State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHILIP D. MURPHY
Governor

TAHESHA L. WAY
Lt. Governor

DIVISION OF WATERSHED PROTECTION AND RESTORATION
BUREAU OF NJPDES STORMWATER PERMITTING & WATER QUALITY MANAGEMENT
P.O. Box 420 Mail Code 501-02A
Trenton, New Jersey 08625-0420
609-633-7021 / Fax: 609-777-0432
https://dep.nj.gov/stormwater/

SHAWN M. LATOURETTE
Commissioner

December 1, 2023

Amr Zaky, Ph.D.
Associate Vice President, Research and
Advanced Process Technology
BioMicrobics, Inc.
16002 West 110th Street
Lenexa, KS 66219

Re: MTD Lab Certification
BioSTORM Stormwater Treatment System
Offline Installation

TSS Removal Rate 50%

Dear Dr. Zaky:

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). BioMicrobics, Inc. has requested a Laboratory Certification for the BioSTORM Stormwater Treatment System (BioSTORM).

The project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology" dated January 25, 2013. The applicable protocol is the "New Jersey Laboratory Testing Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device" dated January 1, 2021, updated April 2023.

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 November 2023) for this device is published online at http://www.njcat.org/verification-process/technology-verification-database.html.

The NJDEP certifies the use of the BioSTORM by BioMicrobics, Inc. 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 BioSTORM stormwater treatment device shall be installed using the same configuration reviewed by NJCAT and shall be sized in accordance with the criteria specified in item 6 below.

3. This BioSTORM stormwater treatment 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 on-line at https://dep.nj.gov/stormwater/.

5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the BioSTORM. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at https://biomicrobics.com/wp-content/uploads/2023/08/BioSTORM-IM-Manual-4-AUG-2023.pdf for any changes to the maintenance requirements.

6. Sizing Requirements:

   The example below demonstrates the sizing procedure for the BioSTORM:

   Example: A 0.25-acre impervious site with a slope of 5% is to be treated to 50% TSS removal using a BioSTORM. The hydraulically most distant point to the inlet of the BioSTORM is 110 feet. The site is located in an area for which the projected 2-year storm rainfall depth was calculated to be 3.84 inches.

   Maximum Treatment Flow Rate (MTFR) Evaluation:

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

   CN = 98 (Curve Number for impervious)
   Dimensionless Unit Hydrograph (DUH) = SCS Standard DUH (peak rate factor of 484)
   Time of concentration = 0.8 minutes
   Q = 0.77 cfs

   Given the site runoff is 0.77 cfs and based on Table 1 below, the BioSTORM Model 1.0 with an MTFR of 1.0 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, A-2 and A-3.

Table 1: BioSTORM Stormwater Treatment System Models and Associated MTFRs

BioST Model	Maximum Treatment Flow Rate[1] (cfs)	Treatment Area (sq. ft.)	Hydraulic Loading Rate (gpm/sf)	50% Sediment Storage[2] (cf)
BioSTORM 0.5	0.5	44.7	5.1	22.4
BioSTORM 0.75	0.75	66.5	5.1	33.3
BioSTORM 1.0	1.0	88.5	5.1	44.0
BioSTORM 1.25	1.25	110.3	5.1	55.1

1. Based on a verified loading rate of 5.1 gpm/ft^2 for test sediment with a mean particle size of 66 µm and an annualized weighted TSS removal of at least 50% using the methodology in the current NJDEP HDS protocol.
2. 50% Sediment Storage Capacity is equal to treatment area x 6 inches of sediment depth. Each BioSTORM model has a 12-inch-deep sediment sump.

Be advised a detailed maintenance plan is mandatory for any project with a NJ Stormwater BMP subject to the Stormwater Management Rules, N.J.A.C. 7:8. The plan must include all 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.

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

c: Richard Magee, NJCAT

BioSTORM® Inspection & Maintenance Manual

For use with:

BioSTORM® 0.5, 0.75, 1.0, 1.25, 1.5, 3.0, 5.0, 10.0

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GENERAL INFORMATION

If you have questions regarding any BioMicrobics product, please contact your distributor first.

