

**NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES  
DIVISION OF PUBLIC HEALTH  
ENVIRONMENTAL HEALTH SECTION  
ON-SITE WATER PROTECTION BRANCH**

<b>INNOVATIVE WASTEWATER SYSTEM APPROVAL</b>
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INNOVATIVE WASTEWATER SYSTEM NO: IWWS-2010-1-R6

Issued To: Infiltrator Water Technologies, LLC  
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For: Infiltrator Quick4 Plus Standard Low Profile (LP) Chamber, Quick4 Plus Standard Low Profile (LP) All-in-One 8 Endcap, and BioDiffuser Arc 36 Low Profile (LP) Chamber

Approval Dates:	May 21, 2010	Approve Quick4 Plus Standard Low Profile
	April 5, 2011	Approve Arc 36 LP
	November, 2012	Change of Arc 36 LP Ownership to Infiltrator Systems Inc.
	September 5, 2014	Add Area Credit for Endcap
	October 31, 2014	Add Reduced Soil Depth for Coastal Plain Physiographic Region
	May 1, 2015	Merge IWWS-2011-1-R1 Arc 36 LP specifications into IWWS-2010-1-R2; retire IWWS-2011-1-R1
	August 7, 2015	Update trench levelness requirements and change company name to Infiltrator Water Technologies, LLC*
	July 16, 2018	Addition of Piedmont and Mountain physiographic regions to Innovative Approval; retire CDWS-2010-1-R2B
	February 8, 2019	Addition of Bed-in-fill system specifications**

\*Prior approvals were issued to Infiltrator Systems, Inc. or predecessor companies

\*\*Refer to Section VIII for Bed-in-fill siting, sizing, special site assessment, design, installation criteria, and permitting.

In accordance with G.S. 130A-343 and 15A NCAC 18A .1969, an application by Infiltrator Water Technologies, LLC or its predecessor of Old Saybrook, CT for a revised approval of their chamber (gravel-less) trench, bed, and Bed-in-fill system has been reviewed and found to meet the requirements of an innovative system when all of the following conditions are met:

I. General

A. Scope of this Innovative Approval

1. Use, design and installation requirements for the Infiltrator Water Technologies, LLC chamber trench, bed, and Bed-in-fill systems.
2. Infiltrator has demonstrated that the modified systems, the Infiltrator Quick4 Plus Standard LP and Arc 36 LP models when sized using the equivalency factor of 3.0 sf/lf as stated in this approval, with a minimum of six inches of cover, will perform in a manner equal or superior to the system as previously approved by Innovative Wastewater System Approval No. IWWS-93-2-R11 and its successors and CDWS 2010-1-R2B. The Quick4 Plus Standard LP and Arc 36 LP models with a minimum of six inches of cover are therefore hereby approved with innovative status subject to the conditions contained herein.

II. System Description

A. Minimum pretreatment by septic tank as required in 15A NCAC 18A .1952.

1. The Quick4 Plus Standard LP unit consists of polypropylene arch-shaped injection molded chamber.
2. The connected overall length of a Quick4 Plus Standard LP chamber is 4 feet.
3. Twenty-five Quick4 Plus Standard LP chambers are approximately equal to 100 feet.
4. The Arc 36 LP unit consists of high-density polypropylene or polyethylene arch-shaped injection molded chambers.
5. The connected overall length of an Arc 36 LP chamber is 5 feet.
6. Twenty Arc 36 LP chambers are approximately equal to 100 feet.

Table I – Infiltrator Chamber Dimensions

Model	Height (in)	Invert <sup>1</sup> Height (in)
Quick4 Plus Standard LP	8.0	3.3 and 9.0
Arc 36 LP	8.0	3.8 and 8.0

<sup>1</sup>Invert Height is for a 4-inch diameter Schedule 40 PVC Pipe

D. Each chamber unit shall be permanently marked as applicable:

1. Quick4 Plus Standard LP; or
2. Arc 36 LP.

E. Each chamber unit mechanically interlocks with the downstream chamber forming a complete line consisting of an inlet plate or cap with a splash plate located below the inlet on the trench bottom and a solid end plate or cap to be located at the distal end of any chamber line.

