstrates the sizing procedure for the StormSettler:

Example: A 0.25-acre impervious site is to be treated to 50% TSS removal using a StormSettler. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs or 354.58 gpm.

Maximum Treatment Flow Rate (MTFR) Evaluation:

The site runoff (Q) was based on the following:

time of concentration = 10 minutes

i = 3.2 in/hr (page 74, Fig. 5-16 of Chapter 5 of the NJ Stormwater BMP Manual)

c = 0.99 (runoff coefficient for impervious)

$Q = ciA = 0.99 \times 3.2 \times 0.25 = 0.79 \text{ cfs (354.58 gpm)}$

(Note: 1 cfs = 448.83 gpm)

Given the site runoff is 0.79 cfs and based on Table 1 below, the StormSettler Model StormSettler-3 with a MTFR of 0.79 cfs would be the smallest model approved that could be used for this site that could remove 50% of the TSS from the impervious area without exceeding the MTFR.

The sizing table corresponding to the available system models is noted below. Additional specifications regarding each model can be found in the Verification Appendix under Table A-1.

**Table 1. StormSettler Model MFRs**

StormSettler HDS Model	Manhole Diameter (ft)	Maximum Treatment Flowrate, MFR (cfs)
StormSettler-3	3	0.79
StormSettler-4	4	1.41
StormSettler-5	5	2.19
StormSettler-6	6	3.17
StormSettler-7	7	4.30
StormSettler-8	8	5.63
StormSettler-10	10	8.78
StormSettler-12	12	12.70

Be advised a detailed maintenance plan is mandatory for any project with a Stormwater BMP subject to the Stormwater Management Rules, N.J.A.C. 7:8. The plan must include all of the items identified in the Stormwater Management Rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact Lisa Schaefer of my office at [lisa.schaefer@dep.nj.gov](mailto:lisa.schaefer@dep.nj.gov).

Sincerely,



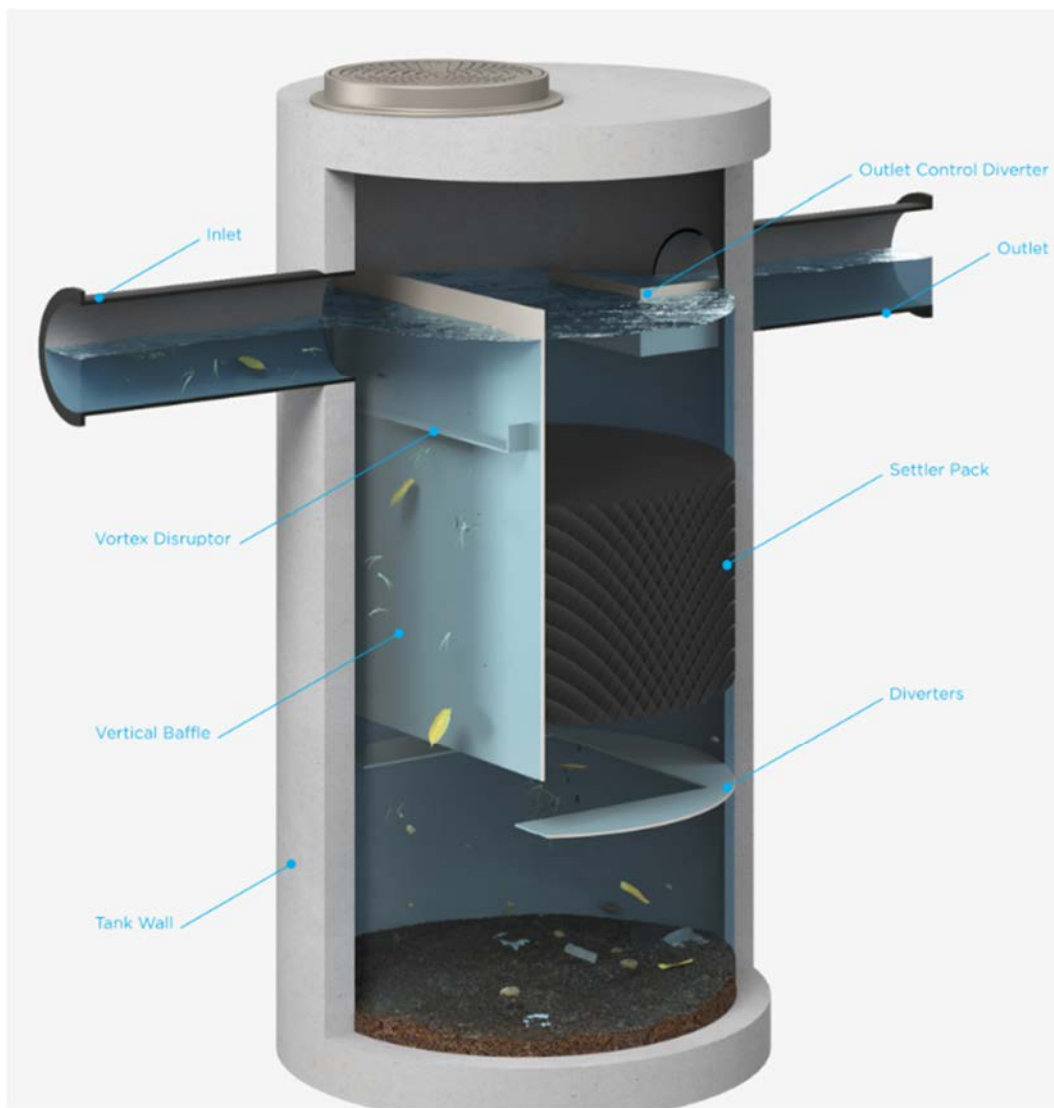
Gabriel Mahon, Chief  
Bureau of NJPDES Stormwater Permitting & Water Quality Management  
Division of Watershed Protection and Restoration  
New Jersey Department of Environmental Protection