If necessary, contact us at:

1-800-753-FAST (3278) or **+1-913-422-0707**

e-mail: onsite@biomicrobics.com

WARNING

Always secure all access covers to prevent unauthorized people from entering tanks. Only qualified service personnel should open access ports and/or covers.

Infectious organisms may also exist in a stormwater tank. Therefore, if any contact with contaminated water occurs, immediately wash and disinfect all exposed areas and contact personal physician. Failure to do so could result in severe sickness or death.

DO NOT use an open flame or cause a spark near a tank's access points. Gases emanating from storm tanks can explode if ignited or deadly if inhaled.

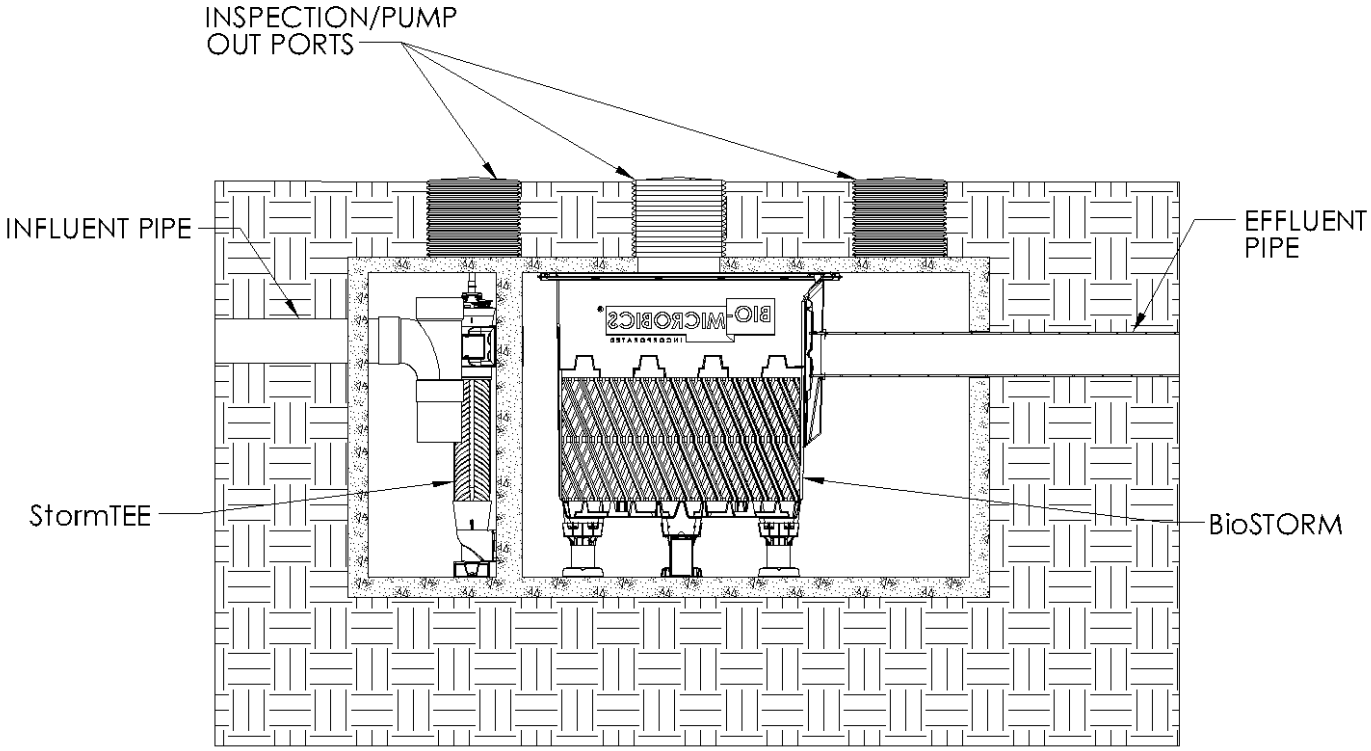
CAUTION

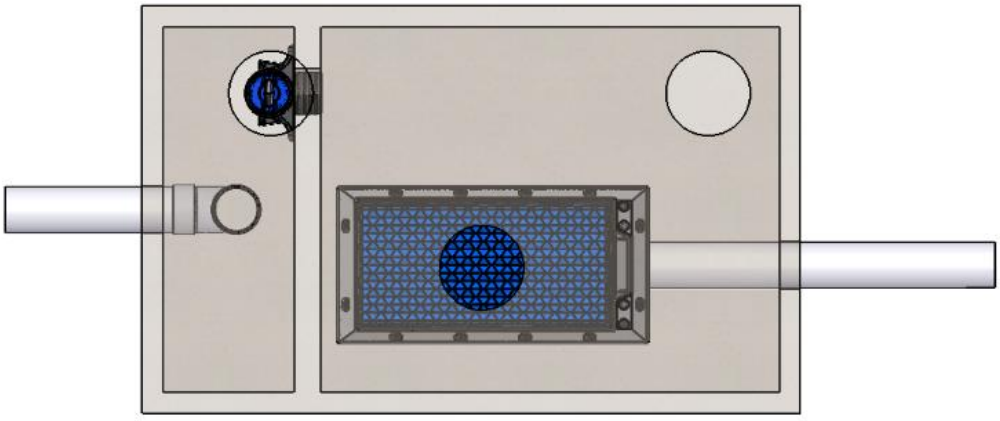
Introducing harmful or damaging substances into the BioSTORM® system may void the warranty.

ABOUT BIOSTORM®

BioSTORM® provides a sustainable, low-maintenance solution for city stormwater needs. The two-stage process prevents pollutants such as trash, debris, sediment, and hydrocarbons from entering storm drainage networks from parking lots, highways, and other impervious surfaces. The BioSTORM® catches surface runoff before it reaches watersheds, protecting streams from pollutants and supporting natural ecosystems.

GENERIC SYSTEM LAYOUT





MAINTENANCE

GENERAL STATEMENT

Regular maintenance of the BioSTORM® does not require entry of the underground storm chambers. However, if entry is required, appropriate OSHA and local safety regulations and guidelines should be followed. Please contact your local distributor if you have questions regarding the inspection and maintenance of the BioSTORM®.

MAINTENANCE PROCESS

Maintenance should be performed when water conditions are static to avoid interruption during the maintenance duration. Refer to your local and national regulations for any additional maintenance requirements and schedules not contained herein. The maintenance process is summarized below.