- F. In addition to conventional use as an end cap, the Quick4 Plus All-in-One 8 Endcap and the Quick4 Plus Periscope pipe appurtenances can also be used as an accessory with the Quick4 Plus Standard LP chamber to decrease the turning radius of a chamber line, as a drop-box in serial distribution, and for mid-line distribution pipe entry and exit. The Quick4 Plus All-in-One 8 Endcap can be used in all applications where the Quick4 Plus Standard LP chamber may be utilized.

III. Siting Criteria (*Refer to Section VIII for Bed-in-fill siting criteria.*)

- A. **ALL COUNTIES:** The Quick4 Plus Standard LP and Arc 36 LP trench assemblies may be utilized on any site which meets all the following criteria:
  - 1. **All Soil Groups**
    - a. **A minimum of 20 inches** of naturally occurring soil shall be present above a limiting condition (saprolite, rock, parent material, expansive clay mineralogy, unsuitable soil structure, or restrictive horizons),
    - b. **A minimum of 26 inches** of naturally occurring soil shall be present above a soil wetness condition when the vertical separation consists of Group I soils as described in (d) below,
    - c. **A minimum of 12 inches** of naturally occurring soil shall be present between the trench bottom and saprolite, rock, parent material, restrictive horizons, or any soil horizon unsuitable as to structure or clay mineralogy,
    - d. **A minimum of 12 inches** of naturally occurring Group II, III, or IV soil shall be present between the trench bottom and an unsuitable soil wetness condition. If more than six inches of the vertical separation distance to a soil wetness condition consists of Group I soils, **a minimum of 18 inches** of separation is required. If 18 inches of separation cannot be achieved in natural soil, low pressure pipe (LPP) dispersal shall be required, and,
    - e. All other factors provisionally suitable or suitable.
  - 2. Sites which meet the criteria for new or existing fill in accordance with 15A NCAC 18A .1957(b). The provisions of 15A NCAC 18A .1957(b) are applicable whenever any portion of the chamber in an Infiltrator system extends into fill material. This reference to "fill material" applies to the site fill and not the backfill placed between the trench and the chamber sidewall.
  - 3. The required vertical separation shall be measured from the bottom edge of the chamber.

IV. System Sizing (*Refer to Section VIII for Bed-in-fill sizing criteria.*)

- A. Reductions in total trench bottom area shall not be granted.
- B. The maximum long-term acceptance rate (LTAR) shall be as specified in Table II:

Table II– LTAR for Infiltrator Chambers

Textural Group		LTAR (gpd/sq ft)	
		Natural Soil	Saprolite
Soil Group I	Sands	0.8 - 1.0*	0.6 - 0.8
	Loamy Sand		0.5 - 0.7
Soil Group II	Sandy Loam	0.6 - 0.8	0.4 - 0.6
	Loam		0.2 - 0.4
Soil Group III	Silt Loam	0.3 - 0.6	0.1 - 0.3
	Other Fine Loams		NA
Soil Group IV	Clays	0.1 - 0.4	NA

\*For sites where the LTAR exceeds 1.0 gpd/sq ft, use an LTAR of 1.0 gpd/sq ft.

