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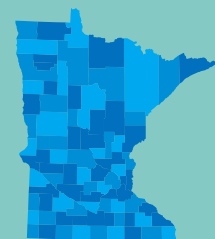
Wastewater

2020 SSTS Annual Report

Subsurface Sewage Treatment Systems in Minnesota



m MINNESOTA POLLUTION
CONTROL AGENCY



Authors

Katie Dowling

Photo credit

MPCA photos

Contributors/acknowledgements

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Minnesota Pollution Control Agency

520 Lafayette Road North | Saint Paul, MN 55155-4194 |

651-296-6300 | 800-657-3864 | Or use your preferred relay service | Info.pca@state.mn.us

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Acronyms

| | |
|-------|---|
| ALS | Alternative local standards |
| FTPGW | Failing to protect groundwater |
| GPD | Gallons per day |
| ITPHS | Imminent threat to public health and safety |
| LGU | Local governmental unit |
| MPCA | Minnesota Pollution Control Agency |
| SSTS | Subsurface sewage treatment system |
| TCPA | Township Cooperation Planning Association |

Executive summary

There were 203 local governmental units (LGUs) who administered subsurface sewage treatment system (SSTS) programs in 2020 that submitted annual report data to the Minnesota Pollution Control Agency (MPCA). The 203 local SSTS programs consist of 86 counties, 79 cities, 34 townships, and 4 other special purpose units of government with permitting authority.

A total of 618,102 SSTS were reported across Minnesota, representing an estimated 42.3 billion gallons of wastewater treated by SSTS per year (assuming 2.5 person/permit; 75 gallons/person; 365 days/year).

LGUs issued 12,368 SSTS construction permits in 2020 for 5,185 new systems and 7,183 replacement systems. Of the SSTS permitted in 2020, approximately 97% are serving residential dwellings and 3% are serving other establishments.

Over 76% of the SSTS permitted in 2020 were Type I systems, including 5,458 Type I mounds. There were 1,428 Type II systems, 1,426 Type III systems, 109 Type IV systems, and 8 Type V systems permitted in 2020.

The majority of SSTS construction permits issued in 2020 were for systems with a flow volume between 1-2,499 gallons per day (gpd); however, there were 15 systems with a flow volume between 2,500-4,999 gpd and 8 systems with a flow volume between 5,000-10,000 gpd permitted.

LGUs reported that 16,241 sewage tanks were installed in 2020.

There were 15,764 existing system compliance inspections conducted in 2020. LGUs reported that 1,275 noncompliant properties were mitigated by centralized sewer connection, abandonment or removal, or a government buyout in 2020.

Of the 203 LGUs with SSTS programs in 2020, 98% approve SSTS designs before issuing construction permits, 97% verify soils at some point during the review process, 40% track SSTS maintenance activities, and 80% have property transfer compliance inspection requirements.

Almost 100,000 SSTS construction permits have been issued within the last 10 years, indicating that over 16% of Minnesota's 618,102 SSTS have been newly constructed within the last ten years or contain components that are less than ten years old

The number of estimated compliant SSTS has increased over the last ten years, from approximately 401,000 systems in 2011 to 505,300 systems in 2020.

Trends observed from the 2020 SSTS Annual Report suggest continued improvements in subsurface wastewater treatment across the state.

Introduction

Minn. R. 7082.0040 requires local SSTS programs to submit annual reports to the MPCA by February 1 documenting their SSTS activities for the previous calendar year. Local SSTS programs occur at four governmental levels: 1) county, 2) city, 3) township, and 4) other special purpose units of government with permitting authority.