- Swab debris and litter off the angled slots on the StormTEE® by using its built-in plunger.
- Remove floatable debris using a heavy-duty skimmer net or a vacuum-waste pump truck to skim trash floating on the stagnant water surface. There is no need for man entry into the chambers. Removal of debris can be performed through the manholes. The removed debris should be properly disposed of per local, state, and federal guidelines and regulations.
- Accumulated oil must be removed from the surface using a vacuum-waste pump truck or sump vacuum.
- To remove accumulated sediments from the BioSTORM® interceptor, wash off the interceptor using pressurized water from a garden hose. Note: Using a pressure washer is not recommended on the interceptor as it may damage its integrity.
- For sediment removal from the system floor, BioSTORM® systems are designed with clear access at both chambers. A vacuum truck, or similar trailer mounted equipment, can be used to remove the sediment, hydrocarbons, and water within the unit. For more effective removal, it is recommended to use sewer jetting equipment to force the sediment to the vacuum hose. When the floor is sufficiently cleaned, fill the system back to its normal water elevation (to the pipe inverts).
- When all pollutants have been removed from the BioSTORM® system, the manhole lids should be put securely back in place.
- Properly dispose of the sediment per local, state, and federal guidelines and regulations.
- Proof of inspections and maintenance is the responsibility of the owner. All inspection reports and data should be kept on site or at a location where they will be accessible for years in the future.

⚠CAUTION

Avoid pumping down after periods of heavy rain or when the ground water is likely to be above the bottom of the concrete tank. Emptying the tank under these conditions could cause the tank to float up and become dislodged if it is not sufficiently anchored to prevent flotation.

