MID-MICHIGAN DISTRICT HEALTH DEPARTMENT

An Accredited Local Public Health Department **www.mmdhd.org**

CLINTON
Branch Office
1307 E. Townsend Rd.
St. Johns, MI 48879-9036
(989) 224-2195

GRATIOT
Branch Office
151 Commerce Drive
Ithaca, MI 48847-1627
(989) 875-3681

MONTCALM
Branch Office
615 N. State St., Ste. 1
Stanton, MI 48888-9702
(989) 831-5237

ADMINISTRATIVE OFFICES
615 N. State St. Ste. 2
Stanton, MI 48888-9702
(989) 831-5237

MARK W. (MARCUS) CHEATHAM
Health Officer

JENNIFER MORSE, MD, MPH, FAAFP
Medical Director

BOARD OF HEALTH
PROGRAM COMMITTEE MEETING
At
Mid-Michigan District Health Department (MMDHD)
Gratiot County Branch Office
Ithaca, Michigan

Wednesday, November 7, 2018
8:30 a.m.

AGENDA

We take action to protect, maintain, and improve the health of our community.

MEMBERS: Sam Smith; Tom Lindeman; Bruce DeLong, Chairperson

STAFF: Mark W. (Marcus) Cheatham, Ph.D., Health Officer; Liz Braddock, Director of Environmental Health

GUESTS: Representatives from Infiltrator Water Technologies

A. Infiltrator Water Technologies Request for Approval of EZflow Gravelless Technology in Beds – **Included.**

B.

NOTES:

October 3, 2018

Lonnie Smith
Mid-Michigan Health District
1307 E. Townsend Rd
St. Johns, MI 48879

Re: Request for Review and Approval of Bed Configuration with No Variance
Infiltrator EZflow Gravelless Drainfield Technology

Dear Mr. Smith,

As discussed in our meeting September 18, 2018, Infiltrator Water Technologies (Infiltrator) requests approval by the Mid-Michigan Health District of its EZflow bundled expanded polystyrene (EPS) gravelless drainfield product in absorption beds and mounds at 1:1 sizing with stone and pipe systems with no variance. EZflow is currently approved for use in the Mid-Michigan Health District in trench systems with no variance requirement. Absorption bed and mound systems currently require a variance. Infiltrator provides the following information for your review in support of this request for expanded allowable uses.

Request for BOH Review

Infiltrator requests that this approval request be considered by the Mid-Michigan District Health Department Board of Health during its November 28, 2018 meeting. An Infiltrator representative will be present at the meeting to provide a presentation, if desired, and answer questions that Board of Health members may have about this approval request.

EZflow History, Regulation, and Use

Infiltrator's historical research shows that gravelless technologies have been used for over 25 years. The use of bundled EPS technology began around 25 years ago in North Carolina, where lightweight synthetic aggregate was used to build drainfields on the mountainous slopes in the western area of the state. It offers substantially more open bottom area than conventional stone and pipe and is free of fine stone dust, eliminating the formation of a stone dust clogging layer at the trench bottom.

In North America, EZflow products are approved in 43 states and 4 Canadian Provinces (see Figure 1). Figure 2 provides system installation data for EZflow and associated sizing factors for select states, with over 336,000 systems installed in the nine years that Infiltrator has owned the EZflow business. Figure 3 shows the sizing factors in use by state regulatory agencies for gravelless systems. The average sizing factor in Figure 3 is 0.69, meaning that for a 1,000-square-foot (ft^2) gravel trench system, 690 ft^2 of gravelless trench would be required. Infiltrator's request is at a sizing factor of 1.0, meaning there would be no reduction in footprint for an EZflow bed or mound as compared to the minimum required size of a stone and pipe system. Approximately

10% of the septic systems in North America are constructed using EZflow with the vast majority employing the sizing factors shown in Figure 3.

The Mid-Michigan District Health Department Environmental Health Regulations (Code) allows multiple types of aggregate, including polystyrene. EZflow consists of polystyrene synthetic aggregate encased in a high-strength polyethylene net. Please see Attachment 1 for a drawing of the EZflow 1203H-GEO product and Attachment 2 for EZflow system installation instructions.

Gravelless Technology Background

The information provided below addresses science supporting gravelless technology, field studies supporting their use, regulatory status, and experience with gravelless technology throughout the nation.

In recognition of the widespread use of bundled EPS gravelless technology across the United States (second most popular gravelless technology behind chambers), the 2015 Uniform Plumbing Code (UPC) was expanded to include bundled EPS systems (Appendix H 3.1(5)). While bundled EPS gravelless technology is allowed at a 0.7 multiplier in the UPC (30% reduced absorption area), Infiltrator is requesting approval to use EZflow 1203H-GEO at a 1:1 ratio with conventional systems in the Mid-Michigan Health District in absorption beds and mounds with no variance. Infiltrator's EZflow gravelless technology maintains IAPMO certification (see Attachment 3 for certification).

EZflow Storage Volume

When compared to a 3-ft-wide stone and pipe trench, the 3-ft-wide EZflow 1203H-GEO unit provides more storage volume on a per-linear-foot basis. The EZflow 1203H-GEO system has a storage volume of 11.3 gallons per linear foot, compared to equivalent-width stone and pipe with a storage volume of 7.8 gallons per linear foot. For a 1,000 ft^2 drainfield, this equates to a storage volume of approximately 3,760 gallons for an EZflow system and approximately 2,587 gallons for a stone and pipe system.