- C. For sites with a usable soil depth of 26 inches or less, the LTAR shall be based on the most hydraulically limiting, naturally occurring soil horizon within 26 inches of the ground surface or to a depth of one foot below the trench bottom, whichever is shallower.
- D. For sites with a usable soil depth of 27 to 35 inches, the LTAR shall be based on the most hydraulically limiting, naturally occurring soil horizon within 27 inches of the ground surface or to a depth of one foot below the trench bottom, whichever is deeper.
- E. For sites with a usable soil depth of 36 inches or greater, LTAR shall be based on the most hydraulically limiting, naturally occurring soil horizon within three feet of the ground surface or to a depth of one foot below trench bottom, whichever is deeper.
- F. To determine the total trench bottom area (ft<sup>2</sup>) required the design daily sewage flow is divided by the applicable LTAR from Table II.
- G. The minimum area (without reduction) for a bed system in natural soil shall be determined as required in 15A NCAC 18A .1955(d) except that the chambers shall be placed in rows next to each other. The requirements of 15A NCAC 18A .1955(d) shall be met for the installation of a bed system.
- H. The available space requirements of 15A NCAC 18A .1945 shall be met, and this approved innovative system may be designated as the required replacement system.
- I. The sizing for the Quick4 Plus Standard LP end cap system shall be determined by the equivalency factors in Table III. Equivalency factors for the Arc 36 LP end cap system do not apply.

Table III – Equivalency Factors for Quick4 Plus Standard LP End Caps

Product	Excavated Trench Width (inches)	Approved Chamber Equivalency Factor Linear Foot Basis (sf/lf) <sup>1,2</sup>	Linear Feet of Chamber Credit per Pair when Placed at Ends of Chamber Line (lf) <sup>2,3</sup>	Linear Feet of Chamber Credit per Unit when Placed as a Mid Line Connection (lf) <sup>2,4</sup>
Quick4 Plus Standard LP All-in-One 8 Endcap	36	3.0	1	1

<sup>1</sup> Actual linear-foot equivalency rating of compatible chamber part.

<sup>2</sup> Only listed end cap model qualifies for bed bottom area credit.

<sup>3</sup> Must install two (2) end cap parts to get approved linear feet of chamber credit.

<sup>4</sup> Single end cap part installed within chamber line receives one (1) linear foot of chamber credit.

V. Special Site Evaluation (*Refer to Section VIII for Bed-in-fill special site evaluation criteria.*)

A special site evaluation may be required based on the proposed ground absorption system. Refer to 15A NCAC 18A .1970(p).

VI. Design Criteria (*Refer to Section VIII for Bed-in-fill design criteria.*)

Refer to Siting Criteria (Section III) and Installation (Section VII) for details.

VII. Installation (*Refer to Section VIII for Bed-in-fill installation criteria.*)

- A. The Infiltrator chamber system used in trenches shall be installed according to the minimum and maximum dimensions in Table IV.

Table IV – Infiltrator Installation Requirements (depths measured from finished grade)

Model	Maximum Trench Width (in)	Maximum Trench Depth (in)	Minimum Trench Spacing (ft on center)	Minimum Soil Cover (in)
Quick4 Plus Standard LP	36	36	9	6
Arc 36 LP	36	36	9	6

- B. The inlet to the Infiltrator chamber is in the uppermost portion of the specially molded inlet panel (end cap). For dosed systems receiving effluent from a pump or siphon, manufacturer’s installation procedures shall be followed, including provisions to dissipate inflow rate so as to minimize soil scouring and modifications that enable the presence and effectiveness of these provisions to be field-verified.
- C. The Quick4 Plus All-in-One 8 Endcap may be used as an accessory with the Quick4 Plus Standard LP chamber to decrease the turning radius of a chamber line, as a drop-box in serial distribution, and for mid-line distribution pipe entry and exit. The number of chambers in the chamber rows extending in opposite directions from the Quick4 Plus All-in-One 8 Endcap does not need to be equal.
- D. Backfill shall be placed between the trench and chamber sidewall to a minimum compacted (carefully walked in) height that is equal to the top of the chamber louvers. Chamber systems can be installed utilizing native soil backfill (Group I, II, III, or IV). Backfill shall be free of trash or debris. The area adjacent to louvers shall be free of large (8” or greater) clods that do not break apart during the walk-in procedure. The latest version of the manufacturer’s installation procedure shall be followed.
- E. Infiltrator chambers may be installed with a minimum compacted cover of six inches when the following conditions are met:
  1. The person installing or constructing the system is certified (documented) by Infiltrator Water Technologies, LLC or its authorized representative as specially trained and qualified to install Infiltrator chamber units with a minimum soil cover of 6 inches;
  2. The person installing the Quick4 Plus Standard LP or Arc 36 LP chamber system shall produce certification documentation upon request by the State or local health department.
  3. When installing the Quick4 Plus Standard LP or Arc 36 LP chambers the installer shall carefully follow the manufacturer’s installation guideline for shallow placement.
  4. In Group I soils, with only six inches of cover, tracked equipment shall be used during backfill as specified by the manufacturer’s installation procedures.

