

**ANNUAL REPORT OF THE
TECHNICAL ADVISORY COMMITTEE
FOR 2020**

Established by Act 133 of the 2001 Adjourned Session

REGARDING OVERSIGHT AND IMPLEMENTATION OF THE

**WASTEWATER SYSTEM AND POTABLE WATER SUPPLY
RULES**

February 1, 2021

Members of the Act 133 Technical Advisory Committee:

Mark Bannon, P.E., Professional Engineer

John Beauchamp, MWS, CI, Master Water Specialist

Grahame Bradley, PhD., Hydrogeologist/Soil Geologist, Drinking Water and Groundwater Protection Division

Claude Chevalier, Licensed Well Driller

Ernie Christianson, Regional Office Manager, Drinking Water and Groundwater Protection Division

Mary Clark, Indirect Discharge and UIC Program Manager

Craig Heindel, Hydrogeologist

Craig Jewett, P.E., Professional Engineer

Sille Larsen, Senior Water Resources Engineer, Vermont Department of Health

Gunner McCain, Licensed Designer

Rodney Pingree, Section Chief, Drinking Water and Groundwater Protection Division

Stephen Revell, Licensed Designer, Hydrogeologist

Scott Stewart, Hydrogeologist, Drinking Water and Groundwater Protection Division

Denise Johnson-Terk, Licensed Designer, Town Official

Roger Thompson, Licensed Designer

Ken White, Licensed Well Driller

Justin Willis, Licensed Designer

Sheri Young, Licensed Designer and Certified Professional Soil Scientist

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Annual Report of the Technical Advisory Committee

Purpose:

The Technical Advisory Committee was created by Act 133 of the 2001 Adjourned Session of the Legislature and incorporated into the Vermont Statutes as Chapter 64, Section 1978(e)(2) which appears as:

The secretary shall seek advice from a technical advisory committee in carrying out the mandate of this subdivision. The governor shall appoint the members of the committee and ensure that there is at least one representative of the following entities on the committee: professional engineers, site technicians, well drillers, hydrogeologists, town officials with jurisdiction over potable water supplies and wastewater systems, water quality specialists, technical staff of the agency of natural resources, and technical staff of the department of health. Administrative support for the advisory committee shall be provided by the secretary of the agency of natural resources.

Section 1978(e)(3) required the preparation and submission to the legislature of an annual report on several topics: the implementation of this Chapter and the rules adopted under this Chapter; the number and type of alternative or innovative systems approved for general use, approved for use as a pilot project, and approved for experimental use; the functional status of alternative or innovative systems approved for use as a pilot project or approved for experimental use; the number of permit applications received during the preceding calendar year; and the number of permit applications denied in the preceding calendar year, together with a summary of the denial. This report is a summary of the work by the Technical Advisory Committee and the recommendations made by the Committee during 2020.

Technical Advisory Committee Members:

Members of the Technical Advisory Committee are recommended by the Secretary of the Agency of Natural Resources and appointed by the Governor. The full list of Technical Advisory Committee Members, and their contact information, is attached as Appendix A.

Executive Committee and Subcommittees:

The TAC has an Executive Committee with three members and two alternates that are available to answer questions or provide testimony to the Agency or the Legislature.

Meetings:

Three meetings were held by the TAC in 2020. The meeting on March 10, 2020 was held in person at the Essex Junction Regional Office with 12 members present. The meetings on May 19, 2020 and on October 20, 2020 were held by video conference with 12 members and 9 members participating.

The full minutes of each meeting are attached as Appendix C and are available on-line at <http://wastewater.vt.gov/wastewaterdisposaltac.htm> under the heading "Technical Advisory Committee."

Activities of the Technical Advisory Committee (TAC):

1. General Comments:

There were two main areas of discussion in 2020. The Department of Environmental Conservation (DEC) proposed revisions to the Wastewater System and Potable Water Supply Rules (Rules) that had been adopted on April 12, 2019. The proposed changes were minor technical revisions or revisions to add clarity to various sections of the Rules based on feedback from users of the Rules since the adoption in 2019. In addition, the TAC also reviewed proposals to add new Innovative/Alternative systems to the list of approved systems. Some specific points are presented below, and more details are included in the minutes of TAC meetings.

2. Discussion and Recommendations

A. Percolation Tests:

The Rules allow both a soil identification method and a percolation test method as the basis of sizing leachfields. The use of the percolation test results can only result in an increase in the size of the leachfield in comparison to the soil identification method. Because the soil identification method only results in a minimum size leachfield that can be permitted, a designer may always specify a larger leachfield. Therefore, the TAC recommended removing the sections related to percolation testing and the DEC agreed.

B. Mound Sand Specifications:

The Rules allow use of sand that meets one of three particle size specification for mound system construction. These specifications have been in use since 1996. The TAC discussed whether one of the specifications allowed for too much coarse material. There is no evidence that systems have been constructed with material that complied with the Rules which failed to work satisfactorily. The DEC recommended leaving the specifications as is until a more detailed review is performed, and the TAC agreed.