Attachment: Maintenance Plan

cc: Richard Magee, NJCAT

# StormSettler®

## StormSettler® Inspection and Maintenance Manual





## **StormSettler® Manufacturer's Inspection and Maintenance Manual**

The StormSettler treatment device, manufactured by StormTrap, is a hydrodynamic separating device designed to capture and store pollutants from stormwater. StormSettler's maintenance frequency is site dependent and routine inspections are recommended to ensure that the system is functioning as designed. Please contact your authorized StormTrap representative if you have questions regarding the inspection and maintenance of the StormSettler system.

### **Inspection Scheduling**

StormSettler inspections are important to assess the condition of the system internals to ensure peak performance. The frequency of inspections and maintenance is dependent on site specific loading conditions and rainfall frequency. Within the first year of operation, it is recommended that the unit be inspected quarterly to determine the rate of pollutant accumulation in order to develop a more accurate maintenance schedule. Inspections should be performed during dry weather conditions when no flow is entering the system. StormSettler systems are recommended to be inspected whenever the upstream and downstream catch basins and stormwater pipes of the stormwater collection system are inspected or maintained. If checked on an annual basis, the inspection should be conducted before the stormwater season begins to ensure that the system is functioning properly for the upcoming storm season.

### **Inspection and Maintenance Equipment**

The following equipment is recommended to have during inspections:

- StormSettler Inspection and Maintenance Manual and Inspection Checklist
- Flashlight



- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage
- Pole with skimmer or net (optional for maintenance procedure)
- Vacuum truck or similar trailer mounted equipment (for maintenance procedure)

### **Inspection Procedure**

Inspections should be done such that a sufficient time has lapsed since the most recent rain event to allow for a static water condition and rainfall is not anticipated to occur during the duration of the inspection procedure. StormSettler does not require entry into the system for inspection or maintenance; however, if entering the system is deemed necessary, it is prudent to note that prior to entry into any underground storm sewer or underground structure, appropriate OSHA and local safety regulations and guidelines should be followed.

To begin the inspection process, set up the necessary traffic control signage per local ordinances. Open all manhole covers using appropriate equipment and ensure the manhole covers are in a location that would not prohibit the inspection process. Visually inspect the system at all manhole access opening locations. During the visual inspection, ensure that all components are in working order. An inspection checklist is provided within this guide for ease and reference.

If any components are not in working order, contact your authorized StormTrap representative.

After the components are inspected, visually quantify the accumulation of trash, debris, and hydrocarbons within the system by using a measuring device such as a tape measure, grade stick, dipstick, etc. Measure and record the depth of trash, debris, and hydrocarbon



accumulation from the static water elevation (pipe elevation) to the average elevation of the trash and debris.

If sorbent materials are used for retention of hydrocarbons, the level of discoloration of the sorbent material should also be noted during the inspection process.

For sediment accumulation, utilize either a sludge sampler or a sediment pole to measure and document the amount of sediment accumulation. To determine the amount of sediment in the system with a sludge sampler, follow the manufacturer's instructions. If utilizing a sediment pole or similar device, first insert the pole to the top of the sediment layer and record the depth. Then, insert the pole to the bottom of the system and record the depth. The difference in the two measurements corresponds to the amount of sediment in the system. Alternatively, sediment depth can also be determined by taking a measurement from a known and consistent elevation (manhole frame, pipe invert, vertical baffle top, etc.) to the top of the sediment layer. That distance can then be compared to the measurement between the known elevation to the sump floor. The difference between these two measurements will correspond to the sediment layer depth.

After completion of the inspection process, ensure that manhole covers are replaced and securely seated in the manhole frame and remove traffic control signage.

StormSettler units can also be installed with remote monitoring technology that measures the current capacities within the system and reports the data to any internet capable device. If a remote monitoring device is used, proper maintenance of the device, such as replacement of batteries, cleaning sensor, etc. needs to be completed to ensure functionality of the remote monitoring technology.

If it is determined during the inspection process that the accumulation of trash and debris or sediment is at or near the capacities of the StormSettler device, maintenance should be performed to ensure performance is not impacted for subsequent storm events.



## Maintenance Procedure

Maintenance should be done such that a sufficient time has lapsed since the most recent rain event to allow for a static water condition and rainfall is not anticipated to occur during the duration of the maintenance procedure.