Vehicular traffic or construction equipment may traverse the chamber system only during system

installation. The load must be bridged over the trench so as not to disturb the chambers. The load may be bridged with a minimum of six inches of compacted soil cover over the chamber.

- G. Chamber trenches shall be constructed level in all directions with one-half-inch tolerance from side-to-side and maximum fall in a single trench bottom not exceeding one-fourth inch in 10 feet end-to-end for any continuous contoured segment. The trenches shall follow the contour of the ground surface elevation (uniform depth). Trenches shall be constructed with continuous interlocking chambers, without any dams, stepdowns or other water stops.
- H. Infiltrator chamber systems installed on a sloping site may use distribution devices or stepdowns as described in 15A NCAC 18A .1955(j) and (l) when necessary to change level line segments from upper to lower elevations. For the Quick4 Plus Standard LP chamber, the Quick4 Plus All-In-One 8 Endcap and Quick4 Plus Periscope pipe appurtenances may be used as a stepdown by making the cross-over out of one of its pre-marked 3.3- or 9.0-inch-high ports. From the end cap, effluent is conveyed through a solid pipe segment installed on a positive downhill grade down to the next lower trench in series. For the Quick4 Plus Standard LP chamber, the pre-marked port on the top of the Quick4 Plus All-In-One 8 Endcap may be used to receive effluent from an upper trench by a cross-over pipe. Infiltrator's MultiPort Invert Adapter or glued 4-inch diameter piping may also be used to change elevation between lines. Stepdown installation details shall be in accordance with the manufacturer's installation procedures.
- I. After installation of chambers in trench or bed configurations, a filter fabric barrier shall be installed to cover the chambers (except Quick4 and Arc models) if chambers are installed in uncompacted, fine or very fine uniform sand and at least one of the following conditions are present.
  - 1. Installations are left uncovered and subject to a major rain event.
  - 2. Systems are subject to not being sodded (or stabilized) in a timely manner after final cover-up has occurred.
  - 3. The drainfield is not protected from surface drainage.

The filter fabric shall be non-woven, weight 0.35 oz./s.y. to 1 oz./s.y., have apparent opening size (AOS) 20-30 U.S. Sieve (ASTM D-4571), or alternate with equal or better performance characteristics. An alternate fabric shall be approved in writing by the manufacturer on a case-by-case basis.
- J. The type and placement of soil cover shall be approved by the local health department.
- K. Manufacturer's installation instructions for the applicable Infiltrator chamber system used in septic tank systems shall be followed except as required herein or 15A NCAC 18A .1900 et.seq.
- L. All Infiltrator chamber systems shall be installed by a contractor or installer appropriately certified in writing by the manufacturer or its authorized representative.
- M. The Quick4 Plus Standard LP chamber system shall be installed only with the Infiltrator Quick4 Plus All-in-One 8 Endcap or Quick4 Plus 8 Endcap options at the ends of each chamber row. The ends of each Arc 36 LP chamber row shall be installed only with end cap system designed for that particular chamber model.
- N. For LPP applications, sleeving the pressurized pipe within a larger-diameter pipe is not

required or recommended, nor is it prohibited.

