

January 24, 2022

Mr. Dennis Hallahan, P.E.
 Technical Director
 Infiltrator Water Technologies,
 4 Business Park Road
 Old Saybrook, CT 06475

RE: Product Registration Renewal #4 – Notice of Proprietary Distribution Product Listing

Description: Proprietary Distribution Product - Gravelless Distribution Media
 Manufacturer: Infiltrator Water Technologies,
 Product Name: Arc Chamber Series
 Model Numbers: Arc 18, Arc 24, Arc 36, Arc 36 Low Profile, & Arc 36 High Capacity

Dear Mr. Hallahan:

Thank you for your application for product renewal for the Infiltrator Water Technologies Arc Chamber Series, which includes the following models: Arc 18, Arc 24, Arc 36, Arc 36 Low Profile (LP) and Arc 36 High Capacity (HC).

In accordance with Minn. R. Ch. 7080 through 7083, the Minnesota Pollution Control Agency (MPCA) has reviewed submitted materials for proprietary distribution product registration. Based on the submitted documentation, the MPCA finds the Arc Chamber Series is eligible to be registered and meet the requirements for proprietary distribution product registration.

As such, the Arc Chamber Series is registered for use in trench, seepage bed, at-grade and mound applications, in accordance with Minn. R. Ch. 7080.2200 through 7080.2350 and the manufacturer's installation requirements. Gravity and pressure distribution requirements, as described in Minn. R. Ch. 7080.2050, shall be met. Table 1 lists registered chamber models and dimensions as presented in the initial application submittal, dated December 21, 2009, and related documents and a second application submitted for the Arc 36 Low Profile (LP) on February 18, 2011.

Table 1. ADS Arc Chamber Models and Dimensions

Model	Product Dimensions (Width x Length x Height) (inches)	Average Open Bottom Width (feet)	Average Sidewall Infiltrative Height (inches)
Arc 18	16 x 60 x 12	1.12	7.6
Arc 24	22 x 60 x 12	1.59	7.6
Arc 36	34 x 60 x 13	2.39	7.1
Arc 36 Low Profile (LP)	34 x 60 x 8	2.45	6.0
Arc 36 High Capacity (HC)	34 x 60 x 16	2.45	10.3

Subject to this determination, the Arc Chamber Series will be placed on the List of Registered Subsurface Sewage Treatment System (SSTS) Proprietary Distribution Media Products at the sizing recommended by the Technical Advisory Panel on January 21, 2010, March 17, 2011, May 19, 2011, and reflected in this letter of registration. The product information listed in this Notice of Proprietary Product Listing will be maintained on the MPCA website and may not be altered by the manufacturer without permission from the MPCA.

Soil absorption areas using Arc chambers may be sized based on the sizing charts included in this Notice of Proprietary Distribution Product Listing, or may be sized larger at the direction of local regulatory authorities. Product drawings contained in the manufacturer's manual provide information on the open bottom area for each product listed in Table 1.

The following design applications for trenches, seepage beds, at-grades and mounds are based on the Registered Sizing as recommended by the Technical Advisory Panel. When the local regulatory authority chooses to size the Arc chamber product based on the chamber inside dimensions, additional calculations will need to be made to determine the number of chambers required in each application.

Trench Applications

For trench applications, the following shall be the basis for establishing equivalency for nominal chamber width to trench width:

- A 16-inch-wide chamber is equivalent to an 18-inch-wide trench using drain field rock
- A 22-inch-wide chamber is equivalent to a 24-inch-wide trench using drain field rock
- A 34-inch-wide chamber is equivalent to a 36-inch-wide trench using drain field rock

Where trench designs are specified, new construction or replacement systems, may utilize the Arc chambers in accordance with Table 2. Trenches must be no more than 36 inches wide. All excavations wider than 36 inches shall be considered seepage beds.

Table 2. Trench Sizing

Model	Dimensions (Width x Length x Height) (inches)	Sizing in Trenches
Arc 18	16 x 60 x 12	Chamber trench length at 1:1 ratio with drainfield rock trench length
Arc 24	22 x 60 x 12	
Arc 36	34 x 60 x 13	
Arc 36 Low Profile (LP)	34 x 60 x 8	
Arc 36 High Capacity (HC)	34 x 60 x 16	

Backfilling along the chamber sidewall absorption area shall be done in a manner that: 1) maintains the ability of the soil to adequately infiltrate and disperse wastewater and 2) prevents the intrusion of soil into the chamber through the louvered sidewall. Backfill material type and method of placement shall be done as specified by the manufacturer in the installation manual.

