ANNUAL REPORT OF THE TECHNICAL ADVISORY COMMITTEE FOR 2021

Established by Act 133 of the 2001 Adjourned Session

REGARDING OVERSIGHT AND IMPLEMENTATION OF THE

WASTEWATER SYSTEM AND POTABLE WATER SUPPLY RULES

January 31, 2022

Members of the Act 133 Technical Advisory Committee*:

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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 (retired)
Mary Clark, Indirect Discharge and Underground Injection Control Program Manager (retired)
Craig Heindel, Hydrogeologist
Craig Jewett, P.E., Professional Engineer
Sille Larsen, Senior Water Resources Engineer, Vermont Department of Health
Gunner McCain, Licensed Designer
Stephen Revell, Licensed Designer, Hydrogeologist
Scott Stewart, Hydrogeologist, Drinking Water and Groundwater Protection Division
Denise Johnson-Terk, Town Official, Licensed Designer
Roger Thompson, Licensed Designer
Ken White, Licensed Well Driller
Justin Willis, Licensed Designer
Sheri Young, Licensed Designer and Certified Professional Soil Scientist

*With positions of at time of appointment to the Technical Advisory Committee and retirements from state service noted.

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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:

No meetings of the Technical Advisory Committee were held in 2021.

Activities of the Technical Advisory Committee (TAC):

1. General Comments:

No meetings of the Technical Advisory Committee were held in 2021. This is due in part to the Department of Environmental Conservation (DEC) increase in permit applications due to the COVID-19 pandemic, as well as leadership changes in the Wastewater System and Potable Water Supply Program. Other rulemaking in the Indirect Discharge Program was a priority which will require some updating of the 2019 Wastewater System and Potable Water Supply Rules.

2. Proposed Activity for 2022:

At the end of 2020 the TAC made several recommendations to the DEC about their list of proposed revisions to the 2019 Wastewater System and Potable Water Supply Rules that have not been adopted. There are other issues that were discussed by the TAC but not resolved in time to add to the DEC list. The list of proposed changes, and the TAC recommendations for those changes. are in Appendix C. The list of other issues discussed by the TAC are included in Appendix C.

The 2019 Wastewater System and Potable Water Supply Rules have been in use for more than two years and it is a good time to review how they are being implemented and whether there are improvements that should be made. The TAC looks forward to working with the DEC to move any proposed changes through the rule adoption process so that applicants and Licensed Designers can benefit from the changes.

Possible topics for TAC discussion:

A. Continuing education for Licensed Designers

B. Sewer line requirements from the septic tank to the leachfield

C. Installation of a composting toilet in an existing single-family residence

D. Sieve-size requirement for mound sand and testing frequency for certification

E. Tiny houses

F. Energy efficiency for wastewater systems

G. Non-soil-based systems and water conservation measures to equal a reduction in treatment area size/composting toilets/Eco-sanitation

H. Greywater system sizing and science for seasonal and year-round use

I. Force main pressure/leak testing consistency with other state codes

J. Establishing inspection intervals or systems within buffer zones of potable surface water

K. Designing for climate changes

L. Tracking reasons for failed systems

M. Adding an occupancy limit to wastewater permits

N. Boundary Line Adjustments

O. Permit Navigator (being required for permit applications)

P. Financing failed system upgrades for low-income residents

3. **Innovative/Alternative Systems:**

During 2021, due to no TAC meetings being held, the Program approved no new Innovative/Alternative (I/A) Technologies.

Table 1. I/A Approvals were renewed in 2021 for the following Innovative/Alternative Technologies

Approval Type	Company	Technology	Expiration Date
General I/A Treatment	Delta Environmental Products	ECOPOD-N	May 1, 2023
General I/A Treatment	Premiere Tech Environment	Ecoflo	May 1, 2023
General I/A Treatment	Hydro-Action Mfg, Inc.	Hydro-Action	May 1, 2023
General I/A Treatment	SeptiTech	SeptiTech	May 1, 2023
General I/A Dispersal	Presby Environmental, Inc	Advanced Enviro-Septic and Enviro-Septic	May 1, 2023
Pilot I/A High-Strength Treatment	Aquapoint3.LLC	Bioclere	May 1, 2023