VIII. Bed Systems Installed in Fill (Bed-in-fill System)

- A. For chamber systems installed in a bed configuration in fill, all Section VIII requirements apply.
  - 1. The allowable chambers models are the Quick4 Plus Standard LP and Arc 36 LP.
  - 2. End caps shall be compatible with the chamber model to be used and sized using the Bed-in-fill equivalency factor in Table V.

Table V – Bed-in-fill Equivalency Factors for End Cap Systems

Product <sup>1</sup>	Engaged Length of Single End Cap at End of a Chamber Line (ft)	Approved Bed-in-fill System Equivalency Factor Linear Foot Basis <sup>2</sup> (sf/lf)
Quick4 Plus Standard LP All-in-One 8 Endcap	1.0	3.0

<sup>1</sup> End cap model used must be compatible with chamber product and only model listed qualifies for an equivalency factor.

<sup>2</sup> Linear-foot equivalency factor of compatible chamber part.

- B. Bed-in-fill Siting criteria
  - 1. A Bed-in-fill system may be installed on sites where at least the first 36 inches below the naturally occurring soil surface consist of sand or loamy sand (Soil Group I).
  - 2. A Bed-in-fill system shall only be used when the local health department determines that there is inadequate space to install a gravity flow trench-type system as required in 15A NCAC 18A .1957(b). The site shall have a uniform slope not exceeding 2 percent.
  - 3. No soil wetness condition shall exist within the first 12 inches below the naturally occurring soil surface. Artificial drainage shall not be used to meet this requirement.
  - 4. The horizontal setbacks of 15A NCAC 18A .1950 shall apply as measured from a point of 5 feet from the nearest edge of the bed sidewall.
  - 5. Refer to Table I for chamber dimensions.
  - 6. The required vertical separation shall be measured from the bed bottom.
- C. Bed-in-fill System sizing
  - 1. The maximum daily sewage flow shall not exceed 480 gpd.
  - 2. The LTAR shall not exceed 1.0 gpd/sq ft. For sites where the LTAR exceeds 1.0 gpd/sq ft, use 1.0 gpd/sq ft.
  - 3. The minimum required bed bottom area (sq ft) required shall be determined based upon the design daily sewage flow divided by the applicable LTAR. The resulting area value shall be increased by 50% in accordance with 15A NCAC 18A .1955(d).
  - 4. The minimum required bed bottom area shall contain a combination of chambers and end caps (placed on 3-foot centers) and the distribution device and piping such that their combined outside perimeter area is equal to or greater than the minimum bed bottom area required under Section VIII(C)(3). Chambers and end caps shall cover the bed bottom as described in Section VIII(E). The maximum spacing between opposing end caps adjacent to the distribution device shall be 6 feet or in accordance with the manufacturer’s installation instructions. End cap bed bottom sizing shall be determined per the bed equivalency factors in Table V.

Example:

Three bedroom residence with a design daily sewage flow of 360 gallons on a sand (Group I) soil having a LTAR equal to 0.90 gpd/sq ft

Total minimum required Bed-in-fill system bed bottom area is:

$$360 \text{ gpd}/0.90 \text{ gpd/sq ft LTAR} \times 1.5 \text{ bed upsizing factor} = 600 \text{ sq ft}$$

For a center-fed Quick4 Plus Standard LP chamber with Quick4 Plus All-in-One 8 Endcap bed system constructed using five chambers and two end caps for each of four laterals on each side of the bed, the area provided to satisfy the minimum required bed bottom area is calculated as follows:

$$\begin{aligned} \text{Chamber area} &= 2 \text{ sides of bed} \times 4 \text{ laterals} \times 5 \text{ chambers} \times 3 \text{ sq ft/ft} \times 4 \text{ ft/chamber} \\ &= 480 \text{ sq ft} \end{aligned}$$

$$\begin{aligned} \text{End cap area} &= 2 \text{ sides of bed} \times 4 \text{ laterals} \times 3 \text{ sq ft/lf of end cap} \times 1.0 \text{ ft long} \times 2 \\ &\text{end caps} = 48 \text{ sq ft} \end{aligned}$$

$$\text{Distribution device area} = 4 \text{ laterals} \times 3 \text{ ft wide/lateral} \times 6 \text{ ft long} = 72 \text{ sq ft}$$

$$\text{Total chamber, end cap, and distribution device area provided} = 600 \text{ sq ft}$$