C. Use of Soil Testing Performed Prior to Adoption of Current Rules:

The Rules allow new applications to be based on soil testing done before the current Rules were adopted. The DEC and the TAC are concerned that the current Rules are based on more accurate and detailed soil analysis than was required in the past. The DEC proposed that a requirement be added for when soil testing completed prior to January 1, 2007 is used for a new application. The proposed language requires that at least one new soil excavation be completed to confirm the older information and states that additional excavations may be required based on site specific conditions.

D. Composting Toilets:

The TAC recommended, and the DEC agreed, that installation of a composting toilet in a single-family residence should not require a permit if the toilet does not depend on the discharge of any liquid. This change would not eliminate any other requirements related to water supply or wastewater disposal. The disposal of the contents of the composting toilet would be subject to the requirements in the Rules.

E. Indirect Discharge Rules:

The TAC was briefed on the work of updating the Indirect Discharge Rules. Some changes will be made to cover agricultural discharges, such as dairy wastewater, that are not covered under Accepted Agricultural Practice regulation administered by the Department of Agriculture. Also updated will be language related to separate, but closely placed, systems that in total discharge 6,500 GPD or more. When the systems function hydraulically as one unit, they will be subject to the Indirect Discharge Rules. The TAC recommended that high strength wastewater disposal systems continue to be subject to the Rules unless they discharge 6,500 GPD or more.

F. Off Grid/Tiny Homes:

The DEC asked for comments on how to respond to the construction of off grid and tiny homes. In some cases, these contain the same water and wastewater fixtures and would be regulated the same as any other single-family residence, other than possibly allowing for a one-bedroom design instead of the minimum two-bedroom design under the Rules. Also discussed was whether a permit should be granted for a residence that does not have piped water or wastewater systems. Various options were discussed including allowing for reductions in design flow or options for non-piped water and wastewater systems. Any agreement to reductions in requirements could be placed in the property deeds to ensure that owners would be on notice and held accountable for compliance. The permit might also require that an area for future water and wastewater system be designed and approved so that future owners will have the option to install conventional systems in the future. DEC will look at other state's response to this question.

G. Innovative/Alternative Systems:

DEC asked for comments about several Innovative/Alternative systems. The applications ranged from changes in treatment media, to requests for approval to treat high-strength wastewater, to a proposal for single-family residential use of techniques currently in use with large wastewater flows. The TAC was supportive of all the proposals with recommendations of general use, pilot use, or experimental use depending on the available data and history of use. Approving more systems to treat high-strength wastewater is helpful, though systems with

extremely high strength wastewater will continue to need careful review and case specific approval. There is more detailed discussion about each of the systems in the attached minutes.

Vermont now has many Innovative/Alternative systems approved that offer applicants several choices for most sites. The DEC is continuing to work with the vendors of the various products to ensure there is an adequate supply of approved installers and maintenance providers.

For the full list of systems and products available for use in Vermont, including those approved, those accepted as equivalent to what is permitted in the Rules, or accepted for use with an approval letter refer to the DEC website:

<https://dec.vermont.gov/water/programs/ww-systems/innovative-alternative/approved-systems>

Innovative/Alternative Systems:

During 2020, the DEC approved the following new Innovative/Alternative Technologies.

Approval Type	Company	Technology	Technology Type	Expiration Date
General I/A Treatment	Anua	PuraSys SBR	Nitrogen reduction	May 1, 2022
General I/A Treatment	Anua	BioCoir	Coco fiber biofilter	May 1, 2022
General I/A Treatment	Anua	AeroCell	Artificial media biofilter	May 1, 2022
General I/A Dispersal	Eljen Corporation	GSF	Gravelless distribution	May 1, 2022
General I/A Dispersal	GeoMatrix, LLC	GeoMat Flat	Gravelless distribution	May 1, 2022
Pilot I/A High-Strength Treatment	BioGill	BioGill	Fixed film biofilter	May 1, 2022
Pilot I/A Treatment	Busse	Busse	Fixed film biofilter	May 1, 2022
Pilot I/A Treatment	Rich Earth Institute	Rich Earth	Plumbed urine diversion	May 1, 2022
Pilot I/A Treatment	Rich Earth Institute	Rich Earth	Non-plumbed urine diversion	May 1, 2023
Experimental I/A Treatment	SeptiTech	Vernon Hall	High-strength treatment	March 19, 2021
Pilot I/A High-Strength Treatment	Hydro-Action	Hydro-Action High-Strength	High-strength treatment	May 1, 2022

I/A Approvals were renewed in 2020 for the following Innovative/Alternative Technologies