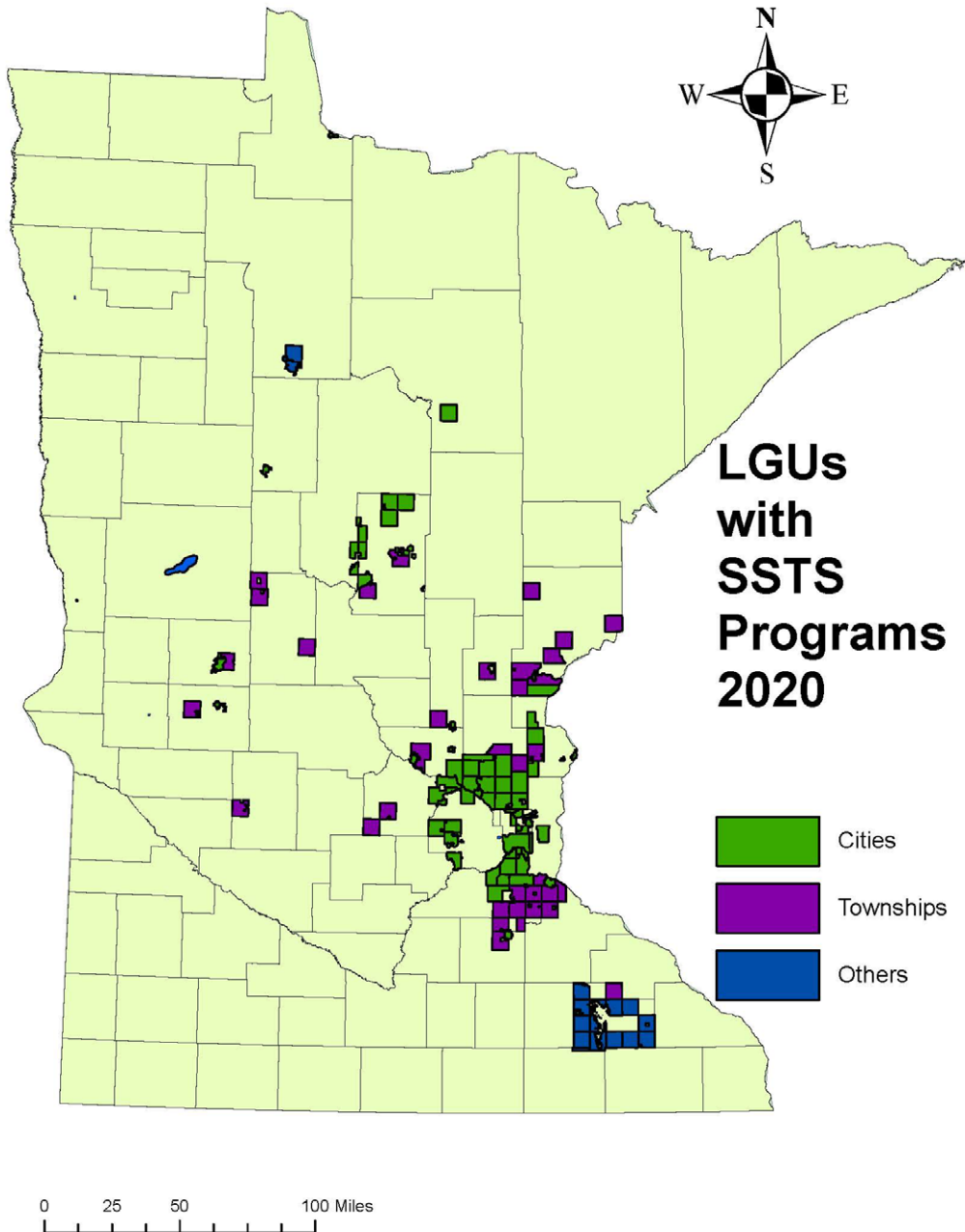
In December 2020, the MPCA sent out a web-based annual report survey to LGUs with known SSTS programs to complete. The annual report survey was used to obtain data from each local SSTS program so that relevant information could be summarized into a statewide 2020 SSTS Annual Report. The annual report survey is also used to track the number of sewage tanks installed to ensure tank fee payments from licensed SSTS installers. Tank fees were approved by the Legislature in 2003 to help fund SSTS compliance efforts in the state.

The 2020 SSTS Annual Report generally models the format used in the 2019 SSTS Annual Report and includes a broad analysis of SSTS trends. The analysis is based on data that LGUs provided in their annual report survey submissions. Some of the data is considered “hard” data, such as the reported number and types of permits issued. Other data is considered “soft” data, such as the reported best estimates provided to determine SSTS compliance rates and the total number of SSTS in each jurisdiction. Additionally, the 2020 SSTS Annual Report includes information about SSTS certification and licensing, which was compiled by the MPCA’s certification and training unit.

Annual report responses

As of 2020, there were 203 LGUs that administered SSTS programs in Minnesota. The number of county programs remained the same at 86; however, the number of city and township programs changed from 2019. [Appendix B1](#) contains a list of cities with SSTS programs in 2020. [Appendix B2](#) contains a list of townships with SSTS programs in 2020. [Appendix B3](#) contains a list of other special purpose units of government with SSTS programs in 2020. The distribution of LGUs with SSTS programs in 2020 is displayed in [Figure 1](#).

Figure 1. LGUs with SSTS programs in 2020



LGU participation

In December 2020, 215 LGUs that were reported to have SSTS programs in 2019 were contacted by the MPCA and requested to submit annual report data through a web-based survey. The annual report surveys were sent electronically to each SSTS administrator email contact previously provided by LGUs in their 2019 annual report surveys. The MPCA was notified that 12 LGUs who received an annual report survey in 2020 no longer administer an SSTS program. The 2020 SSTS Annual Report had a 100% response rate as all 203 expected annual report surveys were submitted. [Table 1](#) provides the 2020 SSTS Annual Report response rate by LGU type.

Recipients with an incomplete status were contacted by MPCA staff and requested to submit the survey for completion, indicate the LGU no longer has an active SSTS program, or identify they are not the correct LGU SSTS program contact.

It can be difficult to ensure the annual report survey is sent to and completed by the right individual for reasons such as; county staff may be unsure of who the local city or township contact is for each program operating within the county boundaries, city and township programs with privately contracted inspection services can change each year, and lack of transferring annual report responsibilities when there are LGU staff changes.

There are 86 counties, 79 cities, 34 townships, and 4 other special purpose units of government that make up the 203 LGUs with SSTS programs as of 2020. Ramsey County is not required to submit an annual report survey due to their entire jurisdiction being served by city and township SSTS programs. The other special purpose units of government with permitting authority consist of the University of Minnesota, Bemidji Joint Powers Board, Otter Tail Water Management District, and the Olmsted Township Cooperation Planning Association (TCPA).

