Mackey, Lawrence

From: Richard Heizer <reheizer@yahoo.com>
Sent: Wednesday, June 12, 2024 4:47 PM
To: Mackey, Lawrence; Richard Heizer; Schrei, Jeffrey
Subject: [EXTERNAL] Comments for Chapter 171
Attachments: Perforation Discharge Rates - Revised 8-22-23.xls

Coming under the wire I hope:
I have two suggestions 1) adopt an equation for calculating the flow through small orifices rather than using a table and making mathamatical interpretations. I got it from the U of Wisc. and is attached. 2) Remove the sand requirement between the Type 5 double mound. It serves no purpose except to increase the sand cost. It can still be used for the "base" layer, but water delivered to the gravel bed will rarely travel horizontally to that sand filler.

Thanks for this opportunity to offer comments.

HEIZER ENGINEERING, LTD
R. HEIZER, P.E.
11-Sep-15

Flowrates for Perforations in LPP Systems
Recommended modification to Appendix C - Table X
in McHenry County Public Health Ordinance - Article X
SOURCE:
University of Wisconsin-Madison
Flow = 11.79 x d2 x h1/2
J.C. Converse - Jan. 2000
Pressure Distribution Network Design

Perforation Discharge Rates
=11.79*(Oriifice Dia)^2*InLinePressure^0.5

Discharge rates (gpm) for Perforations

Pressure	Orifice Diameters (inches)						
Feet	**1/8"**	**3/16"**	**1/4"**	**5/16"**	**3/8"**	**7/16'**	**1/2"**
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.10	0.058	0.131	0.233	0.364	0.524	0.714	0.932
0.20	0.082	0.185	0.330	0.515	0.741	1.009	1.318
0.30	0.101	0.227	0.404	0.631	0.908	1.236	1.614
0.40	0.117	0.262	0.466	0.728	1.049	1.427	1.864
0.50	0.130	0.293	0.521	0.814	1.172	1.596	2.084
0.60	0.143	0.321	0.571	0.892	1.284	1.748	2.283
0.70	0.154	0.347	0.617	0.963	1.387	1.888	2.466
0.80	0.165	0.371	0.659	1.030	1.483	2.018	2.636
0.90	0.175	0.393	0.699	1.092	1.573	2.141	2.796
1.00	0.184	0.414	0.737	1.151	1.658	2.257	2.948
1.10	0.193	0.435	0.773	1.208	1.739	2.367	3.091
1.20	0.202	0.454	0.807	1.261	1.816	2.472	3.229
1.30	0.210	0.473	0.840	1.313	1.890	2.573	3.361
1.40	0.218	0.490	0.872	1.362	1.962	2.670	3.488
1.50	0.226	0.508	0.902	1.410	2.031	2.764	3.610
1.60	0.233	0.524	0.932	1.456	2.097	2.854	3.728
1.70	0.240	0.540	0.961	1.501	2.162	2.942	3.843
1.80	0.247	0.556	0.989	1.545	2.224	3.028	3.954
1.90	0.254	0.571	1.016	1.587	2.285	3.111	4.063
2.00	0.261	0.586	1.042	1.628	2.345	3.191	4.168
2.10	0.267	0.601	1.068	1.668	2.403	3.270	4.271
2.20	0.273	0.615	1.093	1.708	2.459	3.347	4.372
2.30	0.279	0.629	1.118	1.746	2.514	3.422	4.470
2.40	0.285	0.642	1.142	1.784	2.569	3.496	4.566
2.50	0.291	0.655	1.165	1.820	2.621	3.568	4.660
2.60	0.297	0.668	1.188	1.857	2.673	3.639	4.753
2.70	0.303	0.681	1.211	1.892	2.724	3.708	4.843
2.80	0.308	0.694	1.233	1.927	2.774	3.776	4.932
2.90	0.314	0.706	1.255	1.961	2.823	3.843	5.019
3.00	0.319	0.718	1.276	1.994	2.872	3.909	5.105
3.10	0.324	0.730	1.297	2.027	2.919	3.973	5.190
3.20	0.330	0.741	1.318	2.060	2.966	4.037	5.273
3.30	0.335	0.753	1.339	2.092	3.012	4.099	5.354
3.40	0.340	0.764	1.359	2.123	3.057	4.161	5.435
3.50	0.345	0.775	1.379	2.154	3.102	4.222	5.514
3.60	0.350	0.786	1.398	2.185	3.146	4.282	5.592
3.70	0.354	0.797	1.417	2.215	3.189	4.341	5.670
3.80	0.359	0.808	1.436	2.244	3.232	4.399	5.746
3.90	0.364	0.819	1.455	2.274	3.274	4.457	5.821
4.00	0.368	0.829	1.474	2.303	3.316	4.513	5.895
4.10	0.373	0.839	1.492	2.331	3.357	4.569	5.968
4.20	0.378	0.849	1.510	2.360	3.398	4.625	6.041
4.30	0.382	0.860	1.528	2.388	3.438	4.680	6.112
4.40	0.386	0.869	1.546	2.415	3.478	4.734	6.183
4.50	0.391	0.879	1.563	2.442	3.517	4.787	6.253
4.60	0.395	0.889	1.580	2.469	3.556	4.840	6.322
4.70	0.399	0.899	1.598	2.496	3.594	4.892	6.390
4.80	0.404	0.908	1.614	2.523	3.632	4.944	6.458
4.90	0.408	0.918	1.631	2.549	3.670	4.995	6.525
5.00	0.412	0.927	1.648	2.575	3.707	5.046	6.591
5.10	0.416	0.936	1.664	2.600	3.744	5.096	6.656
5.20	0.420	0.945	1.680	2.626	3.781	5.146	6.721
5.30	0.424	0.954	1.696	2.651	3.817	5.195	6.786