Approval Type	Company	Technology	Expiration Date
General I/A Treatment	Oreco Systems, Inc.	AdvanTEX and AX-Max	May 1, 2022
General I/A Treatment	Bio-Microbics, Inc.	MicroFAST and RetroFAST	May 1, 2022
General I/A Treatment	Bio-Microbics, Inc.	Lixor	May 1, 2022
General I/A Treatment	Jet, Inc.	Jet	May 1, 2021
General I/A Treatment	Norweco, Inc.	Singular Series and Hydro-Kinetic	May 1, 2022
General I/A Treatment	Anua	Puraflo	May 1, 2022
General I/A Treatment	Advanced Onsite Solutions, LLC	The Clean Solution	May 1, 2022
General I/A Dispersal	Eljen Corporation	Mantis	May 1, 2022
General I/A Dispersal	Infiltrator Water Technologies, LLC	ARC Series Chambers	May 1, 2022
General I/A Dispersal	Oakson	Perc-Rite	May 1, 2022
Pilot I/A High-Strength Treatment	Bio-Microbics, Inc.	HighStrength Fast	May 1, 2022
Pilot I/A High-Strength Treatment	Aqua Test, Inc	The Nibbler	May 1, 2022

Low Income Loan Program

During calendar year 2020 the On-Site Loan Program made seven loan awards for a total of \$140,353 in new loan commitments. Three the seven loans were for replacement of failed water systems; the other four loans were for replacement of failed wastewater systems. The program has partnered with the Opportunities Credit Union to underwrite and service the loans made under this program.

APPENDIX A

Technical Advisory Committee Members as of December 1, 2020

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Executive Committee

Steve Revell, Ernest Christianson, Roger Thompson

Alternates –Claude Chevalier, Craig Heindel

Appendix B

Compliance with Performance Standards for Regional Office Permits

Issued During Calendar Years from 2007-2020

	# of Permits Issued	# of Permits Meeting PEP Standards	% of Permits Meeting PEP Standards	Average DEC Days
2007	3746	3691	98.5%	16.8
2008	3435	3418	99.5%	12.3
2009	2691	2672	99.3%	11.8
2010	2621	2600	99.2%	11.9
2011	2289	2279	99.6%	13.2
2012	2472	2444	98.9%	12.7
2013	2449	2400	98.0%	14.0
2014	2503	2417	98.4%	12.6
2015	2367	2299	97.1%	11.8
2016	2647	2491	94.1%	16.2
2017	2253	2128	94.4%	16.7
2018	2527	2318	91.7%	15
2019*	2292	2110	84.0%	22.2
2020	2461	2344	95%	16.2

Note: The performance standard for DEC days is 30 days for one-lot subdivisions and projects with a design flow of 500 GPD or less. The performance standard for other projects is 45 days.

* The Program had 2 technical people retire in two offices at the end of 2018 which affected the ability to meet PEP standards and increased the Average DEC Days, particularly for the first 6 months of 2019.

Failed Wastewater System Permit Information

Year	Applications Submitted to Repair Failed Wastewater Systems
2007	330
2008	507
2009	503
2010	495
2011	471
2012	432
2013	435
2014	473
2015	446
2016	528
2017	490
2018	497
2019	512
2020	687

Permit Information for 2020

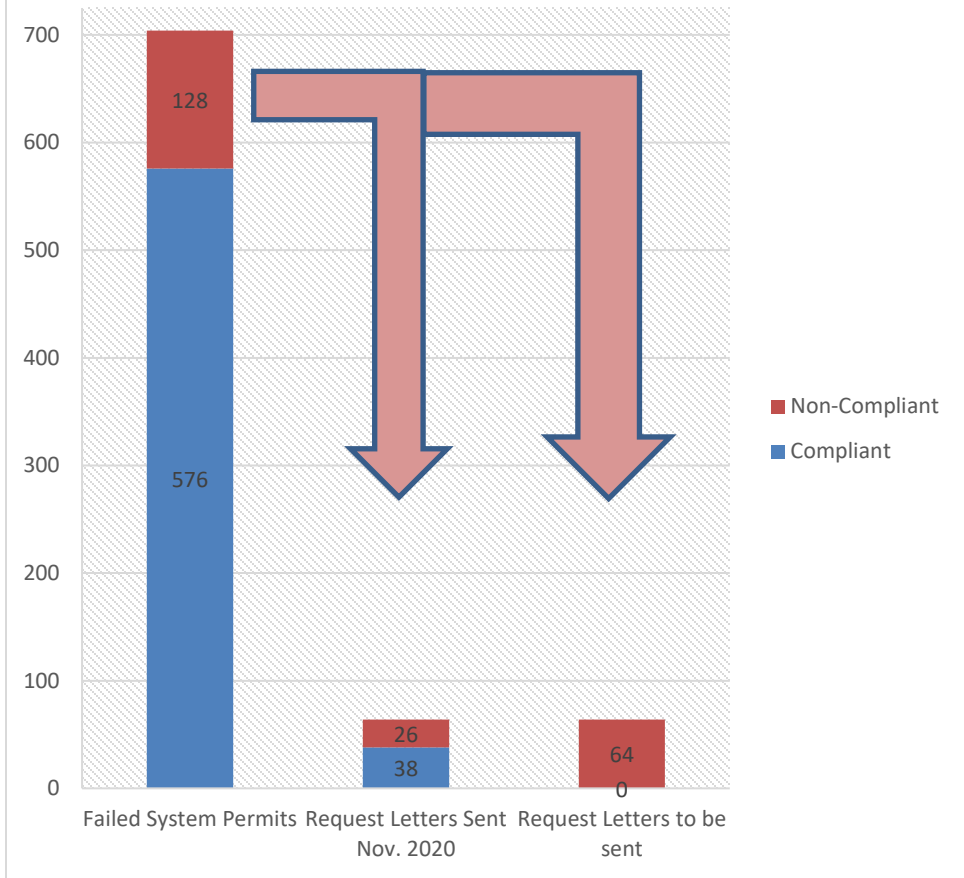
Permits Issued to Repair Failed Wastewater Systems	Applications Denied	Number of Installation Certifications for replacement of failed wastewater systems due in 2020	Received installation certifications for replacement of failed wastewater systems due in 2020
665	1*	704	576**