This example results in a bed with a footprint of 12 ft x 50 ft minus any buffer and toe slope, and requires 40 chambers, 16 end caps, and a distribution box with at least 4 outlets on each side. Six feet of separation is allowed in the center of the bed for the distribution box and piping.

5. No industrial process wastewater shall discharge to a Bed-in-fill system.
6. The available space requirements of 15A NCAC 18A .1945 shall be met, and an approved innovative system may be designated as the required replacement system.

D. Bed-in-fill Special Site Evaluation

A special site evaluation may be required based on the proposed ground absorption system. Refer to 15A NCAC 18A .1970(p).

E. Bed-in-fill Installation

1. Fill material shall be sand or loamy sand (Group I soil), containing not more than 10 percent debris, and shall be approved prior to placement by the local health department.
2. Prior to fill placement, the site shall be void of a vegetative cover, organic litter, and debris.
3. Fill shall be placed in 6-inch lifts, with each fill layer mixed with the underlying layer of natural soil or sandy fill material.
4. The sideslope of the fill shall not exceed a rise to run ratio of 1:3.
5. The system shall be constructed as an elongated berm with the long axis parallel to the ground elevation contours of the slope.
6. The bottom of the bed shall be excavated level ( $\pm 1/4$ " ) in all directions.
7. Chamber rows shall be placed 3 feet on-center.
8. The edge of the bed shall be located 1 1/2 feet from the centerline of the outermost chamber row.



9. For each chamber row, the outer end caps shall extend at least to the end of the required bed footprint.
10. Allowable effluent distribution includes gravity flow, pressure-dosed gravity or LPP.
11. For gravity and pressure-dosed gravity distribution, the following requirements apply:
  - a. The bed bottom shall have a minimum separation of 24 inches from any soil wetness condition.
  - b. The bed bottom shall have a minimum separation of 30 inches from any soil horizon unsuitable as to soil structure, clay mineralogy, organic soil, restrictive horizon, rock, or saprolite.
  - c. The distribution device shall be placed in the center of the bed and is eligible for sizing credit if underlain by Group I fill material or 12 inches or less of gravel.
  - d. The bed bottom area shall include the area bounded by the edges of the outmost chamber rows and end caps located at the distal ends of the chamber rows. The bed bottom area includes the area between chamber rows where the distribution device and piping are located.
  - e. Each line of chambers shall be connected to a distribution box or pressure manifold.
  - f. A maximum of 16 chamber lines are allowed, with no more than 8 on each side of the distribution device.
  - g. The bed width shall be constructed in a multiple of 3 feet up to a maximum of 24 feet.
  - h. Group I fill material shall be placed to the top of the chambers.
  - i. The final 6 inches of soil cover placed over the bed and side slopes shall be classified as a Group II or III soil.
12. For LPP distribution, the following requirements apply:
  - a. The bed bottom shall have a minimum separation of 18 inches from any soil wetness condition.
  - b. The bed width shall be constructed in a multiple of 3 feet up to a maximum of 24 feet.
  - c. Laterals shall be installed in each chamber line per the manufacturer's installation instructions using uniform spacing between laterals. Sleeving of the lateral in a larger-diameter pipe is not required or recommended, nor is it prohibited.
  - d. The bed bottom area shall include the area bounded by the edges of the outmost chamber rows and end caps located at the ends of the chamber rows.
  - e. Except as described herein, the provisions of 15A NCAC 18A .1957(a) shall apply.
  - f. Group I fill material shall be placed to the top of the chambers.
  - g. The final 4 inches of soil cover over the bed and side slopes shall be classified as Group II or III soil.
13. For approved Residential Wastewater Treatment Systems (RWTS) or approved innovative advanced pretreatment systems, the following requirements apply:
  - a. The RWTS shall be approved in accordance with the provisions of 15A NCAC 18A .1957(c).
  - b. The bed bottom shall have a minimum separation of 18 inches from any soil wetness condition.
  - c. The bed system may utilize a gravity distribution as described in Section VIII(E)(11).
  - d. If LPP distribution is utilized, the requirements of Section VIII(E)(12) shall apply except that the bed bottom shall have a minimum separation of 12 inches from