Low Income Loan Program

During calendar year 2021, the Onsite Loan Program made five loan awards for a total of $132,725 in new loan commitments (with three other loans under review when the year closed). Two of the five loans were for replacement of failed water systems; the other three 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, 2021 (including current positions)

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Executive Committee

Steve Revell, Ernest Christianson, Roger Thompson

Alternates –Claude Chevalier, Craig Heindel

Appendix B

Table B-1. Compliance with Performance Standards for Regional Office Permits Issued During Calendar Years from 2007-2021

	# 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
2021**	3085	2931	94%	22.6

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.
** The Program had 2 technical people retire and 1 technical person leave the Program in 2021, which affected the ability to meet PEP standards and increased the Average DEC Days,

particularly in light of the overall increase in applications. This was managed to a great extent through updates in process and the dedication of the remaining staff.

Table B-2. 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
2021	643

Table B-3 Permit Information for 2021*, **

Permits Issued to Repair Failed Wastewater Systems	Applications Denied	Number of Installation Certifications for replacement of failed wastewater systems due in 2021	Received installation certifications for replacement of failed wastewater systems due in 2021
641	17	571	521

* 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. All but 3 denials were submissions that predated the April 12, 2019 Rule change.

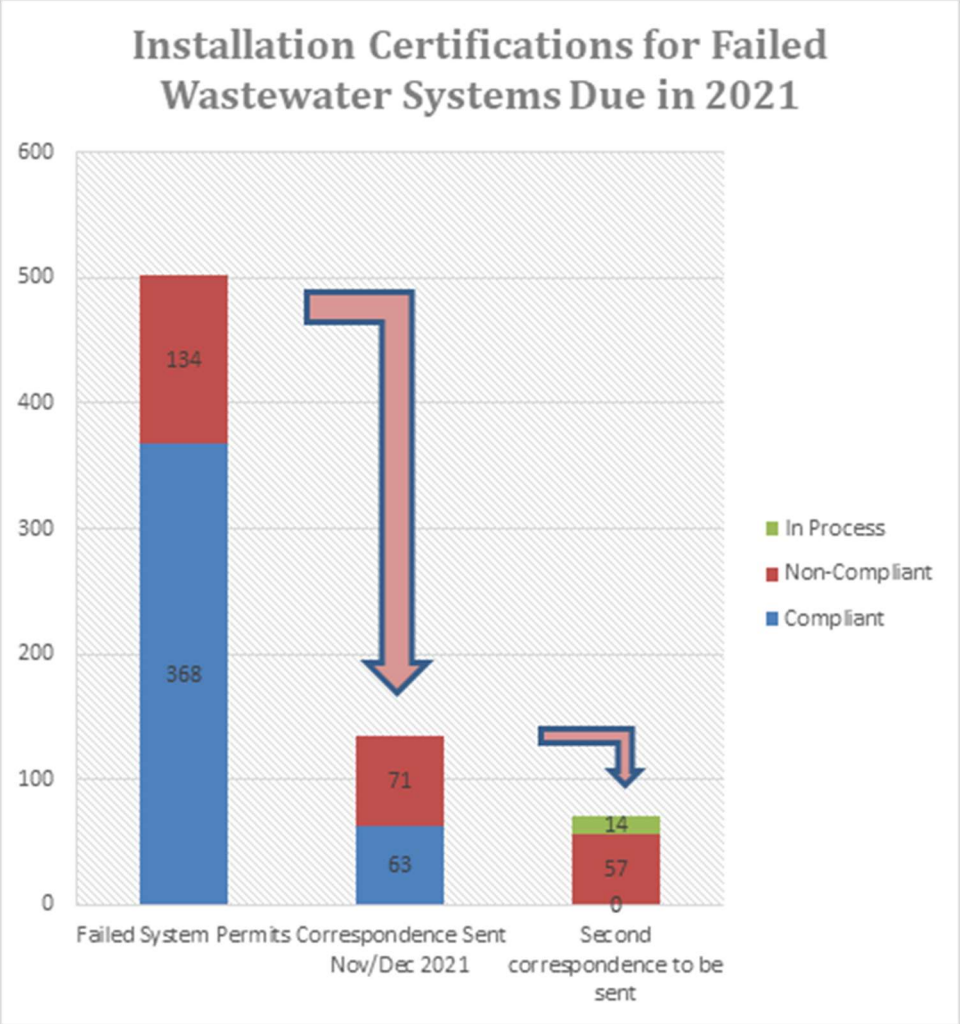
** See Figures B-1 through B-4.