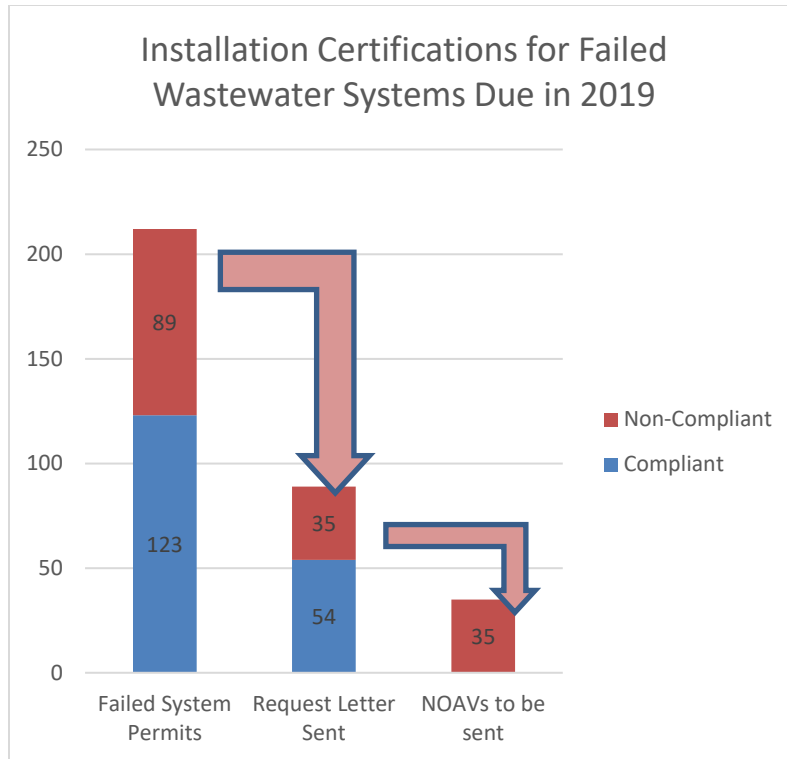
* Reasons for denials:

Denials are issued for applications that are incomplete or fail to demonstrate compliance with the Wastewater System and Potable Water Supply Rules when submitted.

** See following graph.

Installation Certifications for Failed Wastewater Systems Due in 2020





Failed Wastewater Systems Compliance Initiative

In 2020 the program has been able to further enhance the capability of the Water and Wastewater Tracking System (WWTS) by creating online forms for designers to submit for their installation certifications electronically, which allows for the automatic transfer of information to the WWTS. These forms have greatly reduced the time associated with tracking compliance and making the certification information available to the public. The advent of these forms has also removed the need for the Regional Office staff to track and confirm compliance with failed system installations, because all installation certifications are now directed to the compliance staff at the Central Office.

The Central Office is also in the process of completing electronic forms for the online submission of all Innovative/Alternative compliance inspections. As with the installation certifications, these forms will automatically populate the WWTS with ongoing inspection dates that will allow the compliance section to run reports to determine who is not submitting their annual inspections reports.

The other aspect of these enhancements to the WWTS will be the automatic generation of letters to the landowners who are not in compliance with their permits. This automatic letter creation is a great time savings for the staff by reducing their time in having to look at each permit file to find addresses and specific permit conditions.