Third Party Structural Testing

Third party structural testing was performed on EZflow 1203H-GEO to verify its load rating conformance per the IAPMO IGC 276-2010 for a 16,000-pound (lb.) axle load (equivalent to an H-10 load, as defined by the American Association of State Highway and Transportation Officials (AASTHTO) under 12 inches of compacted soil cover). The test demonstrated that EZflow 1203H-GEO successfully withstood the AASHTO H-10 loading. Please see Attachment 4 for the EZflow 1203H-GEO third-party structural testing report.

Regulatory Status

EZflow is approved in 43 states, three Canadian provinces and 26 Michigan counties. The areas in Michigan allowing the use of EZflow include the following county and district health departments:

- Allegan County
- Barry-Eaton District
- Bay County
- Berrien County
- Central Michigan District
- District 2
- District 10
- Kent County
- Midland County
- Muskegon County
- Oakland County
- Ottawa County
- Van Buren-Cass District
- Western UP District

Please see Attachment 5 for an EZflow compliance approval issued by the Michigan DEQ in 2002. Written approvals are available upon request from Infiltrator.

Request for Approval

Over the past twenty-five years, more than 500,000 EZflow drainfields have been installed nationwide. Using EZflow at 1:1 sizing with conventional systems is extremely conservative and carries a 25-year precedence of success. Infiltrator respectfully requests Mid-Michigan Health District approval of the EZflow 1203H-GEO product in absorption beds and mounds at 1:1 sizing with stone and pipe systems with no variance requirement.

Thank you for your consideration of this request. Please contact me at (860) 577-7198 if any further information is required.

Sincerely,

David Lentz

David Lentz, P.E.
Regulatory Director
Science & Government Affairs
Licensed in CT, IL, and NY

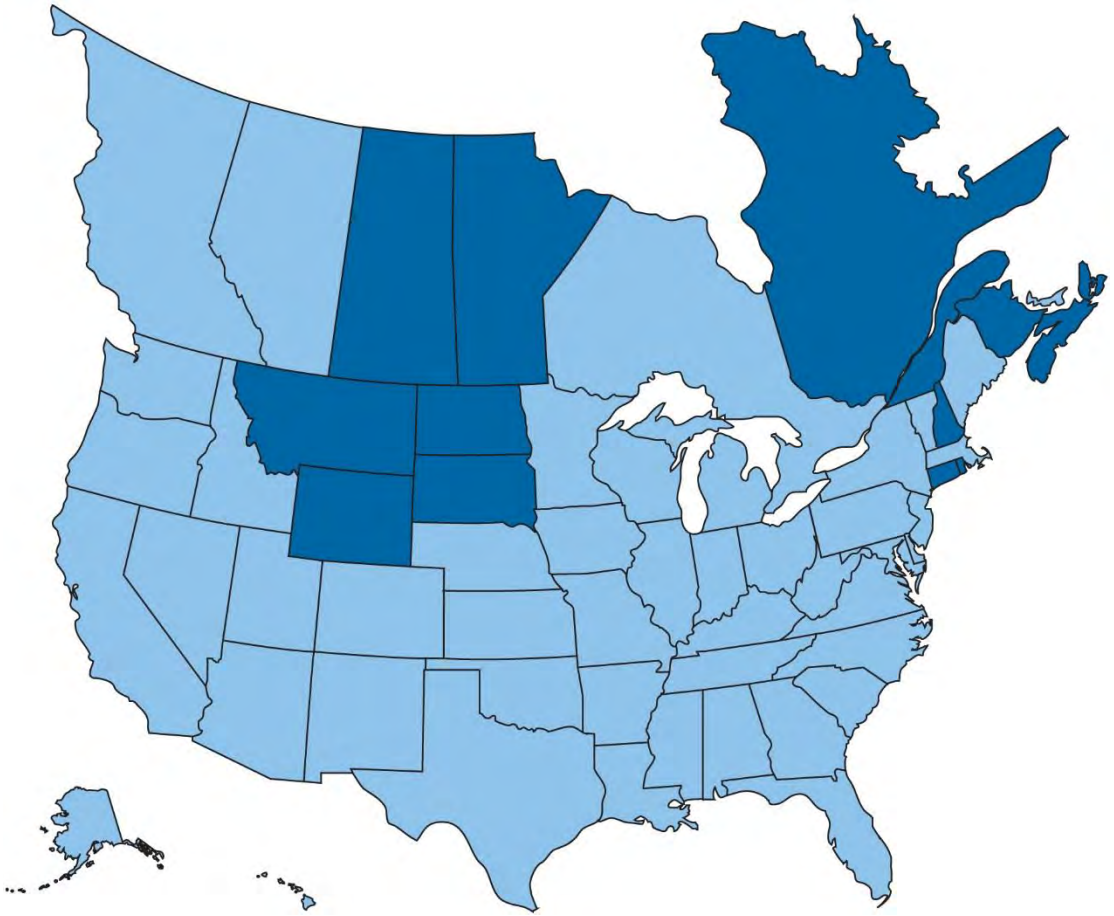
cc: Matt Johnson, Infiltrator Water Technologies
Todd Winkler, Infiltrator Water Technologies
Jonathan Kaiser, Infiltrator Water Technologies

Figure 1 - EZflow by Infiltrator Regulatory Acceptance Summary

INFILTRATOR®
water technologies

EZflow by Infiltrator is accepted for use in 43 states and 4 provinces. Infiltrator continues to expand the EZflow market on a jurisdiction-by-jurisdiction basis. Where acceptance has yet to be achieved, the current status is provided below:

- Canada – No approval requests are under review in provinces without current approvals
- CT – Under CT DEEP review
- MT – Experimental program in progress
- ND – No approval requested to date
- NH – Under NH DES review
- RI - No approval requested to date
- SD - No approval requested to date
- WY – No approval requested to date

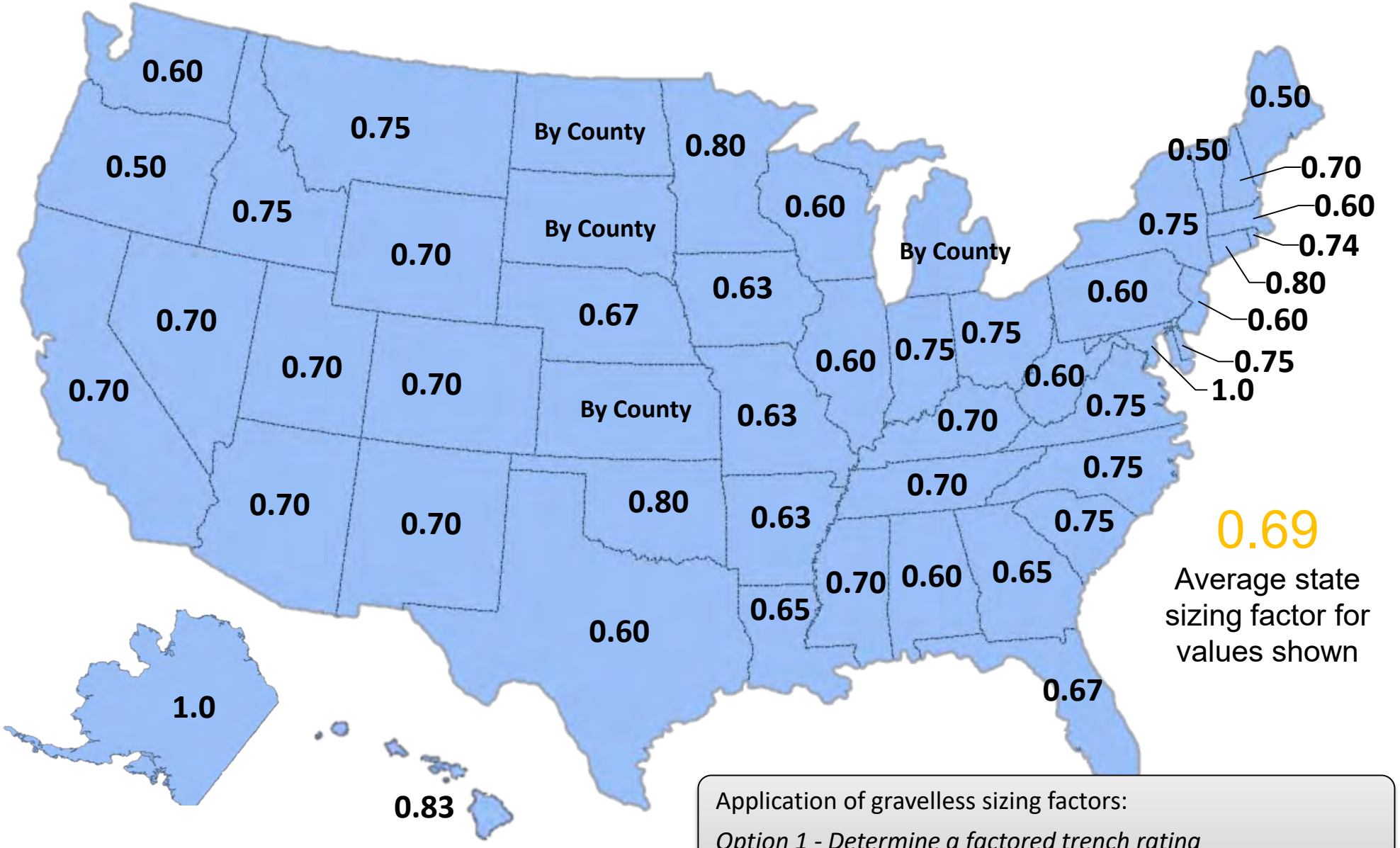


EZflow National Certifications:

- International Association of Plumbing and Mechanical Officials (IAPMO) (bundled expanded polystyrene is allowed under Appendix H – Private Sewage Disposal Systems of the 2015 Uniform Plumbing Code)
- International Codes Council

3/3/16

Figure 2 - United States Gravelless Sizing Factors



0.69

Average state sizing factor for values shown

Key:

0.70 = State-approved gravelless sizing factor

Application of gravelless sizing factors:

Option 1 - Determine a factored trench rating

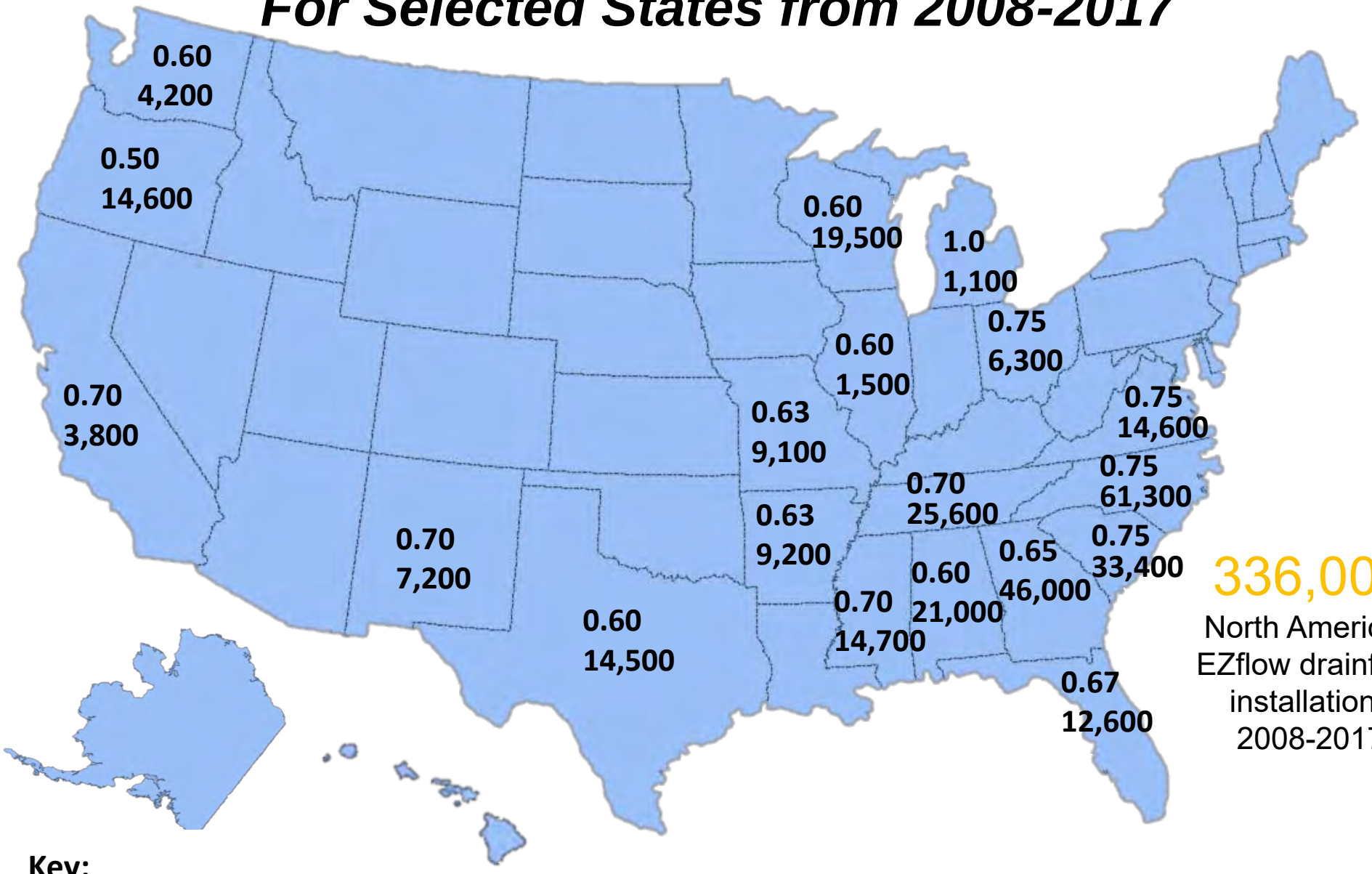
- 3.0 sf/lf ÷ 0.70 = 4.29 sf/lf gravelless trench rating

Option 2 - Determine a factored minimum square footage

- 1,000 ft^2 of gravel x 0.70 = 700 ft^2 of gravelless system

Figure 3 - EZflow Sizing Factors and Installations

For Selected States from 2008-2017



336,000
North American EZflow drainfield installations 2008-2017

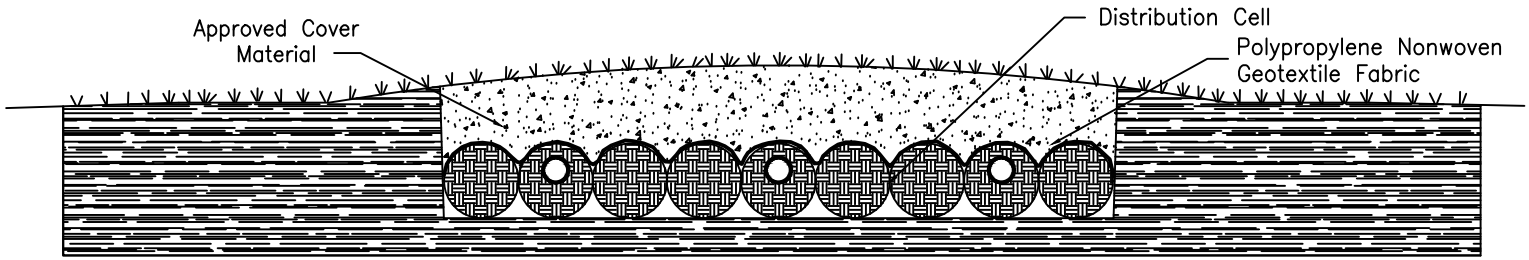
Key:

0.60 = State-approved EZflow sizing factor

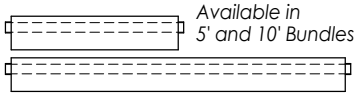
46,000 = Approximate EZflow drainfield installations 2008-2017

Attachment 1

EZflow 1203H-GEO Illustration



System Notes:
1- EZflow-"GEO" comes with fabric installed within the bundle
2- Depth, length and width of system per design
3- System can be pressurized if required



INFILTRATOR® water technologies

INFILTRATOR WATER TECHNOLOGIES
4 Business Park Rd. Old Saybrook, CT 06475
(800) 221-4436