Table 1. 2020 SSTS Annual Report response rate by LGU type

| | County | City | Township | Other | Total |
|---|--------|------|----------|-------|-------|
| LGUs – contacted per 2019 reporting | 86 | 83 | 51 | 4 | 215 |
| LGUs – indicated no active program as of 2020 | 0 | 4 | 8 | 0 | 12 |
| LGUs – submitted 2020 data | 86 | 79 | 34 | 4 | 203 |
| LGUs – no response | 0 | 0 | 0 | 0 | 0 |

Number of SSTS

As of 2020, LGUs estimated that there are 618,102 total SSTS in Minnesota. In 2020, 12,368 SSTS construction permits were issued across the state. Additionally, there were 247 repair permits issued in 2020. [Table 2](#) provides statewide values, as well as the highest and lowest countywide values, for the total number of SSTS reported and construction permits issued in 2020.

The greatest number of total SSTS was reported in Crow Wing County (39,267); the lowest number of total SSTS was reported in Traverse County (598). The greatest number of construction permits issued in 2020 was reported in Otter Tail County (830); the lowest number of construction permits issued in 2020 was reported in Lincoln County (1). County, city, township, and other special purpose units of government data were added to their respective counties to tabulate this information.

Table 2. Total number of SSTS reported and construction permits issued in 2020

| | Total number of SSTS | Construction permits issued in 2020 |
|----------------|----------------------|-------------------------------------|
| Statewide | 618,102 | 12,368 |
| Highest county | 39,267 | 830 |
| Lowest county | 598 | 1 |

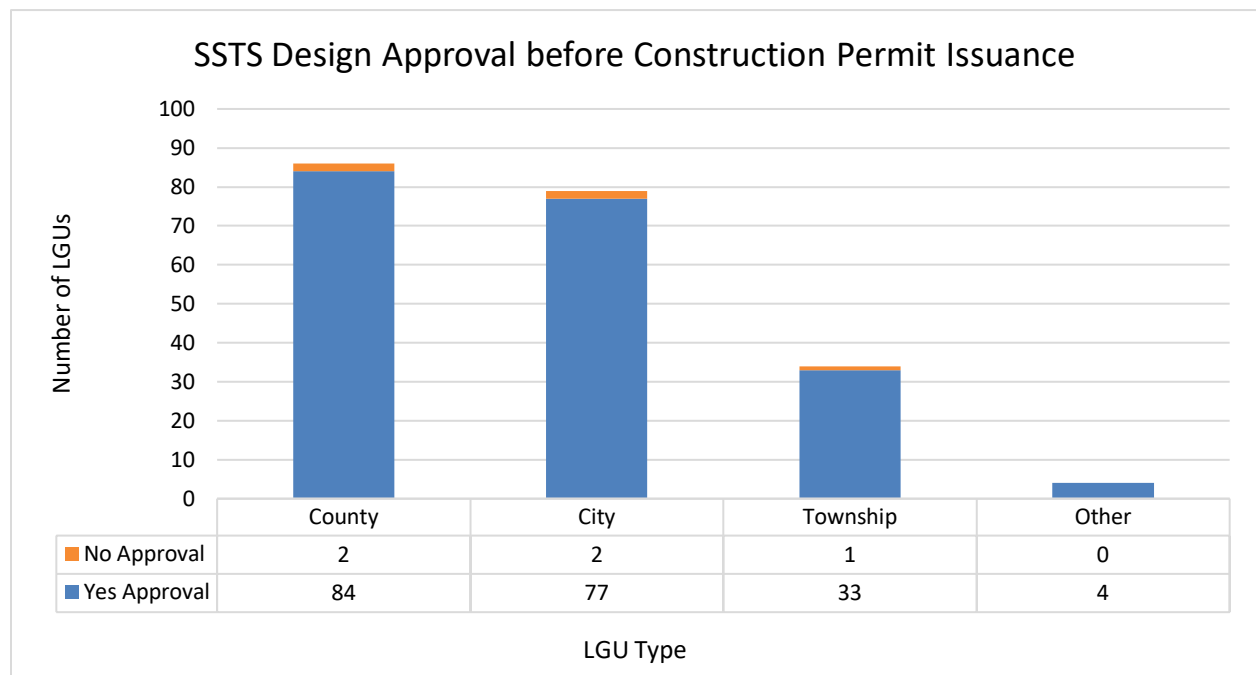
[Appendix A1](#) contains a countywide list of the following information:

1. Number of SSTS reported in 2020;
2. Number of SSTS construction permits issued in 2020;
3. Number of SSTS construction permits issued over the last 19 years (2002-2020);
4. Number of existing system compliance inspections conducted in 2020 countywide (private inspector and LGUs);
5. Percentage of existing SSTS inspected in 2020 out of total SSTS reported in county; and
6. Counties with property transfer compliance inspection requirements.

Design approval

The annual report survey requests LGUs to indicate if they approve SSTS designs before issuing construction permits. Of the 203 LGUs with SSTS programs in 2020, 198 (98%) reported that they approve SSTS designs before construction permit issuance ([Figure 2](#)). The five LGUs that reported not approving SSTS designs before construction permit issuance will be contacted to discuss rule requirements.

Figure 2. 2020 LGU status for SSTS design approval before construction permit issuance



Soil verification

The annual report survey requests LGUs to indicate when they most often perform infield soil verification during the review process. As of 2020, over 96% of LGUs reported verifying soils at some time before, during, or after system construction. There were 132 LGUs that reported verifying soils before construction permit issuance, 50 LGUs that reported verifying soils during construction, and 14 LGUs that reported verifying soils after construction. There were seven LGUs that reported not verifying soils at any time before, during, or after system construction.