5.40	0.428	0.963	1.712	2.676	3.853	5.244	6.849
5.50	0.432	0.972	1.728	2.700	3.888	5.292	6.913
5.60	0.436	0.981	1.744	2.725	3.923	5.340	6.975
5.70	0.440	0.990	1.759	2.749	3.958	5.388	7.037
5.80	0.444	0.998	1.775	2.773	3.993	5.435	7.099
5.90	0.447	1.007	1.790	2.797	4.027	5.481	7.159
6.00	0.451	1.015	1.805	2.820	4.061	5.528	7.220
6.50	0.470	1.057	1.879	2.935	4.227	5.753	7.515
7.00	0.487	1.097	1.950	3.046	4.387	5.971	7.798
7.50	0.505	1.135	2.018	3.153	4.541	6.180	8.072
8.00	0.521	1.172	2.084	3.257	4.689	6.383	8.337
8.50	0.537	1.208	2.148	3.357	4.834	6.579	8.593
9.00	0.553	1.243	2.211	3.454	4.974	6.770	8.843
9.50	0.568	1.278	2.271	3.549	5.110	6.956	9.085
10.00	0.583	1.311	2.330	3.641	5.243	7.136	9.321
11.00	0.611	1.375	2.444	3.819	5.499	7.485	9.776
12.00	0.638	1.436	2.553	3.988	5.743	7.817	10.210
13.00	0.664	1.494	2.657	4.151	5.978	8.137	10.627
14.00	0.689	1.551	2.757	4.308	6.204	8.444	11.029
15.00	0.713	1.605	2.854	4.459	6.421	8.740	11.416

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0.60	0.143	0.321	0.571	0.892	1.284	1.748	2.283
0.70	0.154	0.347	0.617	0.963	1.387	1.888	2.466
0.80	0.165	0.371	0.659	1.030	1.483	2.018	2.636
0.90	0.175	0.393	0.699	1.092	1.573	2.141	2.796
1.00	0.184	0.414	0.737	1.151	1.658	2.257	2.948
1.10	0.193	0.435	0.773	1.208	1.739	2.367	3.091
1.20	0.202	0.454	0.807	1.261	1.816	2.472	3.229
1.30	0.210	0.473	0.840	1.313	1.890	2.573	3.361
1.40	0.218	0.490	0.872	1.362	1.962	2.670	3.488
1.50	0.226	0.508	0.902	1.410	2.031	2.764	3.610
1.60	0.233	0.524	0.932	1.456	2.097	2.854	3.728
1.70	0.240	0.540	0.961	1.501	2.162	2.942	3.843
1.80	0.247	0.556	0.989	1.545	2.224	3.028	3.954
1.90	0.254	0.571	1.016	1.587	2.285	3.111	4.063
2.00	0.261	0.586	1.042	1.628	2.345	3.191	4.168
2.10	0.267	0.601	1.068	1.668	2.403	3.270	4.271
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2.50	0.291	0.655	1.165	1.820	2.621	3.568	4.660
2.60	0.297	0.668	1.188	1.857	2.673	3.639	4.753
2.70	0.303	0.681	1.211	1.892	2.724	3.708	4.843
2.80	0.308	0.694	1.233	1.927	2.774	3.776	4.932
2.90	0.314	0.706	1.255	1.961	2.823	3.843	5.019
3.00	0.319	0.718	1.276	1.994	2.872	3.909	5.105
3.10	0.324	0.730	1.297	2.027	2.919	3.973	5.190
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3.80	0.359	0.808	1.436	2.244	3.232	4.399	5.746
3.90	0.364	0.819	1.455	2.274	3.274	4.457	5.821
4.00	0.368	0.829	1.474	2.303	3.316	4.513	5.895
4.10	0.373	0.839	1.492	2.331	3.357	4.569	5.968
4.20	0.378	0.849	1.510	2.360	3.398	4.625	6.041
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4.50	0.391	0.879	1.563	2.442	3.517	4.787	6.253
4.60	0.395	0.889	1.580	2.469	3.556	4.840	6.322
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5.60	0.436	0.981	1.744	2.725	3.923	5.340	6.975
5.70	0.440	0.990	1.759	2.749	3.958	5.388	7.037
5.80	0.444	0.998	1.775	2.773	3.993	5.435	7.099
5.90	0.447	1.007	1.790	2.797	4.027	5.481	7.159
6.00	0.451	1.015	1.805	2.820	4.061	5.528	7.220
6.50	0.470	1.057	1.879	2.935	4.227	5.753	7.515
7.00	0.487	1.097	1.950	3.046	4.387	5.971	7.798
7.50	0.505	1.135	2.018	3.153	4.541	6.180	8.072
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11.00	0.611	1.375	2.444	3.819	5.499	7.485	9.776
12.00	0.638	1.436	2.553	3.988	5.743	7.817	10.210
13.00	0.664	1.494	2.657	4.151	5.978	8.137	10.627
14.00	0.689	1.551	2.757	4.308	6.204	8.444	11.029
15.00	0.713	1.605	2.854	4.459	6.421	8.740	11.416