Innovative/Alternative (I/A) Wastewater System Summary 2007 to 2020

Year	Overall Number of I/A Systems Permitted
2007	137
2008	796
2009	538
2010	457
2011	424
2012	513
2013	521
2014	612
2015	594
2016	526
2017	545
2018	561
2019	536
2020	735
Total	7,495

Innovative/Alternative (I/A) System Inspection Reports Received

An Approved System Requires an Inspection Each Year

Year	I/A Reports Received
2012	52
2013	693
2014	891
2015	914
2016	960
2017	1040
2018	1037
2019	1013
2020	1351

Innovative/Alternative Technologies Permits in 2020 by Manufacturer

I/A Manufacturer	Number of General Use I/A Products Permitted	Number of General Use I/A Dispersal Technologies	Number of Pilot Use I/A Treatment Technologies Permitted	Number of Experimental Use I/A Treatment Technologies Permitted
Advanced OnSite Solutions	4			
American Manufacturing/Oakson		6		
Anua	0			
Aqua Test			0	
Aquapoint 3	0			
BioGill			0	
Bio-Microbics	13		0	
Cromaglass	1			
Delta Environmental Products	0			
Ecological Tanks	0			
Eljen Corp		3		
F.R. Mahony & Associates, Inc.				
FujiClean	1			
Hydro-Action Manufacturing, Inc.	3			
Infiltrator Systems		130		
Island Water Technologies				
Jet	51			
Norweco	22			
Orenco	35			
Premier Tech Environmental	29			
Presby Environmental		435		
Rich Earth Institute			0	
SeptiTech	1			1
Total	160	574	0	1

Licensed Designer Program Education Opportunities

Year	DEC Sponsored Training		DEC Endorsed Soil Classes	DEC Endorsed Non-Soil Classes
	Classes	Attendees		
2010	5	120		
2011	4	110		
2012	7	215*		
2013	12	273*		
2014	12	173*		
2015	13	222		
2016	5	200*	20	36
2017	4	159*	16	20
2018	5	110	12	17
2019	12	186	12	17
2020**	2	33	6	34

* estimated

** due to Covid-19 many classes were cancelled. In response, additional online classes which could be taken at any time were added to the DEC Endorsed Class offerings and are only counted once on this chart.

Appendix C

Approved Minutes of the Technical Advisory Committee Meeting March 10, 2020

Attendees: Roger Thompson
Justin Willis
Gunner McCain
Brian Tremback
Nathan Kie
Sille Larsen
Cristin Ashmankas
Carl Fuller
Sheri Young
Bryan Harrington
Ernest Christianson
Rich Wilson

Scheduled meetings:

April 21, 2020 1-4 PM The Catamount Room

Technical Advisory Committee Annual Report for 2019

Some minor edits were suggested for typos and page references. There was also discussion about the phrase “if there are application methods not currently allowed that should be approved,” The question was whether this referred to a better understanding of soil adsorption capacity or a different method of application. Both issues will be considered.

Sheri asked if the increase in average review times and reduction in compliance with the performance standards was related to staff reductions. Ernie said that the reduction of 9 Regional Office staff has been mostly covered by changes in permit processing including electronic application procedures. There have been recent staff vacancies that did have some effect on permit review, but the positions have been filled and the numbers should improve.

Proposed Revisions to the 2019 Wastewater System and Potable Water Supply Rules (Rules):

Ernie said he hoped to have the proposed revisions ready to start the adoption process by June. The proposed revisions will have to go through the full rule adoption process because there are substantive changes as well as typographic errors.

Justin asked about the percolation test and whether to allow landowners with permitted projects, which had designs based on application rates determined by percolation tests, to amend the basis of design using the application rates in the permit file. The TAC recommends not to reinstate the

use of percolation test for determining the maximum allowable application rate. The group noted that in the new Rules the use of percolation test results can only result in lower application rates and therefore are only useful when a designer is concerned that the soil description method might result in too high of an application rate. The decision was to remove all reference to the percolation test because designers can use lower application rates than determined by soil texture whenever, in their judgment, it would be wise to do so.

Brian asked about the sieve specifications for mound sand. The 2007 version of the Rules used a 3/8" screen for the control on the coarse end of the sand specification for two of the three specifications, while the 2005 Rules used the #10 sieve. Brian said that the 2007 specifications allow for too much coarse material to the point where the material should be described as gravel rather than soil. While no problems caused by the 2007 specifications have been identified (the systems are being constructed using material meeting the definition of sand) and all agree that the amount of fine material is most important, there is support to adjust the specification. Adding a #10 sieve would ensure that the material would be classified as soil rather than gravel. Ernie will look for information about why sand specifications were changed in 2007.

Ernie circulated the List of Changes below and the TAC responses are added in bold.

List of Changes (Draft 2/13/2020)

Page iv - Table of Contents: Add § 1-909 Grease Traps...97. **Agreed**

Page 25 - § 1-304(13): Delete “or in a manner that modifies any operational requirements of such a sanitary sewer service line, and any associated sanitary sewer collection line” and add a new (B) the modification or change in use does not modify operational requirements that need to be applied to the building or structure or campground, the sanitary sewer service line, and any associated sanitary sewer collection line;. **Agreed**

Page 26 - § 1-304(14): Delete “or in a manner that modifies any operational requirements of a water service line,” and add a new (B) the modification or change in use does not modify operational requirements that need to be applied to the building or structure or campground, and water service line;. **Agreed**

Page 46 - § 1-405(10)(A): Delete “Design cost estimates” and replace with Retail costs. **Agreed**

Page 46 - § 1-405(10)(C): Add based on a projected 20-year life of the system or component. **Agreed**