[Figure 4](#) provides a breakdown of when LGUs are most often performing infield soil verifications as of 2020. [Figure 5](#) displays the time of soil verification throughout the state by county. Those jurisdictions that reported not verifying soils will be contacted to discuss the requirements of Minn. R. 7082.0500.

[Figure 3](#) displays a tool commonly used to determine the depth to the limiting layer by identifying distinct redoximorphic concentrations and depletions in the soil profile.

Figure 3. A hand auger tool is used during a soil observation



Figure 4. 2020 LGU status for soil verification timing

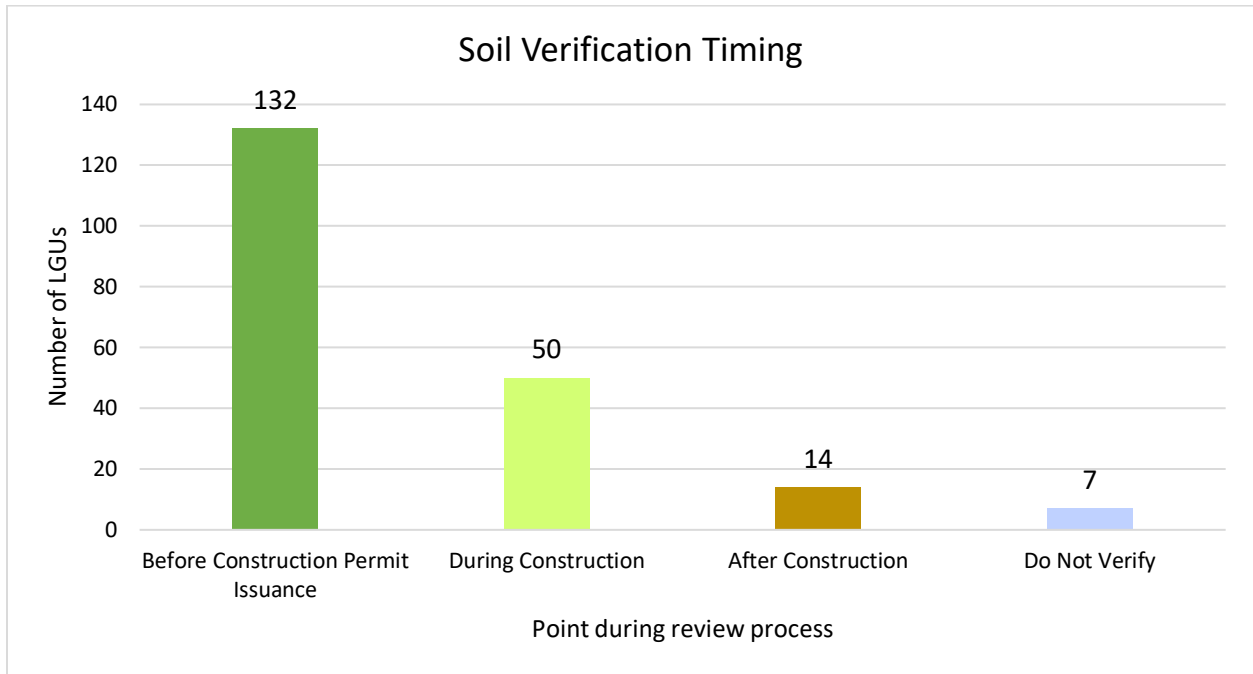
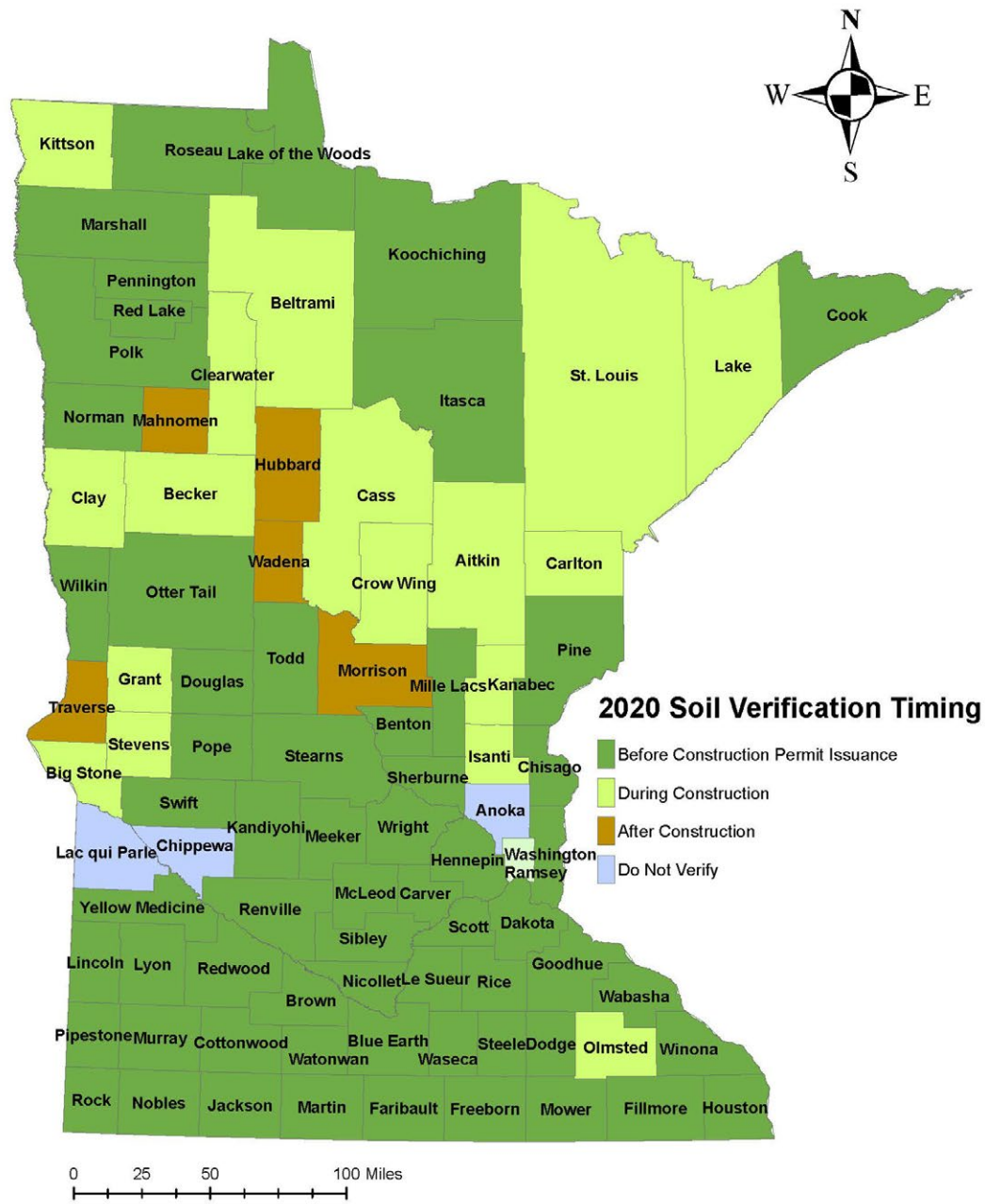