EZflow 1203
BED DETAIL

Drawn by: E.Alv.		Date: 10/03/2018
Scale: NOT TO SCALE	Checked by:	Sheet: 1 OF 1

Attachment 2

EZflow System Installation Instructions

Installation Instructions for EZ*flow* Systems in Michigan

Michigan local health departments must approve the use of proprietary products in accordance with the requirements of their individual sanitary codes. However, Michigan Department of Environmental Quality (MDEQ) has reviewed EZ*flow* for compliance with *Criteria for Subsurface Sewage Disposal (04/94)*, and has agreed that EZ*flow* products can be sized on a 1:1 basis with aggregate trench or absorption bed systems with the following comments for the specific product configurations:

- **1201P**: This configuration is a single 12-inch diameter product. MI DEQ does not object to it's application at an equivalent one square foot of bottom area per lineal foot.
- **1202V**: This configuration consists of two 12 inch diameter units stacked vertically, intended to compare with a deep trench system as allowed for under Section C 10 Criteria. MI DEQ does not object to it's application at 3 square feet per lineal foot for deep trench installation.
- **1203H**: This configuration consists of three 12" diameter units installed side by side horizontally. MI DEQ does not object to it's application equivalent to a 3 foot wide gravel trench on a lineal foot to lineal foot basis. This configuraion can also be replicated in a bed configuration with each lineal foot being equivalent to three square feet of required bottom area.

A single pipe bundle contains a four inch perforated pipe surrounded by EPS aggregate and is held together with polyethylene netting. A single aggregate bundle contains aggregate only and is held together with polyethylene netting.

Materials and Equipment needed

- EZ*flow* Bundles
- EZ*flow* Barrier Paper
- EZ*flow* Internal Pipe Couplers
- Pipe for Header and Inlet
- Backhoe/Excavator

Installation Instructions

The instructions for installation of EZ*flow* products are given below. All sites must meet the *Site & Soil Conditions* & *Location & Isolation* distances as noted in the Criteria or County Code as applicable.

1. After the local health department has determined sizing, configuration, and layout for the EZ*flow* systems, stake or mark with paint the location of trenches and lines. Be careful to set correct tank, invert pipe, header line or distribution box and trench bottom elevations before installation of pipe bundles.

2. Construction should not be undertaken when soils are saturated from heavy rains or snow melt, or when soils are frozen, unless specific approval is granted by the reviewing agency.

3. Excavate trench to approved depth. Smearing of sidewall and bottom surfaces during construction is to be avoided. Smeared soil surface should be raked to remove glazing.

4. Place EZ*flow* bundle(s) in the EZ*flow* configuration approved by system design permit specified for the particular site. The top or center-most bundles containing pipe are joined end to end with an internal pipe coupler. Any additional aggregate only bundles that may be required, should be butted against the other aggregate-only bundles and do not require any type of connection.

5. Remove plastic EZ*flow* stretch wrap prior to placing bundles in the trench(es). Remove any plastic wrap in the trench before system is covered.

6. Soil within 12" of the cylinders, in trenches, shall be loosely placed and not compacted.

7. The bottom of each absorption system trench should be laid as close to level as possible but not to exceed a grade of two inches fall in 100 feet per Criteria or County Code as applicable.

8 . EZ*flow* EPS bundles are flexible and can fit in curved trenches as may be necessary to avoid trees, boulders, or other obstacles.

9. Trench Systems shall have a minimum of 4' of undisturbed earth between trench walls. For Bed Systems, a maximum of 6' on center may be provided between laterals.

10. The EZ*flow* Drainfield Systems should be installed with the contour of the ground surface elevation (uniform depth), with all continuous adjoining 10-foot cylindrical bundles placed end to end, with central bundle distribution pipe interconnected, without any dams, or other water stops.

11. All EPS bundles should be covered across the top only with untreated building paper or other approved porous material.

12. Check with local health department, prior to covering, for required inspections.

13. A minimum of 12" and a maximum of 24" of suitable earth cover shall be placed over the EZ*flow* EPS bundles.

14. The trench top shall be graded such that water will not pond and compacted to the maximum degree possible with a backhoe bucket. Backfill should be seeded or sodded immediately after completion to reduce erosion.

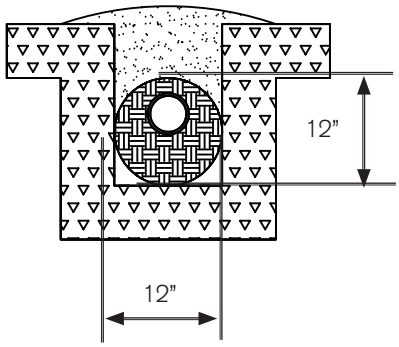
Repeat steps 1 through 14 as needed.

Reserve Area

Sufficient suitable area shall be available and reserved to provide for a minimum of one replacement system without utilization or disruption of the initial installation.