Failed Wastewater Systems Compliance Initiative

In 2020 the program wasable 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.

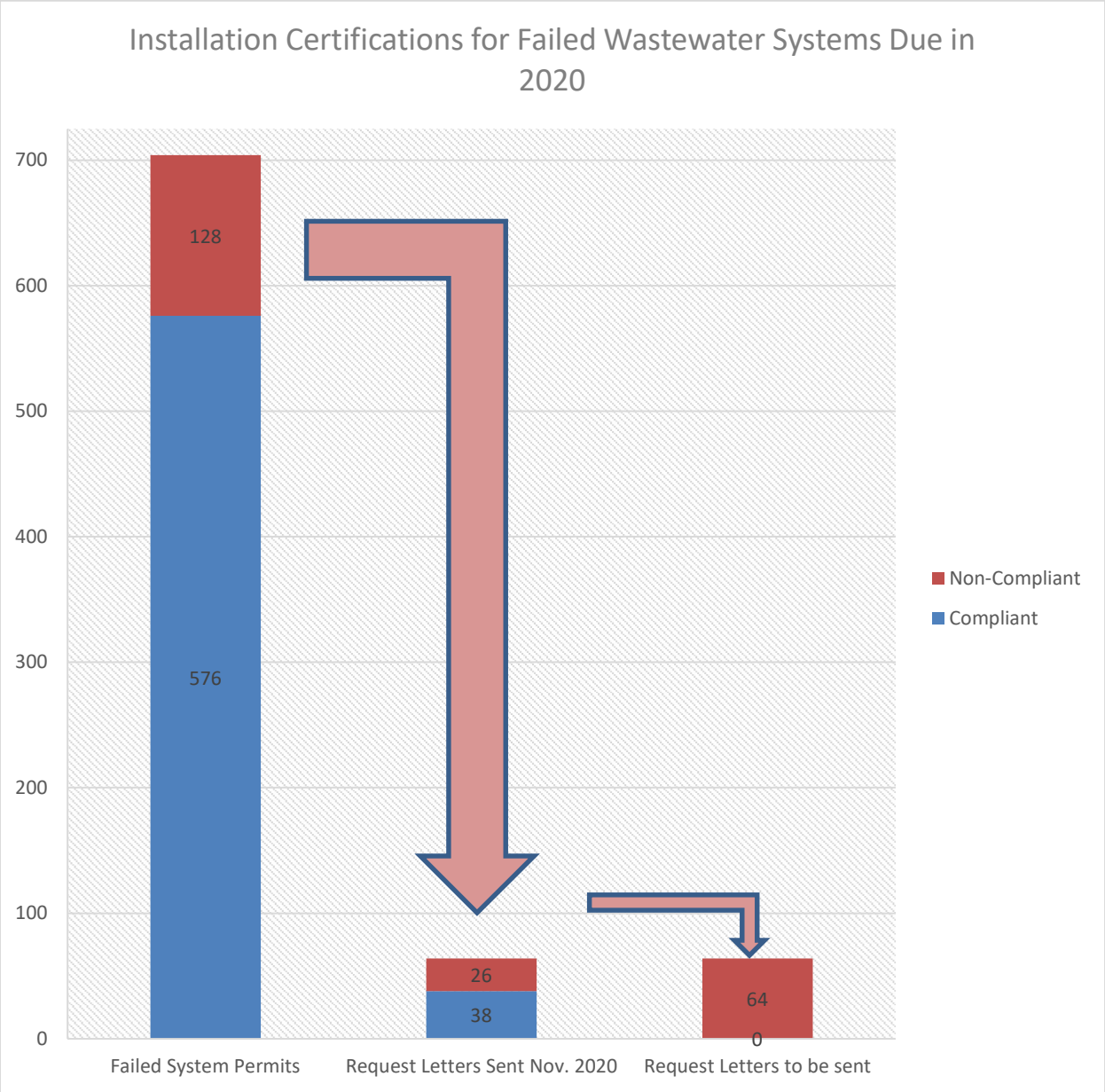
Not all permits for failed wastewater systems issued in 2021 required installation within 2021. A total of 502 permits did require installation in 2021 (Figure B-1). The effectiveness of the initial and second letters sent to failed system permittees by the compliance program in 2021 reveals the effectiveness of follow-up correspondence, with an additional 64 permits being complied with after first letters and 14 permits being noted as being in progress after the second letter. The net failed system compliance in 2021 was 89%.