Figure 5. Timing of soil verification as of 2020 by county



Systems by type

The following section describes each of the types of SSTS.

Type I Systems are mounds, at-grades, trenches, or beds built in accordance with the prescriptive requirements of Minn. R. chs. 7080-7081.

- Specific prescriptive requirements in Minn. R. chs. 7080 and 7081.
- Requires a management plan.
- Has been termed “standard systems”.
- Designed by a basic, intermediate, or an advanced designer – based on flow.

Type II Systems are holding tanks, privies, or SSTS in floodplain areas.

- Employed to fit non-standard site conditions (e.g., floodplains) or special dwelling and “other establishment” situations (privy or holding tanks).
- Requires a management plan.
- Has been termed “alternative systems”.
- Designed by a basic, intermediate, or an advanced designer – based on flow.

Type III Systems are systems that do not have one foot of natural soil, are determined to have disturbed soils, or have limited space for a soil dispersal area, among other potential deviations.

- Deviates from certain allowable Type I prescriptive standards when needed.
- Employed to fit non-standard soil and site conditions or organic loading-limited design without the use of pretreatment.
- Requires a management plan; operating permit is recommended.
- Has been termed “other systems”.
- Designed by a basic, intermediate, or an advanced designer – based on flow.

Type IV Systems are systems, which employ a treatment component registered under Chapter 7083.4030 and can have a reduced infiltration area and vertical separation.

- Follows Type I prescriptive design requirements when site conditions allow.
- Deviates from Type I prescriptive standards due to the use of a registered treatment product .
- Employed to:
 - Reduce the vertical separation distance requirement.
 - Reduce the absorption area.
 - Extend the life of the soil system.
 - Reduce waste strength.
- Higher operation and maintenance requirements than a Type I – III.
- Requires a management plan.
- Requires an operating permit and service provider.
- Designed by an intermediate or advanced designer – based on flow.

Type V Systems are systems designed by a professional engineer that deviate from the prescriptive requirements of a Type I system.

- Does not need to follow prescriptive design standards.
- Must meet environmental and safety performance outcomes.
- Components not following Type I – IV design standards authorized by a professional engineer.

- Employed to use registered and/or non-registered treatment and dispersal products.
- Requires a management plan.
- Requires an operating permit and service provider.
- Designed by an advanced designer and signed off by a professional engineer or appropriately licensed professional.

SSTS reported by type

The number of SSTS construction permits reported by system type is presented in [Table 3](#). The majority of SSTS permitted in 2020 were Type I systems; approximately 58% were mound systems. Over 7% of Type I systems permitted in 2020 contain proprietary distribution media, consisting of 650 chamber trenches and 31 EZ Flow trenches.

There were 1,428 Type II systems, 1,426 Type III systems, 109 Type IV systems, and 8 Type V systems permitted in 2020.

