State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATERSHED PROTECTION AND RESTORATION
BUREAU OF NJPDES STORMWATER PERMITTING
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May 15, 2025

Bo Liu, P.E., Ph.D.
Senior Engineer
Advanced Drainage Systems, Inc.
4640 Trueman Boulevard
Hilliard, OH 43206

Re: MTD Lab Certification
Arcadia Hydrodynamic Separator by ADS
Online Installation

TSS Removal Rate 50%

Dear Dr. Liu:

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). Advanced Drainage Systems, Inc. (ADS) has requested a Laboratory Certification for the Arcadia Hydrodynamic Separator (Arcadia).

The project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advanced Technology" dated August 4, 2021. 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, and last updated April 25, 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 May 2025) for this device is published online at http://www.njcat.org/verification-process/technology-verification-database.html.

The NJDEP certifies the use of the Arcadia Hydrodynamic Separator by Advanced Drainage Systems, 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 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 Arcadia Hydrodynamic Separator 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 Arcadia Hydrodynamic Separator 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 Arcadia Hydrodynamic Separator. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at https://assets.adspipe.com/m/2b13451739fb2bfe/original/Arcadia-Separator-Maintenance-Guide.pdf?_gl=1*1y3snpz*_gcl_au*MjA0NDY0MjY3OS4xNzQzNjAwNzky*_ga*ODM4MDE3ODA2LjE3MzU1NzA5NzQ.*_ga_1TPLC9D3R7*czE3NDczMzQyODMkbzkkZzEkdDE3NDczMzQ0NDEkajYwJGwwJGgzMTIzMzMzNjY for any changes to the maintenance requirements.

6. Sizing Requirements:

   The example below demonstrates the sizing procedure for the Arcadia Hydrodynamic Separator:

   Example: A 0.25-acre impervious site with a slope of 5% is to be treated to 50% TSS removal using an Arcadia Hydrodynamic Separator. The hydraulically most distant point to the inlet of the Arcadia 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 Arcadia ARC3 model with an MTFR of 0.95 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.

Table 1: Arcadia Hydrodynamic Separator Models and Associated MTFRs

Arcadia Hydrodynamic Separator Model	Diameter (ft)	Maximum Treatment Flow Rate (cfs)	Treatment Area (sq. ft.)	Hydraulic Loading Rate (gpm/sq. ft.)
Arcadia ARC3	3	0.95	7.07	60.0
Arcadia ARC4	4	1.68	12.57	60.0
Arcadia ARC5	5	2.63	19.63	60.0
Arcadia ARC6	6	3.78	28.27	60.0
Arcadia ARC8	8	6.72	50.27	60.0
Arcadia ARC10	10	10.5	78.54	60.0

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 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 Peter Plianthos of my office at Lisa.Schaefer@dep.nj.gov.

Sincerely,

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

Attachment: Maintenance Plan

c: Richard Magee, NJCAT

Arcadia™ HDS Maintenance Guide

One of Arcadia's advantages is the ease of maintenance. Like any system that collects pollutants, the Arcadia hydrodynamic separator must be maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The systems were designed to minimize the volume of water removed during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash There is no confined space entry necessary for inspection or maintenance.

The entire maintenance procedure typically takes 2 to 4 hours, depending on the system's size, the captured material, and the vacuum truck's capacity.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

Inspection and Cleaning Cycle

Periodic inspection is needed to determine the need for and frequency of maintenance. You should begin inspecting as soon as construction is complete and then on an annual basis. Typically, the system needs to be cleaned every 1-3 years.

Excessive oils, fuels or sediments may reduce the maintenance cycle. Periodic inspection is important.

Determining When to Clean

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it contacts the top of the captured sediment and mark that spot on the rod. Then push the probe through to the bottom of the sump and mark that spot to determine sediment depth.

Maintenance should occur when the sediment has reached the levels indicated in the Storage Capacity Chart.

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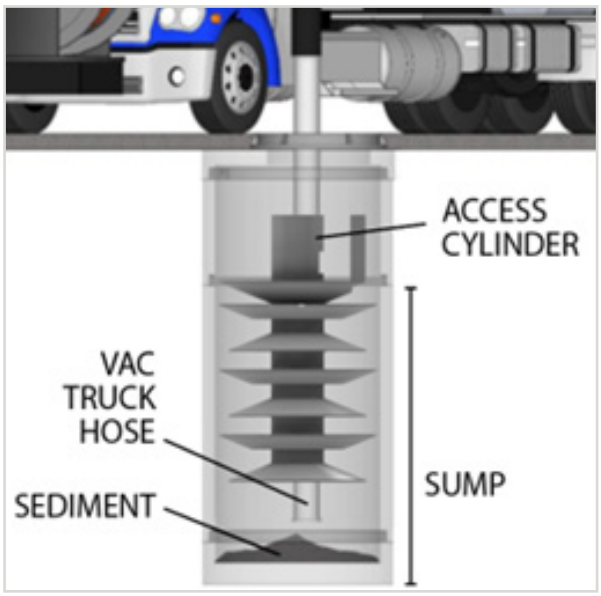
Arcadia Storage Capacities

Model	Manhole Diameter in (mm)	Total System Volume Gallons (Liters)	Treatment Chamber Capacity Gallons (Liters)	Standard Sediment Capacity (18" depth) Yards^3 (m^3)	NJDEP Sediment Capacity (50% of Standard Depth) Yards^3 (m^3)
ARC3	36 (914)	242 (917)	203 (767)	0.39 (0.30)	0.19 (0.15)
ARC4	48 (1219)	635 (2402)	564 (2135)	0.70 (0.53)	0.35 (0.27)
ARC5	60 (1524)	991 (3753)	881 (3336)	1.09 (0.83)	0.55 (0.42)
ARC6	72 (1829)	1428 (5404)	1269 (4804)	1.57 (1.20)	0.79 (0.60)
ARC8	96 (2438)	4136 (15656)	3854 (14588)	2.79 (2.14)	1.40 (1.07)
ARC10	120 (3048)	7931 (30022)	7490 (28354)	4.36 (3.34)	2.18 (1.67)

Maintenance Procedures

1. Remove the manhole cover to provide access to the pollutant storage. Pollutants are store in the sump, below the unit assembly visible from the surface. Access this area through the access cylinder (larger than 10" (254 mm) diameter for all sizes).
2. Use a vacuum truck or other similar equipment to remove all water, debris, oils and sediment. See Figure 1.
3. Use a high pressure hose to clean the manhole of all the remaining sediment and debris. Then, use the vacuum truck to remove the water.
4. Fill the cleaned manhole with water until the level reaches the invert of the outlet pipe.
5. Replace the manhole cover.
6. Dispose of the polluted water, oils, sediment and trash at an approved facility.
    a. Local regulations prohibit the discharge of solid material into the sanitary system. Check with the local sewer authority for authority to discharge the liquid.
    b. Some localities treat the pollutants as leachate. Check with local regulators about disposal requierments.
    c. Additional local regualtions may apply to the maintenance procdure.

Figure 1



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