= Currently not in state code

= Not Applicable in state code

Mackey, Lawrence

From: Jordan Johnson <mycountrysidecontractor@gmail.com>
Sent: Wednesday, May 29, 2024 7:47 PM
To: Mackey, Lawrence
Subject: [EXTERNAL] proposed septic code changes
Attachments: Private Sewage 171 Proposed Amendments 1232023.pdf

Larry

Please add the following comments to be read at the hearing. The Fox Waterway study has determined that Nitrogen and BOD / Fecal coliform is polluting the fox chain o lakes from non point source septic system pollution. I have mailed the health department, Linda Peterson and the Lake County Board. Our first emailing addressing concerns was back in December 2023. To date the code does nothing to address the pollution problem. A sewer is unlikely, slow to be approved, extremely expensive to both homeowners and taxpayers and per the study will only reduce the amount of septics that affect the fox waterway by 1600 of the 5000-7000 septics within the watershed. The code MUST be amended to protect our environment and our health. See attached.

Jordan

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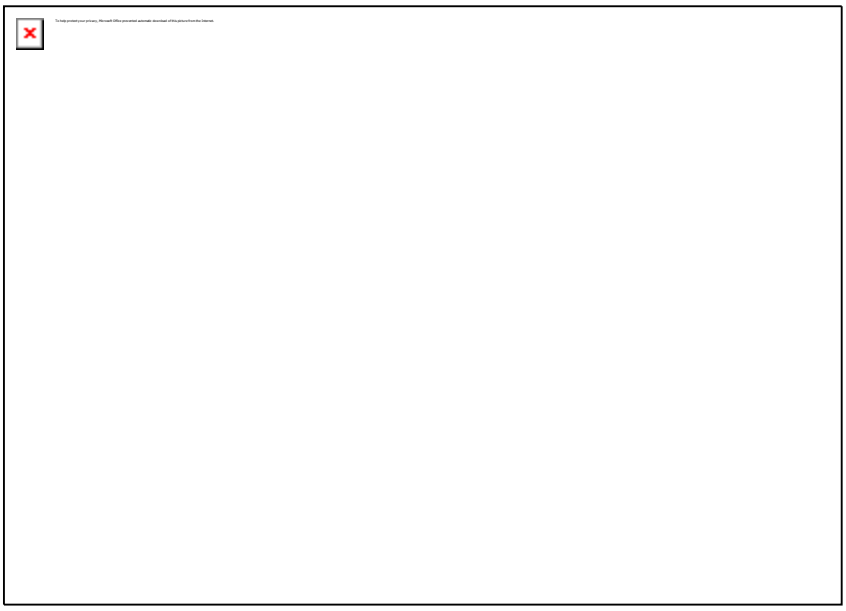

Our Business Values

We will protect the health of You, your loved ones and your property by designing and installing a system that safely disposes of your wastewater, while protecting your drinking water.

You will feel apart of Countrysides family of satisfied customers.

We will help you understand what a septic system is, how it works, and how to properly invest in a system that will provide long lasting effective treatment of your wastewater.

As a licensed Plumber and Septic Installer we will provide solutions that no other contractor in Lake County can resolve.