Table 3. 2020 SSTS construction permits reported by system type

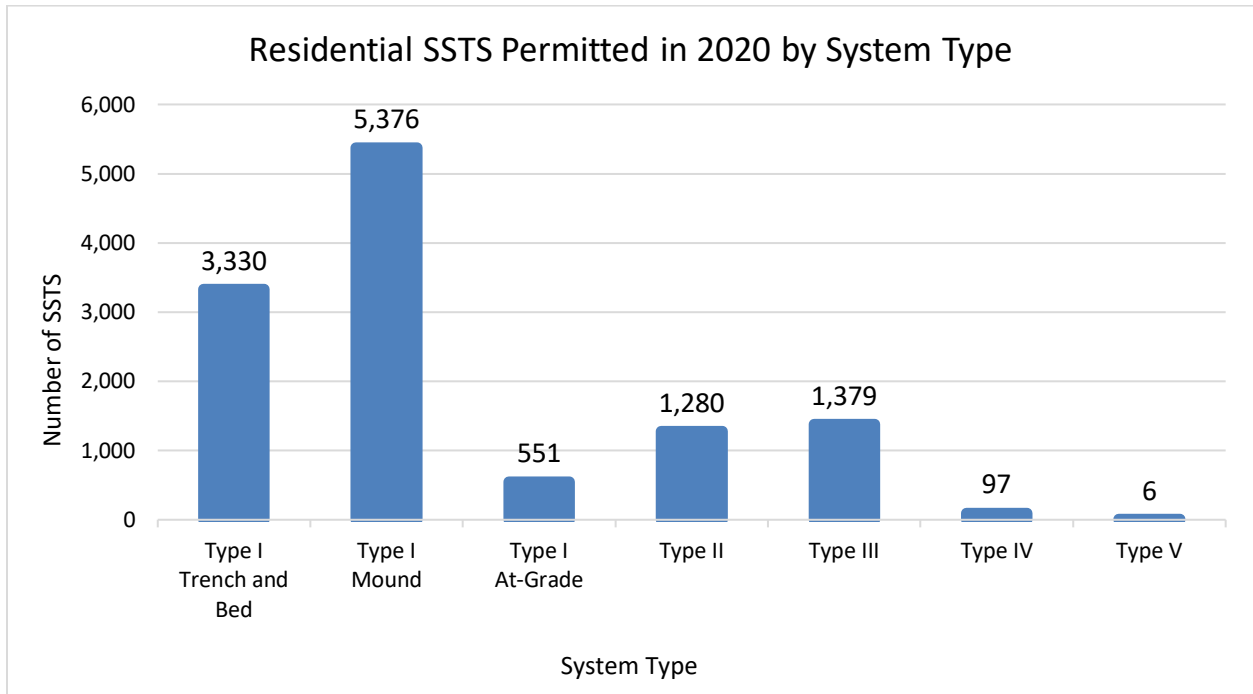
| System Type | System Subtype | Residential | Other Establishment | Total | % Change From 2019 |
|-----------------|---------------------------|---------------|---------------------|---------------|--------------------|
| Type I | All | 9,257 | 163 | 9,420 | 24% |
| | At-Grade | 551 | 2 | 553 | 39% |
| | Chamber Trench | 635 | 15 | 650 | 1% |
| | EZ Flow Trench | 30 | 1 | 31 | -21% |
| | Mound | 5,376 | 82 | 5,458 | 28% |
| | Rock Trench | 905 | 33 | 938 | 6% |
| | Seepage and Pressure Beds | 1,760 | 30 | 1,790 | 31% |
| Type II | | 1,280 | 148 | 1,428 | 10% |
| Type III | | 1,379 | 47 | 1,426 | 40% |
| Type IV | | 97 | 12 | 109 | 1% |
| Type V | | 6 | 2 | 8 | 14% |
| Total | | 12,019 | 372 | 12,391 | 24% |

Note: The totals in this dataset are inconsistent with construction permit data included elsewhere in this report due to inconsistencies among reporting LGUs. This dataset should only be used for identifying trends and proportional analysis.

Residential SSTS

The number of SSTS construction permits issued in 2020 for residential dwellings, reported by system type, is presented in [Figure 6](#). A total of 12,019 residential SSTS were permitted in 2020. Type I systems accounted for approximately 77% of total residential SSTS permitted, including 3,330 trenches and beds, 5,376 mounds, and 551 at-grades. There were 1,280 Type II systems, 1,379 Type III systems, 97 Type IV systems, and 6 Type V systems permitted in 2020 for residential dwellings.