Page 46 - § 1-406: Add (8) A recalculation of the operation and maintenance costs based on a projected 20-year life of the system or component. **Agreed**

Page 85 - § 1-903(k)(1): Delete “24”, replace with 18. **Agreed**

Page 96 - § 1-908(a)(2): Delete “one”, replace with two to be consistent with the sizing of septic tanks in Table 9-1. Add an s to day. **Agreed**

Page 100 - § 1-910(f): Delete “on or after January 1, 2007 and completed”. **Agreed**

Page 100 - § 1-910(f): Add (3) For soil descriptions and recordings completed prior to January 1, 2007, the Secretary will require one or more soil excavations to confirm the accuracy of the previous soil descriptions. When determining the number of soil excavations, the Secretary shall consider the consistency of the soil texture, recorded depth to the seasonal high groundwater table, depth to bedrock, depth of soil over a soil with a consistence of firm or denser, and number of existing excavations. **Agreed**

Page 108 - Table 9-5 (continued): Row “Foundation, footing, or perimeter of a building or structure with a drain (located upslope of a leachfield)”, 3rd column, delete 10 and replace with 20; 6th column, delete 10 and replace with 20. **Agreed**

Page 108 - Table 9-5 (continued): Row “Foundation, footing, or perimeter of a building or structure without a drain (located upslope of a leachfield)”, 3rd column, delete 20 and replace with 10; 6th column, delete 20 and replace with 10. **Agreed**

Page 148 - § 1-928(a)(1)(B): Add “is existing or proposed and owned by a charitable, religious, or nonprofit organization.” (statutory change 2019 Legislative session) **Agreed**

Page 148 - § 1-928(a)(4): Add “The design flows do not exceed 600 gallons per day or the existing or proposed building or structure shall not be used to host events on more than 28 days in any calendar year.” (statutory change 2019 Legislative session) **Agreed**

Page 165 - § 1-1007(a)(1)(A): Correct typo, change C-900 to C900. **Agreed**

Page 165 - § 1-1007(a)(1)(B): Correct typo, change C-900 to C900. **Agreed**

Page 165 - § 1-1007(b)(1)(B)(i): Delete “water works grade 50 pounds per square inch pressure rated pipe meeting AWWA standard C-600”, replace with water works grade 150 pounds per square inch pressure rated pipe meeting AWWA standard C900. This will now align § 1-1007(a)(1)(A), § 1-1007(a)(2)(B)(ii), § 1-1204(a)(1)(B)(ii), and § 1-1204(b)(1)(C)(ii). **TAC recommends keeping at 50 PSI. Ernie will review with the Public Water Supply Section.**

Page 166 - § 1-1007(b)(2)(A): Delete “AWWA standard C-600 or equivalent pipe and pressure tested to 50 pounds per square inch to assure watertightness” and replace with AWWA standard C900 or equivalent pipe and be pressure tested to 150 pounds per square inch. This will now align § 1-1007(a)(1)(A), § 1-1007(a)(2)(B)(ii), § 1-1204(a)(1)(B)(ii), and § 1-1204(b)(1)(C)(ii).

TAC recommends keeping at 50 PSI. Ernie will review with the Public Water Supply Section.

Page 166 - § 1-1007(b)(2)(A): Delete the colon after “shall”. **Agreed**

Page 203 - § 1-1204(a)(1)(B)(ii): Correct typo, change C-900 to C900. **Agreed**

Page 204- § 1-1204(b)(1)(C)(ii): Correct typo, change C-900 to C900. **Agreed**

Page 214 - Appendix A: Add a new (c) When the application includes a wastewater system presumptive isolation zone or potable water supply presumptive isolation zone that requires notification under § 1-307(a), the application shall include:

- (1) a copy of the certified mail receipt;
- (2) the completed ANR Form 1 and ANR Form 4 provided by the Secretary for notification of presumptive isolation zones; and
- (3) the site plan sent to a landowner affected by the presumptive isolation zone.

Agreed

Page 214 - Appendix A: Add a new (d) When the application includes a wastewater system presumptive isolation zone or potable water supply presumptive isolation zone that does not require notification under § 1-307(e)(1) and (2), the application shall include the completed ANR Form 5 provided by the Secretary for certification no notification is required. **Agreed**

Page 240 - Appendix C: Add to Figure C-18 6 inches to indicate the vertical separation between the Overflow Pipe outlet and the Splash Plate. **Agreed**

Should These be Included (Draft 2/13/2020)

1. § 1-201 Modifies Operational Requirements – add installation of a composting or incinerator toilet. The definition of a wastewater system includes storage tanks and toilets that are located inside a building or structure that are integral to the operation of a wastewater system. Would this be a permit requirement under § 1-301(3), the physical modification or replacement of a potable water supply or wastewater system? Or, should we not review until a landowner comes in to either dispose of the contents on site or request a change to the design flow based on the use of a composting toilet? **The TAC recommends that installation of a composting toilet for a single-family residence be exempt. Disposal of the waste would be regulated under the existing Rules.**
2. Table 8-3 Fueling Stations – a pump with two fueling lines (2 different grades) or has two pumps side-by-side where only one car per side can fuel. Should we do this by guidance to interpret the Rules so it’s a document that can be changed? **Guidance**