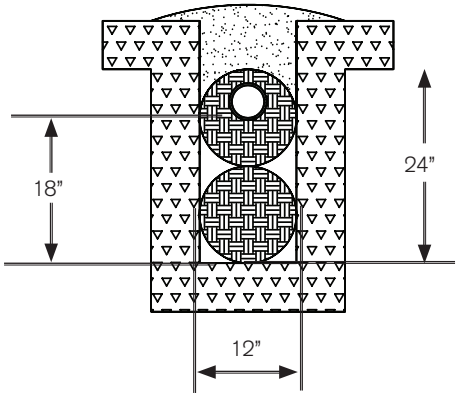
Approved EZ*flow* Products

EZ*flow* 1202P



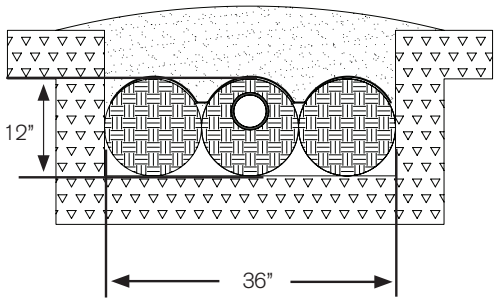
SIZING EXAMPLE: - 300 sq ft. required
300 sf X 1.0 = 300 lf required

EZ*flow* 1202V Deep Trench



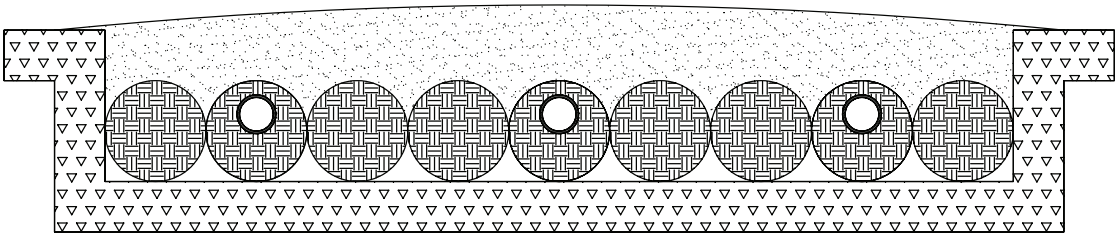
SIZING EXAMPLE: - 300 sq ft. required
300 sf X 0.6 = 180 lf required

EZ*flow* 1203H



SIZING EXAMPLE: - 300 sf required
300 sf X 0.333 = 100 lf required

EZ*flow* 1203H BED



Repeat 1203H configurations until required bed size is met.

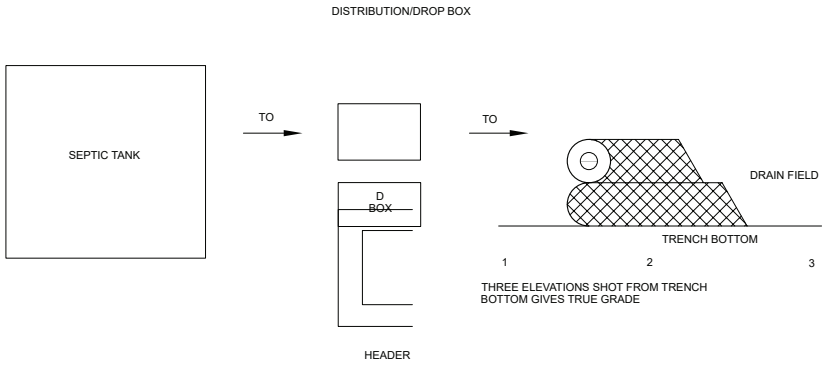
An inspection by the county or district health department may be required after the sewage disposal system has been completed but before any portion of the system has been covered or placed in operation. It is the responsibility of the contractor, homeowner, or installer to notify the local health jurisdiction that the sewage disposal system is ready for inspection.

Septic tank, header pipe or D box, trench bottom, grade, depth, and cover shall be in accordance with state Criteria and county sanitary code unless otherwise specified.

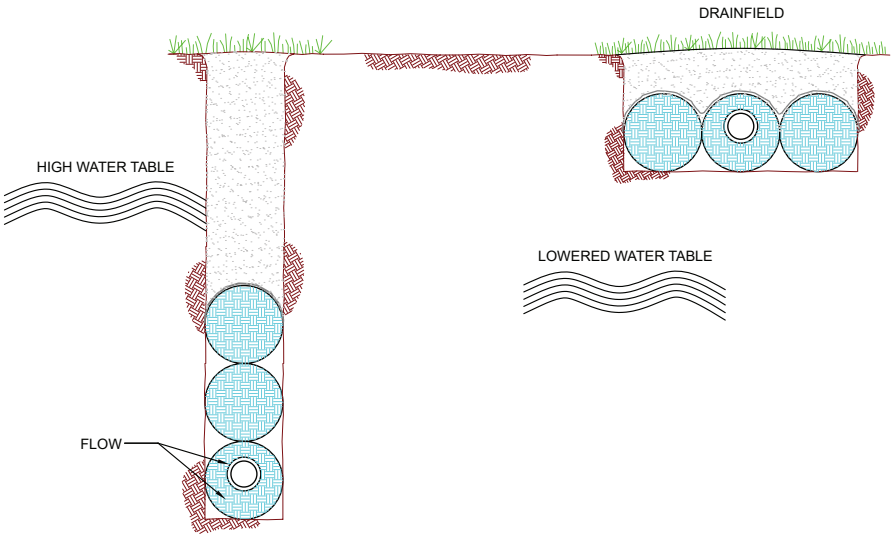
Barrier over systems, if required, shall be of untreated building paper or manufacturer approved geotextile.

Sizing

The Absorption area (SF) necessary for a given site shall be sized based on maximum daily sewage flow (GPD) and the Permeability for the site. The total length of the trench required shall be determined by dividing the total absorption area (SF) required by the SF/FT of the product configuration being installed.



Perimeter Curtain Drain



EZ*flow* CURTAIN DRAIN
1001P OR 12001P

CROSS SECTION OF AN**EZ***flow* PERIMETER CURTAIN DRAIN (FOR LOWERING HIGH WATER TABLE UNDER A SEPTIC SYSTEM DRAIN FIELD).