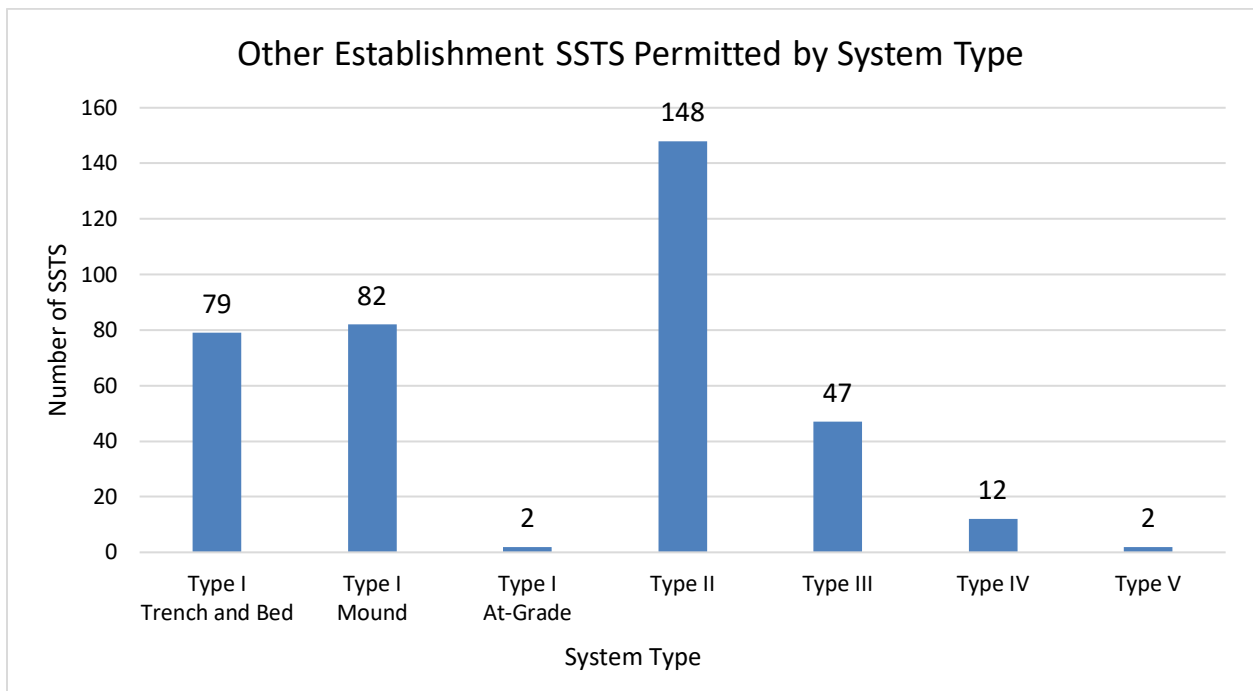
Figure 6. 2020 SSTS construction permits, reported by system type, for residential dwellings



Other establishment SSTS

The number of SSTS construction permits issued in 2020 for other establishments, reported by system type, is presented in [Figure 7](#). A total of 372 other establishment SSTS were permitted in 2020. Type I systems accounted for approximately 44% of total other establishment SSTS permitted, including 79 trenches and beds, 82 mounds, and 2 at-grades. There were 148 Type II systems, 47 Type III systems, 12 Type IV systems, and 2 Type V systems permitted in 2020 for other establishments.

Figure 7. 2020 SSTS construction permits, reported by system type, for other establishments