Figure B-1



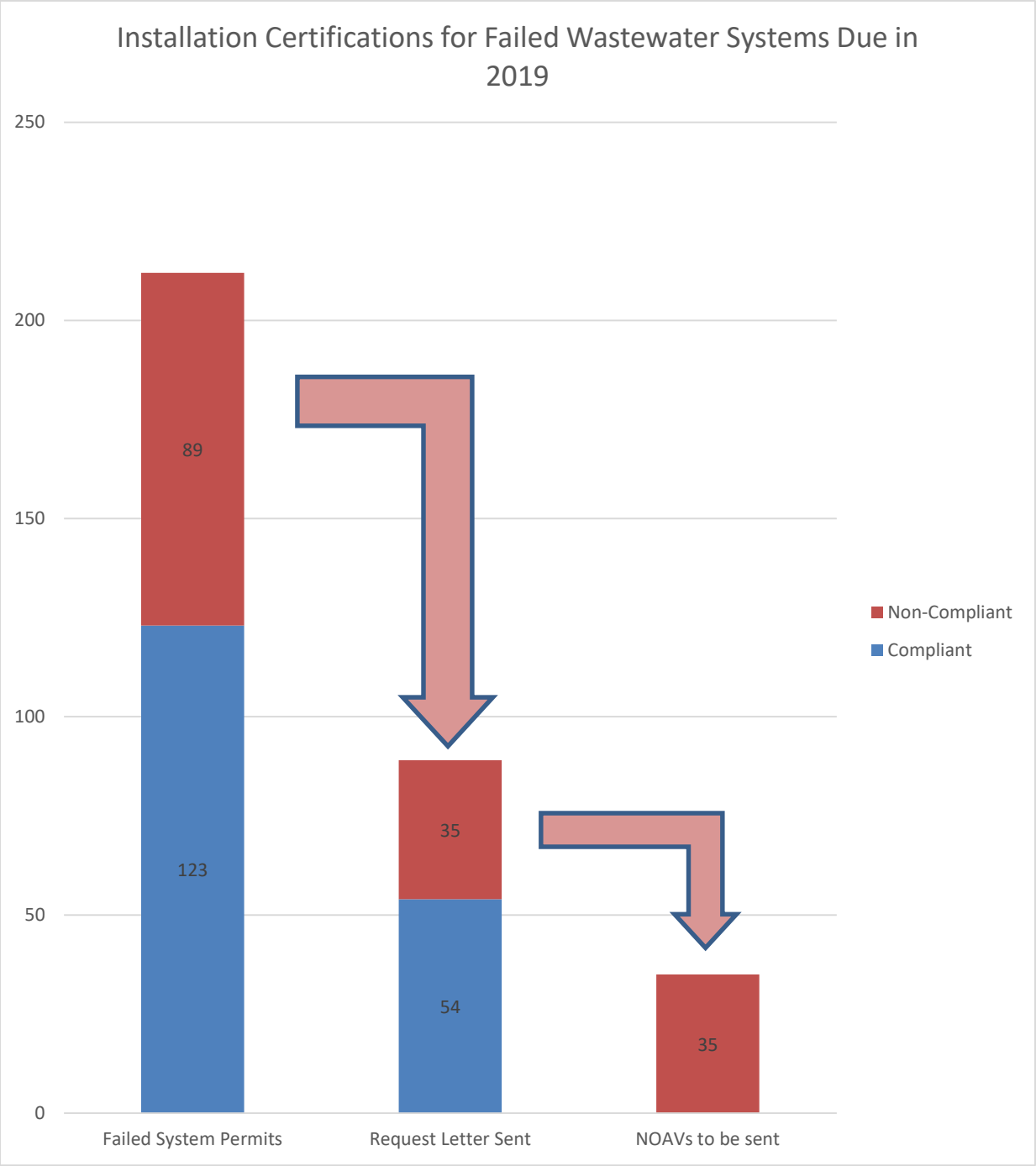
There were 704 failed wastewater system permits that required installation in the 2020 calendar year (Figure B-2). Of the 128 systems that had not been installed prior to November, an additional 38 installations were submitted. In 2020, the second letter did not result in any additional installation certifications, and the overall rate of installation certification compliance was 87 percent with additional request letters pending by the end of 2020.