INFILTRATOR®
systems inc.

6 Business Park Road • Old Saybrook, CT 06475 • 800.689.7759

Attachment 3

IAPMO Certification

IAPMO RESEARCH AND TESTING, INC.

5001 East Philadelphia Street, Ontario, California 91761-2816 – USA • 909-472-4100 • 909-472-4244 • www.iapmort.org

ISO/IEC 17065
Product Certification Body
#0202

SCC Accredited
CB-P/S
OCPS
Accrédité CCN

CERTIFICATE OF LISTING

IAPMO Research and Testing, Inc. is a product certification body which tests and inspects samples taken from the supplier's stock or from the market or a combination of both to verify compliance to the requirements of applicable codes and standards. This activity is coupled with periodic surveillance of the supplier's factory and warehouses as well as the assessment of the supplier's Quality Assurance System. This listing is subject to the conditions set forth in the characteristics below and is not to be construed as any recommendation, assurance or guarantee by IAPMO Research and Testing, Inc. of the product acceptance by Authorities Having Jurisdiction.

The most updated information on this Certificate of Listing is available online at pld.iapmo.org

Effective Date: September 2018 Void After: September 2019

Product: Bundled Expanded Polystyrene Synthetic Aggregate Units File No. C-7095

Issued To: EZFLOW, L.P.
4 Business Park Dr
P.o. Box 768
Old Saybrook, CT 06475

Identification: Packaging shall be indelibly marked with manufacturer's name or trademark, unit load rating code (H-10 or H-20) and the C/IAPMO® triangular certification mark.

Characteristics: Bundled EPS synthetic aggregate units may contain a pipe for use as a septic leach disposal system, perimeter drain, foundation drain or French drain. To be installed in accordance with manufacturer's installation instructions.

Products listed on this certificate have been tested by an IAPMO R&T recognized laboratory. This recognition has been granted based upon the laboratory's compliance to the applicable requirements of ISO/IEC 17025.

Products are in compliance with the following standard(s):
IAPMO IGC 276-2011

Chairman, Product Certification Committee

CEO, The IAPMO Group

This listing period is based upon the last date of the month indicated on the Effective Date and Void After Date shown above. Any change in material, manufacturing process, marking or design without having first obtained the approval of the Product Certification Committee, or any evidence of non-compliance with applicable codes and standards or of inferior workmanship, may be deemed sufficient cause for revocation of this listing. Production of or reference to this form for advertising purposes may be made only by specific written permission of IAPMO Research and Testing, Inc. Any alteration of this certificate could be grounds for revocation of the listing. This document shall be reproduced in its entirety.

IAPMO RESEARCH AND TESTING, INC.
CERTIFICATE OF LISTING

Void After: September 2019

Product: Bundled Expanded Polystyrene Synthetic Aggregate Units File No. C-7095

Issued To: EZFLOW, L.P.

MODELS:

Note: The following models are intended to be used under non-traffic areas only.

Model No.	Description
0700	7″ diameter bundle
0800	8″ diameter bundle
0900	9" diameter bundle
1000	10″ diameter bundle
1200	12″ diameter bundle
1300	13" diameter bundle
1400	14" diameter bundle
1500	15″ diameter bundle
1800	18″ diameter bundle

Attachment 4

EZflow 1203H-GEO Structural Testing Report

MID SOUTH
ENGINEERING CONSULTANTS LLC
11284 Gulf Stream Rd., Arlington, TN. 38002
Office: 901-867-2085 Fax: 901-867-0350

August 5, 2010

Mr. Ben Berteau
Project Manager
Infiltrator Systems, Inc.

RE: Test Summary of AASHTO H-10 Loading on EZflow 1203H-GEO

Dear Mr. Berteau:
This letter summarizes my review and conclusion regarding the field tests that were performed on June 29, 2010. Test results and procedures are contained in the attached report, "Structural Testing AASHTO H-10 Load at 12 Inches of Soil Cover EZflow 1203H-GEO".

The purpose of the testing was to document the performance of the EZflow product's structural ability to withstand a wheel load in accordance with the referenced AASHTO standard.

I was present at the field test that was performed on June 29,2010 at the vacant field owned by Rapac, LP in Oakland, TN and observed the EZ Flow product's installation in a trench beneath 12" of compacted soil. A Chevrolet C70 dump truck was then loaded, weighed and allowed to roll perpendicular across the trench six times. The first two passes were made with a rear axle load of 10,900 lbs, the next two passes were using a rear axle load of 13,700 lbs and the final two passes were using a rear axle load of 16,600 lbs. The EZ Flow product was then re-excavated and examined. There were no signs of failure observed in the aggregate product or in the internal pipe and only very minimal permanent compression of the aggregate.

Based on the results of these tests, it is my conclusion that the EZflow 1203H-GEO successfully withstood the AASHTO H-10 (16,000 lb) loading.

Thanks for your help please call me if you have any questions or need any other information.

Sincerely,

Bob Conrad, P.E.
Consulting Engineer

ROBERT M. CONRAD
REGISTERED ENGINEER
AGRICULTURE
COMMERCIAL
No. 0010097
STATE OF TENNESSEE

Structural Testing
AASHTO H-10 Load at 12 Inches of Soil Cover
EZflow 1203H-GEO

Test Date: June 29, 2010

Test Conditions: Dry, Overcast, Temp 88º F

Test Site: Vacant field owned by Rapac, LP
Oakland, TN

Personnel: **Robert Conrad, P.E., Midsouth Engineering Consultants, LLC**
Chester Pulliam, Pulliam Trucking, LLC
Jeff Blackford, CRT Laboratories, Inc.
Ben Berteau, Infiltrator Systems Inc.