INSPECTION

GENERAL STATEMENT

Regular inspections are recommended to ensure that the system is functioning as designed. Inspections should be a part of the standard operating procedure. The required frequency of cleanout depends on site use and other site-specific characteristics and should therefore be determined by inspecting the unit after installation. During the first year of operation, the unit should be inspected at least every six months to determine the rate of sediment and floatable material accumulation. More frequent inspections are recommended at sites that would generate heavy solids loads, like parking lots with winter sanding or unpaved maintenance lots. In cases where inspection is performed 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 PROCESS

Inspection should be performed when water conditions are static to avoid interruption during the maintenance duration. Refer to your local and national regulations for any additional inspection requirements and schedules not contained herein. Brief steps of the inspection process are summarized below.

- Perform visual inspection at all manhole locations.
- Visually check for debris accumulation on the StormTEE® and the interceptor.
- Utilize a sediment pole to measure and document the amount of sediment accumulation in both chambers. Refer to “How to Check the Sediment Depth” section for additional details.
- Inspect the inlet and outlet pipe opening to ensure that the silt level or any foreign objects are not blocking the pipes.
- It is recommended to visually inspect all pipes and connection for any possible leaks and findings will need to be reported to the contractor.

HOW TO CHECK THE SEDIMENT DEPTH

To determine the amount of sediment in the treatment chamber, which contains the BioSTORM® interceptor:

- Open the access ports or cover(s) of the treatment zone
- Insert a sediment pole to the top of the sediment layer and record the depth.
- 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 treatment chamber.
- NJDEP requires sediment removal on or before it reaches the maximum allowable depth per model size (50% of the MTD’s maximum storage depth). Consult your local distributor or the factory for guidance. **We recommend that you pump both chambers even if only one chamber requires pumping. Pump the settling chamber first, which contains the STORMTEE® and then the treatment chamber, which contains the interceptor**

LIMITED WARRANTY

BioMicrobics, Inc. warrants the following systems

***BioSTORM® 0.5, 0.75, 1.0, 1.25, 1.5, 3.0, 5.0, and 10.0**

against defects in materials and workmanship for a period of one year after installation, or eighteen months from date of shipment, whichever occurs first, subject to the following terms and conditions.

TERMS AND CONDITIONS

Note: *For this warranty to be effective, BioMicrobics must receive the product registration for the system*.

During the warranty period, if any part is defective or fails to perform as specified when operating at design conditions, and if the equipment has been installed and is being operated and maintained in accordance with the written instructions that BioMicrobics, Inc. has provided, BioMicrobics, Inc. will repair or replace at its discretion such defective parts free of charge. Defective parts must be returned by owner to BioMicrobics, Inc.'s factory postage paid, if so requested. The cost of labor and all other expenses resulting from replacement of the defective parts and from installation of parts furnished under this warranty shall be borne by the owner. This warranty does not cover general system misuse, aerator components that have been damaged by flooding or any components that have been disassembled by unauthorized persons, improperly installed or damaged due to altered or improper wiring or overload protection. This warranty applies only to the treatment system and does not include any of the structure wiring, plumbing, drainage, septic tank or disposal system. BioMicrobics, Inc. reserves the right to revise, change or modify the construction and/or design of the BioMicrobics system, or any component part or parts thereof, without incurring any obligation to make such changes or modifications in present equipment. BioMicrobics, Inc. is not responsible for consequential or incidental damages of any nature resulting from such things as, but not limited to, defect in design, material, or workmanship, or delays in delivery, replacements or repairs.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. BIOMICROBICS, INC. SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO REPRESENTATIVE OR PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY OR TO ASSUME FOR BIOMICROBICS, INC. ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ITS PRODUCTS.

Use this page to record service dates, maintenance performed, notes on system performance, etc.

KEEP FOR YOUR RECORDS

Manufacturer Name: BioMicrobics, Inc.

Manufacturer Phone: 1-800-753-FAST (3278)

FAST® System Serial Number: _____

System Designer Name:_____

Designer Phone:_____

Installed By:_____

Installer Phone:_____

Maintenance Provider Name:_____

Maintenance Provider Phone:_____