Figure B-2


Installation Certifications for Failed Wastewater Systems Due in 2020
700
600
500
400
300
200
100
0
128
576
26
38
64
0
Failed System Permits
Request Letters Sent Nov. 2020
Request Letters to be sent
Non-Compliant
Compliant

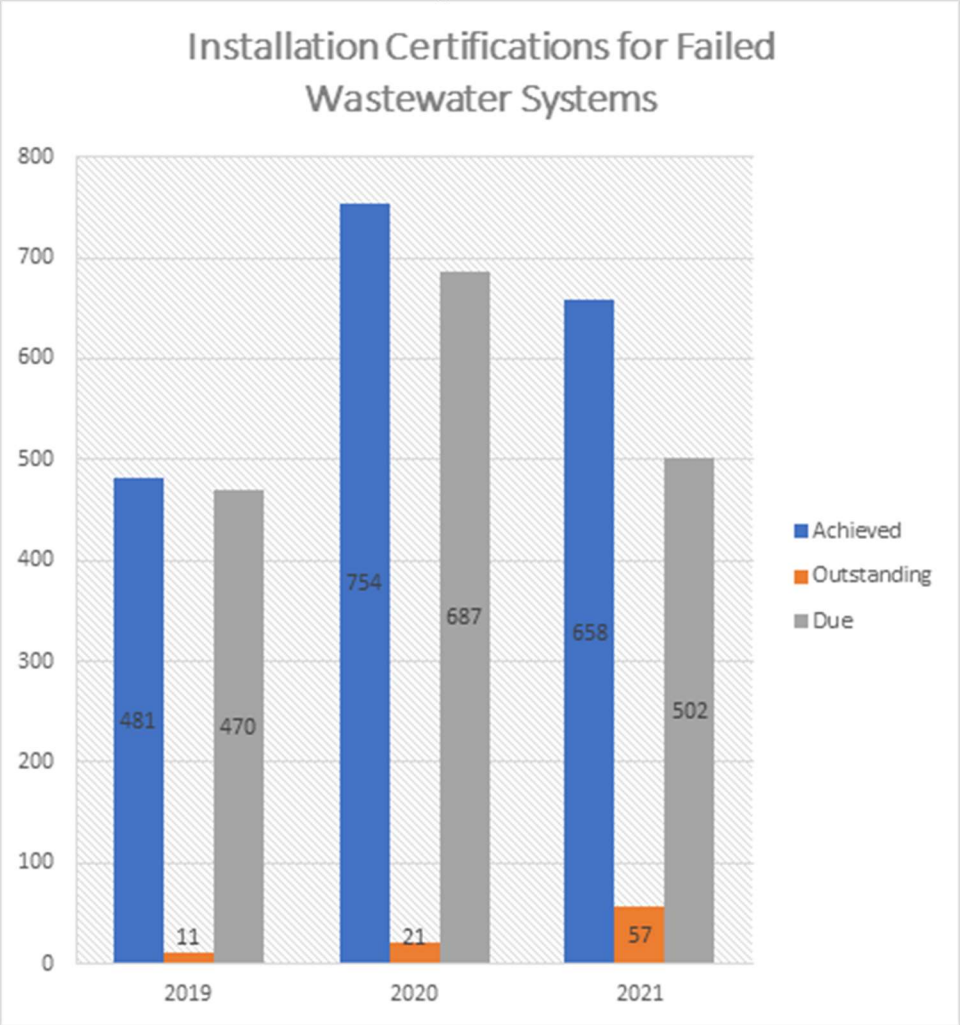
In 2019, initial failed system installation certification request letters increased compliance, and Notices of Alleged Violations were to be sent to non-compliant permittees (Figure B-3). Of the 212 failed system permit installation certifications that were due in 2019, there was an overall 83% compliance.