Test Objective:

Verify the load rating conformance of the EZflow 1203H-GEO per the International Association of Plumbing and Mechanical Officials (IAPMO) Guidance Criteria (IGC) 276-2010 for a 16,000-pound (lb.) axle load [equivalent to an H-10 load, as defined by the American Association of State Highway and Transportation Officials (AASHTO)] under 12 inches of compacted soil cover. The objective is to load installed EZflow without collapsing, fracturing, or breaking.

Test Procedure:

1. Excavate trenches to length of 24 feet to allow installation of two ten-foot sections of 1203H-GEO to be installed end-to-end with placement of 12 inches of soil cover.
2. Install units in trench per manufacturer's installation instructions.
3. Connect units with 4-inch EZflow internal pipe coupler.
4. Backfill units with soil using backhoe bucket. Mound soil to allow for settling.
5. Compact soil cover.
6. Finish grade per manufacturer's instructions.
7. Apply loads with dump truck of progressively increasing weight, as shown in Table 1.

Test Results

For the loading sequence presented in Table 1, field observations were photographed and are presented in Figures 4 through 7.

Vehicle	Traverse Sequence	Rear Axle Weight (lbs)
Chevrolet C70 Dump Truck w/ load	1st and 2nd Pass	10,900
Chevrolet C70 Dump Truck w/ load	3rd and 4th Pass	13,700
Chevrolet C70 Dump Truck w/ load	5th and 6th Pass	16,600

Table 1: Load Sequence

Conclusions:

Subsequent to the incremental loading of the trench as described in Table 1, the units were excavated for visual inspection. The EZflow 1203H-GEO units successfully passed the AASHTO H-10 load rating at the mid-point along the unit length and at the connection point to the adjacent unit without collapsing, fracturing, or breaking. The test results demonstrate conformance of EZflow 1203H-GEO with Section 6.1 of IAPMO IGC 276-2010.

Figure 1: Test Units Label

Figure 2: Trench Excavation

Figure 3: 12-Inch Installation Depth

Figure 4: Chevrolet C70 Dump Truck w/ Load

Figure 5: Post-Loading: EZflow 1203H-GEO Pipe Bundle with Internal Coupler

Figure 6: Post Loading: EZflow 1203H-GEO Pipe Bundle without Internal Coupler

Figure 7: Post Loading: EZflow 1203H-GEO Bundle Cut to Inspect Pipe and EPS Aggregate

Attachment 5

Michigan DEQ EZflow Compliance Approval

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JOHN ENGLER
GOVERNOR

RUSSELL J. HARDING
DIRECTOR

June 18, 2002

Mr. Benjamin Berteau
Ring Industrial Group
65 Industrial Park Road
Oakland, Tennessee 38060

Dear Mr. Berteau:

SUBJECT: EZ*flow* Products

Pursuant to our meeting with you and Dr. Koerner on April 8, 2002, your follow-up correspondence of May 7, 2002 and review of supporting documentation, we are able to offer the following response regarding the application of EZ*flow* Products in Michigan. As you are aware, this office functions only in a review and not an approval capacity with respect to proprietary products. In Michigan, it is the local health departments that must approve the use of proprietary products in accordance with the requirements of their individual sanitary codes. With this thought in mind, please consider the following comments.

In general, it is the consensus of this office that EZ*flow* Products can be applied on a 1:1 comparison to gravel laden trench or absorption bed systems with the following comments for your specific product configurations:

EZ 1201 P –This product configuration is a single 12-inch diameter product. This office does not object to it's application at an equivalent one square foot of bottom area per lineal foot.

EZ 1202V- This product configuration consists of two 12 inch diameter units stacked vertically, intended to compare with a deep trench system as allowed for under Section C 10. of the Michigan Criteria for Subsurface Sewage Disposal. This office does not object to it's application at 3 square feet per lineal foot for deep trench installation.

EZ 1203 H- This product consists of three 12–inch diameter units installed side by side horizontally. This office does not object to it's application equivalent to a three foot wide gravel trench on a lineal foot to lineal foot basis. This product configuration could also be replicated in a bed configuration with each lineal foot being equivalent to three square feet of required bottom area.

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This office was also presented with the results of load testing of the various product configurations with soil loading up to 7 feet. This test data suggests that there will be minimal effect on product performance due to compression as the result of soil loading.

Physical and chemical properties and longevity of the polystyrene aggregate beads was also evaluated in the information provided. Based on the information provided, it is the opinion of this office that the product will function satisfactorily on a long-term basis.

We are in agreement that one of the advantages of the product should be the cleanliness of the expanded polystyrene aggregate compared to conventional gravel. Essentially no fines are present, thus eliminating the concern with reduction in soil permeability due to fines in gravel. The product also offers certain other advantages from the standpoint of ease of construction.

With regard to proposed instructions for installation, the preference of this office would be to employ the use of approved synthetic filter fabric between your product and final cover material. Filter fabric is considered more effective in terms of preventing the migration of final cover into the product voids on a long-term basis.

As indicated, approval for usage must be dealt with on a case by case basis in accord with the provisions of the requirements of the applicable local health department sanitary code. Should you have further questions or comments, please do not hesitate to contact this office.

Sincerely,

Richard A. Falardeau, P.E., Chief
Land Division & Local Health Department
Support Program
Environmental Health Section
Drinking Water and Radiological
Protection Division
517-241-1345