To begin the maintenance process, set up the necessary traffic control signage per local ordinances. Open all manhole covers using appropriate equipment and ensure the manhole covers are in a location that would not prohibit the maintenance process.

Visually inspect the system at all manhole access opening locations. During the visual inspection, ensure that all components are undamaged. If any components are not in working order, contact your authorized StormTrap representative.

After the components are inspected, remove all accumulated trash, debris, and hydrocarbons stored on the surface of the water using the vacuum hose or pole with attached skimmer or net.

If sorbent materials are used, the materials may have to be moved to not impact pollutant removal. If significant discoloration of the sorbent material has occurred, simply remove the sorbent materials and replace upon completion of maintenance activities.

To remove sediment, insert the vacuum truck's hose on the inlet side of the vertical baffle into the sump. The system should be completely drained, and all sediment should be removed from the sump. For smaller diameter devices (3' or 4' units), a 6" or smaller vacuum hose diameter may be required for effective cleaning due to maneuverability constraints. If the vacuum truck that is being utilized has a hose diameter greater than 6", a smaller tube can be affixed to the boom hose with duct tape to improve maneuverability within the device.

If excessive sediment or debris buildup occurs within the device, components can be washed with sewer jetting equipment or a spray lance to remove stubborn materials. Particular





attention must be taken when spraying the settler pack. A wide spray nozzle is recommended around the settler pack to ensure there is no damage to the material.

After completion of the maintenance procedure, complete a post maintenance inspection to ensure that all components are in good condition. Ensure that manhole covers are replaced and securely seated in the manhole frame and remove traffic control signage. Dispose of all pollutants removed during maintenance per local, state, and federal guidelines and regulations.

### **Inspection and Maintenance Documentation**

Proof of inspections and maintenance activities is the responsibility of the owner. All inspection and maintenance reports and any relevant data should be kept on site or at a location where they will be accessible in accordance with local requirements. It is a good practice to take time stamped photographs after every inspection and maintenance event to include within logs. It is also good practice to keep records of rainfall events between maintenance events and the weight of material removed, even if no report is required. Some municipalities may require inspection and maintenance reports be forwarded to the proper governmental permitting agency on an annual basis. Refer to your local regulations and ordinances for any additional maintenance requirements and schedules not contained herein. Inspections and maintenance activities should be performed to ensure performance is not impacted and the device performs as designed.

### Inspection Items

- StormSettler Maintenance Manual and Inspection Checklist
- Flashlight
- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage

### Maintenance Items

- StormSettler Maintenance Manual and Inspection Checklist
- Flashlight
- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
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- Pole with skimmer or net (optional for maintenance procedure)
- Vacuum truck or similar trailer mounted equipment (for maintenance procedure)

<b>StormSettler™</b>		<b>StormSettler Inspection Checklist</b>							
Structure ID:									
Location/Address:									
Inspector Name:				Inspector Contact Information:					
Date:		Time:		Weather Conditions:					
Rain in the Last 48hrs:				If yes, list amount and timing:					
<p>*Do not enter underground chambers to inspect system unless Occupational Safety &amp; Health Administration (OSHA) regulations for confined space entry are followed.</p> <p>*Follow inspection and maintenance instructions provided by system manufacturer.</p> <p>*Please circle the condition of each inspection item below. 1 being the worst and 5 being the best condition.</p>									
Inspection Item		Condition					Comment	Action Needed	
<b>1.) Frames and Covers</b>									
Accumulation of debris and/or sediment		1	2	3	4	5		Yes	No
Component(s) structural condition		1	2	3	4	5		Yes	No
<b>2.) Inlet Pipe(s)</b>									
Accumulation of debris and/or sediment		1	2	3	4	5		Yes	No
Component(s) structural condition		1	2	3	4	5		Yes	No
<b>3.) Vortex Disruptor</b>									
Accumulation of debris and/or sediment		1	2	3	4	5		Yes	No
Component(s) structural condition		1	2	3	4	5		Yes	No
<b>4.) Verticle Baffle</b>									
Accumulation of debris and/or sediment		1	2	3	4	5		Yes	No
Component(s) structural condition		1	2	3	4	5		Yes	No
<b>5.) Enhanced Settling Pack</b>									
Accumulation of debris and/or sediment		1	2	3	4	5		Yes	No
Component(s) structural condition		1	2	3	4	5		Yes	No
<b>6.) Flow Modifiers</b>									
Accumulation of debris and/or sediment		1	2	3	4	5		Yes	No
Component(s) structural condition		1	2	3	4	5		Yes	No

7.) Outlet Control Diverter										
Excessive accumulation of debris and/or sediment present	1	2	3	4	5		Yes	No		
Component(s) structurally sound	1	2	3	4	5		Yes	No		
8.) Outlet Pipe										
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No		
Component(s) structurally sound	1	2	3	4	5		Yes	No		
9.) Concrete Chamber										
Component(s) structural condition	1	2	3	4	5		Yes	No		
10.) Sediment Storage Capacity										
Sediment storage capacity	1	2	3	4	5		Yes	No		
<b>Additional Notes:</b>										
Wet Weather Inspection Needed:							Yes	No		
Maintenance Activities Needed:							Yes	No		