Figure B-3



Recognizing that outstanding installation certifications extend back before 2019 and may extend across calendar years, the overall numbers of failed system installation certifications achieved is increasingly outpacing the number that were due in that particular year as we are resolving more and more of the long held outstanding sites. The increase in tracking and compliance outreach has shown a significant impact on improving the overall state of compliance for replacing failed systems. The program anticipates resolving this backlog in another year.

Figure B-4



Innovative/Alternative Systems Compliance Initiative

This was the second year of electronic forms for the online submission of all Innovative/ Alternative compliance inspections from Service Providers. 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 subsequent outreach has significantly increased the compliance of these systems with their permit conditions over the 2020 – 2021 timeframe.

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.

Table B-4 Innovative/Alternative (I/A) Wastewater System Summary 2007 to 2021

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
2021	841
Total	**8,336**

Table B-5. 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
2021	1404

Table B-6. Innovative/Alternative Technologies Permits in 2021 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	1			
Algaewheel			0	
American Manufacturing/Oakson		3		
Anua	0			
Aqua Test			2	
Aquapoint 3	1			
BioGill			0	
Bio-Microbics	18		2	
Busse			0	
Cromaglass	0			
Delta Environmental Products	0			
Ecological Tanks	0			
Eljen Corp		5		
F.R. Mahony & Associates, Inc.	0			
FujiClean	0			
GeoMatrix		5		
Hydro-Action Manufacturing, Inc.	6		0	
Infiltrator Systems		126		
Island Water Technologies	0			
Jet	31			
Norweco	19			
Orenco	57			
Premier Tech Environmental	0			
Presby Environmental		555		
Rich Earth Institute			6	
SeptiTech	4			
Total	137	694	10	0

Licensed Potable Water and Wastewater System Designers

The program has been taking steps to generate interest in younger individuals in becoming a potable water and wastewater system designer. The program has been partnering with Vermont Technical College to create more robust training opportunities, working towards the creation of a full training program. This was timely in that the partnership allowed us to continue to meet the continuing education offerings in the time of the COVID-19 pandemic (Table B-7). Vermont Technical College in return has been able to advertise this career path and this year we were able to see an increase in the number of applicants to take the Class A exam (Table B-8). We also saw an increase in the percentage of students passing the Class A. The program is looking forward to continuing the relationship with Vermont Technical College, increasing interest in the career path, increasing in state continuing education offerings, and eventually revitalizing the dormant state statute setting Vermont Technical College as a site of innovation and testing for alternative wastewater systems. We hope to show increasing numbers of licensed designers in the coming years (Table B-9) and to provide the means to keep this work force at the forefront of the industry.

Table B-7. 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
2021	8	200*	11	39

* 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.

Table B-8. Licensing Exam Record for 2019-2021

YEAR	Class A Exams	Class A Pass	Class B Exam	Class B Pass	Class BW Exam	Class BW Pass
2019	8	4 (50%)	9	8 (89%)	4	3 (75%)
2020*	13	5 (39%)	NA	NA	NA	NA
2021	20	14 (70 %)	6	3 (50%)	2	2 (100%)

*Class B and BW exams were not offered in 2020 due to the COVID restrictions.

Table B-9. Number of Active Licenses in each Designer Class

Year	Class 1	Class BW	Class B	Class A
2021	194	59	51	20

C

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**