any soil wetness condition.

14. The latest version of the manufacturer's installation procedure shall be followed.
15. The person installing or constructing the system shall be certified (documented) by Infiltrator Water Technologies, LLC or its authorized representative as specially trained and qualified to install chamber units.
16. The person installing the chamber system shall produce certification documentation upon the request by the State or local health department.
17. The inlet to the Infiltrator chamber is in the uppermost portion of the end cap. For dosed systems receiving effluent from a pump or siphon, manufacturer's installation procedures shall be followed, including provisions to dissipate inflow rate so as to minimize soil scouring and modifications that enable the presence and effectiveness of these provisions to be field-verified.
18. After installation of chambers, a filter fabric barrier shall be installed to cover the chambers if chambers are installed in uncompacted, fine or very fine uniform sand and at least one of the following conditions are present.
  - a. Installations are left uncovered and subject to a major rain event.
  - b. Systems are subject to not being sodded (or stabilized) in a timely manner after final cover-up has occurred.
  - c. The drainfield is not protected from surface drainage.The filter fabric shall be non-woven, weight 0.35 oz./s.y. to 1 oz./s.y., have apparent opening size (AOS) 20-30 U.S. Sieve (ASTM D-4571), or alternate with equal or better performance characteristics. An alternate fabric shall be approved in writing by the manufacturer on a case-by-case basis.
19. Manufacturer's installation instructions for the applicable Infiltrator chamber system used in septic tank systems shall be followed except as required herein or 15A NCAC 18A .1900 et. seq.
20. All Infiltrator chamber systems shall be installed by a contractor or installer appropriately certified in writing by the manufacturer or its authorized representative.
21. The Quick4 Plus Standard LP chamber system shall be installed only with the Infiltrator Quick4 Plus All-in-One 8 Endcap or Quick4 Plus 8 Endcap options at the ends of each chamber row. The ends of each Arc 36 LP chamber row shall be installed only with end cap system designed for that particular chamber model.

#### E. Bed-in-fill Permitting

Any improvement permit and operation permit issued for a Bed-in-fill system shall include the specific condition required in 15A NCAC 18A .1957(b)(1)(L)(iv).

#### IX. Operation, Maintenance and Monitoring Requirements

The Infiltrator chamber system shall have a minimum classification as a Type IIIg system (other non-conventional trench systems) in accordance with Table V(a) of 15A NCAC 18A .1961(b).

#### X. Permitting

Prior to the installation of the approved Infiltrator chamber trench, bed, or Bed-in-fill system at a site, the owner or owner's agent shall fill out an application at the local health department for the proposed use of this system. The local health department shall issue an improvement permit and construction authorization or amend a previously issued construction authorization allowing the use of an Infiltrator chamber system

upon a finding that the provisions of the applicable Rules and conditions of this approval are met. Use of the proposed innovative system and any conditions shall be described in the construction authorization or amended construction authorization, as applicable. Such information shall also be described on the operation permit to be issued upon the acceptable completion of the system installation.

XI. Repair of Systems

The provisions of 15A NCAC 18A .1961(l) shall apply to the use of Infiltrator chamber systems for repairs to existing malfunctioning septic tank systems.

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_