Countryside Plumbing Sewer and Septic
40338 N. Fox Dr Antioch IL 60002
www.CountrysideSewerandSeptic.com
www.facebook.com/countrysidesewerguy
(847) 809-2494

COUNTRYSIDE PLUMBING SEWER AND SEPTIC INC

847-809-2494
mycountrysidecontractor@gmail.com

December 4, 2023

Tom Copenhaver
Lake County Health Dept.
500 Winchester Rd
Libertyville, IL 60048

Tom Copenhaver,

I am writing to address much needed amendments to the Lake County Private Sewage code 171. Since 1996 when the code was largely composed many advancements have happened in the technology of wastewater treatment products. Lake County has also undergone many changes. NSF 350 Standard will resolve the areas in which the Private sewage code 171 is ineffective at protecting the health of Lake County's citizens and the environment.

1. The pandemic caused a major influx of citizens into our area. Housing designed as weekend homes and cabins are now being lived in full time. Most of these systems are undersized.
2. Many citizens now work from home or in hybrid situations where they are using more wastewater at home than ever before.
3. Economic conditions have cause nearly 30% of homes to be occupied by more at least 3 adults per household increasing biological wastewater loading.
4. There are hundreds of failing septic systems within the Fox Watershed that contribute to non point source pollution and negatively effect the health of Lake County citizens.
5. The biological load on homes in Lake County has increased substantially

The Fox Waterway agency in its application for 319D funding from the IL EPA has conducted a survey of non-point source pollution. Non point source pollution is defined by the EPA as "Salt from irrigation practices and acid drainage from abandoned mines. Bacteria and nutrients from livestock, pet wastes and faulty septic systems."

Continued

Current 171 code is ineffective at protecting the environment and the Fox watershed from incidental, unintentional and intentional septic failures.

1. Local septic pumping companies report over 200 septic systems in the area that are directly connected to a waterway, storm drain or wetland.
2. We have observed many residences that contain septic systems connected directly to the Fox Waterway, wetland, or storm drain.
3. LEHP inspections during real estate transactions or not effective in identifying and stopping direct or indirect connections to Fox Watershed and public water ways. We have see many systems pass an inspection in 2023 where the LEHP “failed to identify a seepage device.” But passed the system.
4. The code allows for antiquated technology in areas where compliance to code is “impossible.”

Current code 171.067 B is ineffective at protecting the health of the citizens of Lake County.

1. Its allows for pretreatment that is defined by the code as producing ““Unsanitary” effluent [171.050A] with the potential to “contaminate any drinking water supply” or “pollute and contaminate the water of any bathing beach or surface waters used for public or domestic water supply or recreational purposes” [171.035(1) and 171.035 (3)]
2. Many lab results from NSF 40 units produce over 400 cfu.
3. NSF 40 units are permitted to be installed when a 75’ well radius can not be maintained.
4. NSF 40 units are permitted to be installed where a replacement system can not be code compliant.
5. NSF 40 units are permitted where septic replacement systems are undersized for the residence it serves.

Continued

As a licensed plumber, septic installer and designer in both the State of Illinois and Lake County we propose the following amendments to the code.

1. NSF 350 standard unit be required under 171.067 B when any system is replaced when compliance with current code is impossible.
2. NSF 350 standard , denitrification and sterilization be required when any system is designed with less than 75' radius to any well.
3. NSF 350 standard denitrification and sterilization be required when any system is replaced that is within the Fox Watershed, a public swimming area, bathing beach, wetland, river lake or stream where a failure of the system would potentially cause any non point source pollution.
4. That annual inspection be required of all existing septic systems serving homes and businesses within reach of the Fox Watershed that are not currently already required to have Bi-Annual Inspection in conjunction with existing aerobic treatment units. That this inspection be performed by licensed private sewage installation contractors only.
5. That in review of 171 it has come to our attention that the County is using tax payer dollars to have its employees perform "Management activities" which on page 9 are defined as the responsibility of "a licensed service provider." Section 2 "sampling or servicing surface discharging onsite treatment systems" This is a violation of the code. Private contractors shall be responsible for sampling of all surface discharging septic systems in Lake County not taxpayers.

NSF 350 standard will aid in denitrifying and sterilizing wastewater. We are the most affluent county in Illinois. There is no excuse for permitting pretreatment that produce "Unsanitary" effluent [171.050A] with the potential to "contaminate any drinking water supply" or "pollute and contaminate the water of any bathing beach or surface waters used for public or domestic water supply or recreational purposes" [171.035(1) and 171.035 (3)]

Continued

The benefits to NSF 350 treatment in replacement systems that are non-code compliant, as well as within the reach of the Fox Watershed, are not limited to the following.

1. Safer drinking water for all citizens and their guests served by well.
2. Healthier water and food served at food establishments and businesses where the well is less than 75’ from the septic system.
3. Improved health for visitors and users of the Fox Waterway.
4. Improved environmental impact of the Fox and all waterways in the county.

Sincerely Yours,

Jordan F. Johnson
President of Countryside Plumbing Sewer and Septic Inc.