3. Table 9-14 – remove linear loading rates for Sandy Clay, Silty Clay, Clay. One reason to maintain is for failed systems or statutory changes so we have a basis in the Rules. **Keep**

Indirect Discharge Rules (IDR): Bryan Harrington gave an update on his work in preparation for proposing changes to the IDR. One question is if all high-strength wastewater disposal systems should be subject to the IDR. The TAC recommends keeping the division point between the Rules and the IDR at 6,500 GPD. One suggestion is to add monitoring requirements in the Rules for high-strength wastewater disposal systems. Bryan said that the proposed changes for the IDR will include requirements for non-sewage wastewater, such as dairy wastewater, that is not subject to regulation by the Department of Agriculture. One concern is when two or more wastewater systems, each less than 6,500 GPD design flow, should be reviewed as a single unit relative to hydraulic and inground treatment issues. An example would be a lot containing two wastewater systems serving unrelated off-lot building, each with a design flow of 4,000 GPD. If the two systems are in proximity and in the same hydraulic flow path, they might have the same impact on groundwater and surface water quality as a single 8,000 GPD system and therefore should be subject to the IDR.

Meeting Date: The next meeting is scheduled for April 22, 2020, from 1-4 PM, in the Catamount Room at the National Life Building in Montpelier.

Approved Minutes of the Technical Advisory Committee Meeting
May 19, 2020

Participation by videoconference

Attendees:	Roger Thompson	Cristin Ashmankas
	Gunner McCain	Sheri Young
	Ernest Christianson	Rich Wilson
	Denise Johnson-Terk	Craig Heindel
	Craig Jewett	Eli Erwin
	Chris Russo	Abe Noe-Hays
	Conor Laly	

Scheduled meetings:

None

Discussion of Proposed Rule Revisions to the 2019 Wastewater System and Potable Water Supply Rules (Rules):

The question of whether the 3/8" sieve specification allows too much coarse material for mound sand was discussed. The 3/8" specification was adopted as part of the 2007 Rule update. The TAC did not report that any problems had occurred from the use of material that is too coarse. The TAC members who are designers reported that the mounds they design and inspect are being constructed with sand that they find appropriate. The designers noted that they can set the sand specifications, within the limits in the Rules, if they are concerned about too much coarse or too much fine material. The consensus was that a revision is not required at this time.

The pressure testing requirements that should be required when a sewer line crosses a water line and the vertical separations cannot be met were discussed. When the separation distance is not met the Rules require a portion of the sewer line be constructed of water main grade material and that it be pressure tested to 150 psi. Several TAC members feel this is excessive and suggested various alternatives. Ernie will propose revised language.

Rich noted that the diagram for bottomless sand filters will be revised. The current version specifies a maximum height of 24" above grade that in turn limits the maximum amount of sand that can be used. A designer should be able to specify additional sand if they wish. The revision will allow the bottomless sand filter to be more than 24" above grade as long as the designer ensures that the structure is properly supported.

Innovative/Alternative Systems

Cristin asked for comments on several applications that are under review.

BioGill Tower – designed to handle high strength wastewater. The system has ongoing monitoring and can be adjusted to maintain the specified pH if needed. The company trains the users staff on how to do the routine oversight and maintenance. The TAC suggested that the buyer should be informed of the amount of oversight and maintenance prior to choosing this system and that the initial I/A approval should be as a pilot system because the leachfield size will be case specific based on the designer's assessment. The company prohibits the use of quaternary ammonia cleaning solutions which may limit the use for restaurant and food preparation operations. The TAC supports approval for pilot use.

BioMicrobics – designed to handle high strength wastewater. This is a fixed film system with a high air flow. The system is designed to bring the wastewater contaminant concentrations down to that of low strength wastewater. Each system is custom designed based on the contaminants for the operation. The TAC suggests the initial approval be for pilot use. The company prohibits the use of quaternary ammonia cleaning solutions which may limit the use for restaurant and food preparation operations. The TAC supports approval for pilot use.

Busse Green Technologies – low strength wastewater. This is a membrane bioreactor system with primary separation in the first chamber followed by biologic treatment in a second chamber. The system has NSF certification to treat to less than 30 mg/l BOD and TSS and therefore meets the definition of filtrate in the Rules. The system does not require a septic tank. The system is in an insulated tank and the temperature must be 45 degrees Fahrenheit or greater. It can be installed inside the building if properly vented per the Vermont Plumbing Rules. The system is approved for water reuse in some jurisdictions but the proposed approval for use in Vermont does not include any reuse of the treated wastewater. The TAC supports approval for pilot use.