Vertical inspection pipes must be properly installed in the distribution medium of all trenches as per Minn. R. Ch. 7080.2210, subp. 4(B). The inspection pipe must be located at the end opposite from where the effluent enters the distribution medium. The manufacturer’s installation instructions for trench systems shall illustrate this requirement.

Seepage Bed Applications

Seepage bed designs shall be sized based on bottom area only with no additional credit given to sidewall. When a seepage bed is specified with a design width of less than or equal to 12 feet, gravity distribution may be utilized. Seepage bed designs greater than 12 feet and up to 25 feet in width shall require pressure distribution. Table 3 provides Arc chamber configurations for seepage bed applications using the Registered Sizing.

Table 3. Seepage Bed Sizing

Model	Nominal Dimensions (Width x Length x Height) (inches)	Number of Chambers Spanning Bed Width	Bed Design Width (feet)
Arc 24	22 x 60 x 12	2	4
		3	6
		4	8
		5	10
Arc 36	34 x 60 x 13	3	9
		4	12
		5	15
Arc 36 Low Profile (LP)	34 x 60 x 8	3	9
		4	12
		5	15
Arc 36 High Capacity (HC)	34 x 60 x 16	3	9
		4	12
		5	15

Backfilling along the chamber sidewall absorption area shall be done in a manner that prevents the intrusion of soil into the chamber through the louvered sidewall. Backfill material type and method of placement shall be done as specified by the manufacturer in the installation manual.

Vertical inspection pipes must be properly installed in the distribution medium of all seepage bed systems as per Minn. R. Ch. 7080.2210, subp. 4(B). The inspection pipe must be located at the end opposite from where the effluent enters the medium. The manufacturer’s installation instructions for seepage bed systems shall illustrate these requirements. One inspection pipe per seepage bed is sufficient; it is not necessary to install an inspection pipe in each run of chambers.

At-Grade Applications

Arc chambers are registered for use in at-grade systems on both flat sites and on sloping sites. At-grade designs shall be sized based on bottom area only with no additional reduction given to sidewall.

At-grades should be long and narrow, with individual contour loading rates ranging between two and eight gallons per lineal foot per day. Proper scarification of the absorption area is required before Arc chamber products are installed in at-grade systems. The maximum allowable width for at-grade distribution media beds is 15 feet. Table 4 provides Arc chamber configurations when utilized in at-grade systems applications using the Registered Sizing.

Backfilling along the chambers shall be done in a manner that prevents the intrusion of soil into the chamber through the louvered sidewall. The required backfill material includes six inches of sandy cover material over the chambers, extending at least five feet beyond the ends of the chambers, and six inches of topsoil. The backfill material shall be properly sloped to divert surface water away from the system. The method of soil placement over the at-grade shall be done as specified by the manufacturer in the installation manual.

One vertical inspection pipe must be properly installed along the down slope portion of at-grade absorption beds as per Minn. R. Ch. 7080.2230, subp. 3(G). The manufacturer’s installation instructions for at-grades shall illustrate this requirement.

Table 4. At-Grade Sizing

Model	Dimensions (Width x Length x Height) (inches)	Number of Chambers Spanning At-Grade Width	At-Grade Design Distribution Media (feet)
Arc 24	22 x 60 x 12	2	4
		3	6
		4	8
Arc 36	34 x 60 x 13	1	3
		2	6
		3	9
		4	12
Arc 36 Low Profile (LP)	34 x 60 x 8	1	3
		2	6
		3	9
		4	12
Arc 36 High Capacity (HC)	34 x 60 x 16	1	3
		2	6
		3	9
		4	12

Mound Applications

Mound designs shall be sized based on bottom area only with no additional reduction given to sidewall. Mounds should be long and narrow, with contour loading rates ranging between one and twelve gallons per lineal foot per day. The maximum allowable width for mound distribution media beds is nine feet.

Table 5 provides Arc chamber configurations when utilized in mound applications using the Registered Sizing. The area around the Arc chambers, and in-between the chambers in mounds, shall be filled with clean sand up to the top of the louvered sidewall. The manufacturer’s installation manual shall provide a detailed drawing showing this requirement.

Backfilling along the chambers shall be done in a manner that prevents the intrusion of soil into the chambers through louvered sidewalls. Backfill material type and method of placement shall be done as specified by the manufacturer in the installation manual.