GeoMatrix – GeoMat Flat® and GeoMat Edge® systems. These are application systems rather than treatment systems. The applicant proposes the same loading rate approach as is currently approved for other application systems not using crushed stone. These systems do not qualify for a reduction in separation distance to the Seasonal High-Water Table (SHWT). These systems are approved by NSF which imposes an initial 2-year service contract. Gunner asked about the storage capacity system. Conventional crushed stone systems have a large amount of pore space that can accept large, short term discharges. The system uses pressure distribution. The soil application rates in the Rule are based on bottom area contact with native soil and the GeoMat Edge has a small footprint compared to the Geo-Mat Flat. The TAC supports approval.

Annua – Puraflo® System. This system is currently approved. The request is to use cocoanut fiber rather than peat fiber as the treatment medium. The TAC supports this request.

Annua – AeroCell® System. This system is similar in operation to the Puraflo® System. The main difference is that the filter medium is a manufactured foam rather than plant fiber. It has NSF approval. The TAC recommends approval.

Rich Earth Institute – Urine Collection System. The proposal is to separate urine from the rest of the toilet flow using plumbing fixtures designed to separate the flow or by separate container collection. The urine will be stored in containers at the site and periodically collected by a licensed wastewater hauler. The urine will be sterilized and then reused for fertilizer as it is high in nitrogen content. There would be no reduction in the wastewater design flow for the site. Legal review is needed to determine if there is any conflict with the existing Rule related to the use of holding tanks. Also to be checked is whether a system with an outside storage tank that is not piped to the building is subject to the Rules and whether the Rules require that the storage tank be piped to the building. Also, to be determined is how to design the onsite holding tanks to ensure they have reasonable storage capacity and are protected against spills. If it is decided that this approach can be used in buildings other than single family residences, any separation process must be based on the use of approved plumbing fixtures and the discharge to the onsite holding tanks must be piped.

SeptiTech, Inc – installation to replace a failed system at Vernon Hall. Vernon Hall is an elder care facility. This will be a site-specific design and therefore subject to pilot approval. The designer states that the system can handle the quaternary ammonia cleaning products that will be used. Craig noted that elder care, nursing homes, and similar facilities often have septic tanks that fail to function properly because the medications used by the occupants stop the bacterial action. This question should be explored as part of the approval.

Rich asked if an application for a project using Innovative/Alternative technology could be approved with two choices of system. The Department does not allow a substitution of a technology other than the one named in the permit without issuing a revised permit. This approach would approve two different systems along with specific requirements depending on which one is installed.

Approved Minutes of the Technical Advisory Committee Meeting
October 20, 2020

Participation by videoconference

Attendees:	Ernest Christianson	Craig Heindel
	Rodney Pingree	Craig Jewett
	Sheri Young	Sille Larsen
	Cristin Ashmankas	Carl Fuller
	Rich Wilson	

Scheduled meetings:

January 21, 2021 9AM – Noon by video conference

Innovative/Alternative Systems:

Cristin presented the following I/A Technologies for TAC review:

Hydro-Action for high-strength wastewater pilot-approval – Supported by members.

Algaewheel for low-strength wastewater pilot-approval – Members concerned by the increased frequency of monitoring, suggested monthly reporting of weekly averaged data, also discussed possible operator licensing as this system is similar to RBC’s but could potentially

permanently ruin leachfields, recommendation was to require more frequent monitoring and compliance in line with the Indirect requirements- otherwise supported by members.

Rule Revisions: Ernie said that he and Bryan Redmond presented to the DMT on October 19, 2020. Hope to present to the Rule Writing ICAR before November 20th, 2020. All material up to date with exception of new image for Basal Area, being corrected by Rich Wilson. Last addition to Rule Revision involved the expansion of alternative toilets/composting toilets for remote campsites in the Vermont State Parks.

Discussion of Off-grid/Tiny Homes: Ernie requested a discussion of how the program should handle off-grid/tiny homes. Sheri and Craig H. both felt that they required no change from what they have been doing. Rich clarified that the owners are looking for reduction in water supply and wastewater flows, often wanting to go back to outhouses. TAC members recommended only allowing a reduction with they demonstrate that there are reduced amenities- put the burden on the applicant to show what is appropriate flows on a case-by-case basis and put conditions to hold them to that in the permit. All agreed that water that is pumped in must have a wastewater system to flow out. Craig H. suggested a checklist of guidance for what must be considered for justifying reduction. Ernie does not support less than 25 gpd/person. Ensure that the restriction conditions are mentioned right in the deed. Require an area to be designated that will support a fully compliant system as part of application. For more unique proposals, require IA experimental approvals with site-specific data to support and monitoring requirements. Suggested that the program check the regulations for the Adirondacks, Maine, and New Hampshire, so that we are not out ahead of our neighbors.

Discussion of Maintaining Wastewater Systems:

Sheri wanted to clarify what could count as a minor repair, what required a full permit, and what fell between the two as possible “maintenance to the system”. TAC members suggested and supported a simple form for maintenance that is signed and submitted by a designer.