One vertical inspection pipe must be properly installed at the end of each mound, terminating at the mound sand and chamber interface, per Minn. R. Ch. 7080.2220, subp. 3(O). The manufacturer’s installation instructions for mounds shall illustrate this requirement.

Table 5. Mound Sizing

Model	Product Dimensions (Width x Length x Height) (inches)	Number of Chambers Spanning Mound Width	Mound Distribution Media Width (feet)
Arc 36	34 x 60 x 13	1	3
		2	6
		3	9
Arc 36 Low Profile (LP)	34 x 60 x 8	1	3
		2	6
		3	9
Arc 36 High Capacity (HC)	34 x 60 x 16	1	3
		2	6
		3	9

Side Port Coupler (SPC)

Each Arc chamber model listed includes, as an accessory, Side Port Coupler (SPC) parts. The SPC may be used in three ways: 1) placed at the end of the chamber line and used in conjunction with the universal end cap; 2) installed by itself between individual Arc chambers; and 3) installed in series between individual Arc chambers. Although these SPC parts provide some bottom absorption area, this area is not included as part of the absorption area for trench, seepage bed, at-grade or mound system designs, unless specifically allowed by the local permitting authority. The manufacturer’s manual shall describe each of these applications, and specify the recommended absorption area for each Arc chamber SPC.

General Requirements

The registration of products in Minnesota is contingent upon compliance with the following conditions:

1. The manufacturer shall have readily accessible information, specific to a product's registered use in Minnesota, for designers, installers, regulators, system owners, and service providers for the following items: a) product manual; b) design instructions; c) installation instructions; d) information regarding operation and maintenance; e) homeowner instructions and f) list of manufacturer-certified service providers, if any, as required by Minn. R. Ch. 7083.4040 (H).

2. Distribution of sewage by means of gravity and pressure are permissible, in accordance with Minn. R. Ch. 7080.2050 and the manufacturer's installation requirements. The distribution of effluent shall be done in a manner that does not scour or excessively pit the soil's infiltrative surface or cause sealing from fines at the soil's infiltrative surface.
3. Soil loading rates shall be as specified in Minn. R. Ch. 7080.2150, subp.3. Tables IX and IXa and in Minn. R. Ch. 7080.2350.
4. No additional consideration shall be given to the Arc chamber Side Port Coupler (SPC) to size trench, seepage bed, at-grade and mound systems, unless specifically allowed by the local permitting authority.
5. The minimum depth of soil cover, including six inches of topsoil borrow, over Arc chamber products used in trenches, seepage beds, at-grades and mounds is 12 inches.
6. Any excavation into the absorption area must be in a manner that maintains soil structure in an un-smearred and un-compacted condition. Excavation and placement of Arc chamber products are allowed when: 1) the soil moisture is less than the plastic limit and 2) the soil is not frozen or freezing per Minn. R. 7080.2150, subp. 3(G).
7. Placement of Arc chamber products shall be performed in a manner that minimizes soil compaction due to foot traffic related to the installation of chamber products.
8. Arc chamber products shall be installed so they do not: 1) sink, 2) separate, 3) allow for the intrusion of soil into the chambers through the louvered sidewalls and 4) provide a home for burrowing animals, which partially or completely fills the chamber system with soil.
9. Training shall be provided to practitioners in the proper application and use of the Arc chamber products registered for use in Minnesota.
10. During the period of product registration and as part of the renewal process, systems using registered distribution products are subject to an audit established by the MPCA.

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Please be advised that this registration expires on December 31, 2024. Manufacturers desiring to continue product registration beyond this date must obtain MPCA renewal according to the requirements in Minn. R. 7083.4080, subp. 5. If the MPCA finds the product has changed in any way that may affect performance, it may not be renewed and must meet the requirements for initial registration.

The MPCA is in no way endorsing these products or any advertising, and is not responsible for any situation which may result from its use or misuse. The MPCA is not liable for any product failure and these statements are not intended and cannot be relied upon to establish any substantive or procedural rights with the state of Minnesota or the MPCA, either express or implied, that can be enforced in litigation or any administrative proceeding.

If you have any questions, please contact Katie Dowling at 651-757-2301 or by email at katie.dowling@state.mn.us.

Sincerely,

Katie Dowling

This document has been electronically signed.

Katie Dowling
Environmental Specialist
Municipal Division

KD:lm

cc: File