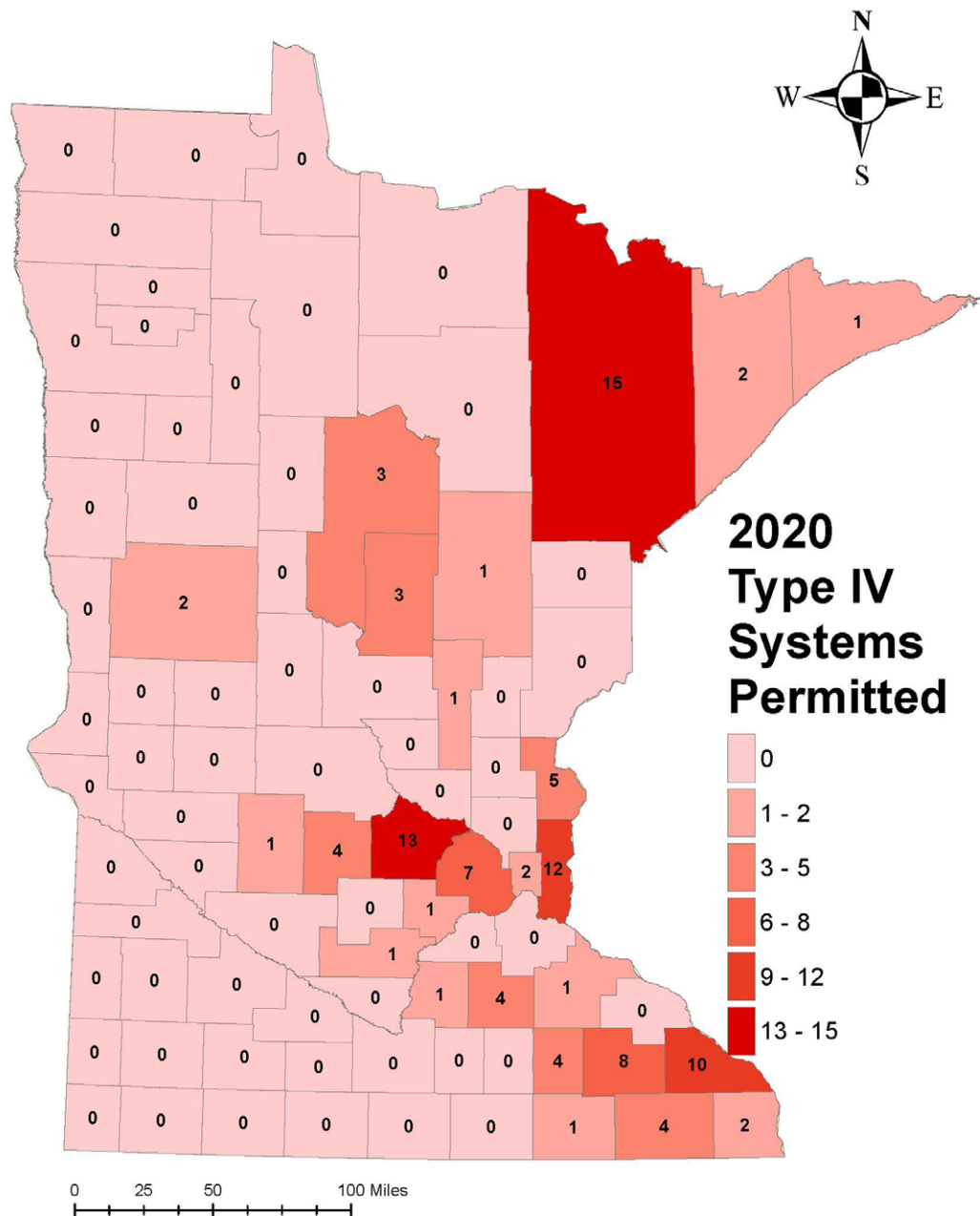
Type IV systems

A total of 109 Type IV systems were permitted in 2020, consisting of 97 residential SSTS and 12 other establishment SSTS. An example of a registered proprietary treatment product used in a Type IV system is shown in [Figure 8](#). The greatest number of Type IV systems was reported in St. Louis County (15). [Figure 9](#) presents the distribution of Type IV systems permitted in 2020 by county.

Figure 8. Type IV system using a registered proprietary treatment product



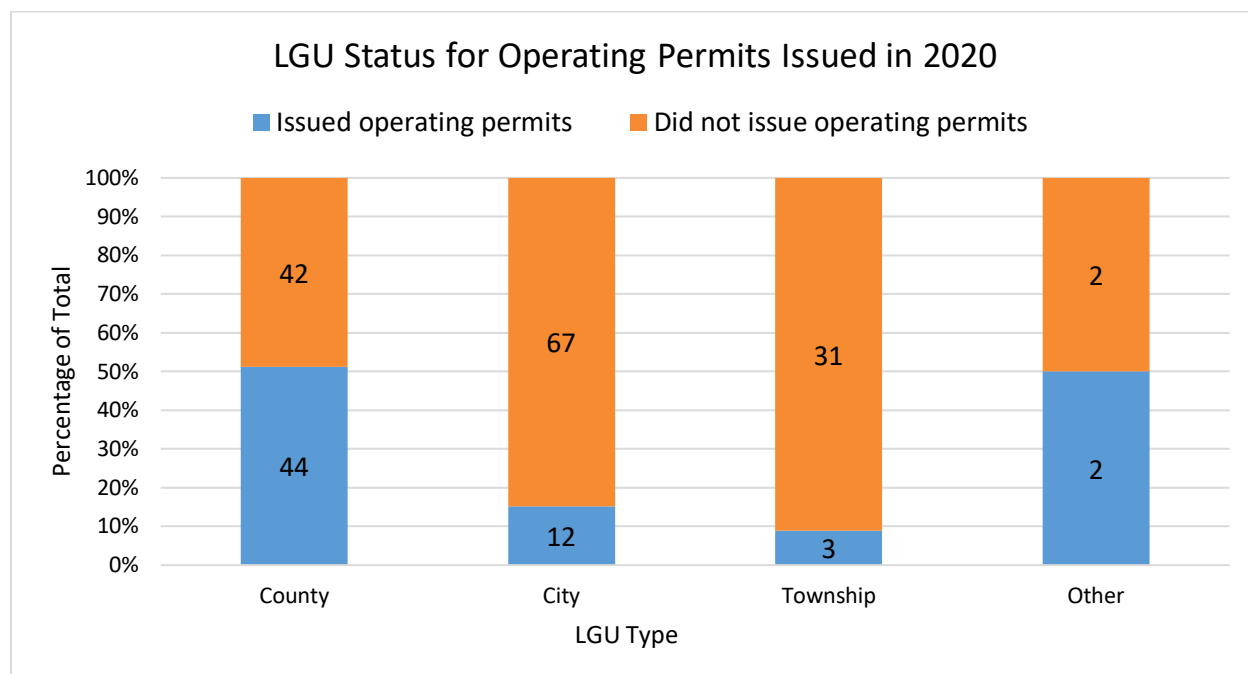
Figure 9. Type IV systems permitted in 2020 by county



Operating permit issuance

Operating permits are site-specific regulatory documents that outline various parameters for maintenance, monitoring, and other service functions for a variety of SSTS types. It was reported that 568 operating permits were issued in 2020 for both residential and other establishment systems. The LGUs that issued operating permits in 2020 consist of 44 counties, 12 cities, 3 townships, and 2 other special purpose units of government. The distribution of LGUs who issued operating permits in 2020 is presented in [Figure 10](#).

Figure 10. LGU status for issuing operating permits in 2020



SSTS by wastewater flow volume

Over 99% of the total SSTS construction permits issued in 2020 were for systems with a flow volume between 1-2,499 gpd, consisting of 11,999 residential SSTS and 346 other establishment SSTS. Of the total SSTS with a flow volume between 1-2,499 gpd permitted, approximately 59% were replacement systems and 41% were new systems.

A total of 15 systems with a flow volume between 2,500 and 4,999 gpd were permitted in 2020, consisting of 4 residential SSTS and 11 other establishment SSTS. Of the total SSTS with a flow volume between 2,500 and 4,999 gpd permitted, 9 were replacement systems and 6 were new systems.

A total of 8 systems with a flow volume between 5,000 and 10,000 gpd were permitted in 2020 for other establishments. Of the total SSTS with a flow volume between 5,000 and 10,000 gpd permitted, 2 were replacement systems and 6 were new systems.

[Table 4](#) provides the number of SSTS construction permits issued in 2020 by wastewater flow volume.

Table 4. SSTS permitted in 2020 by flow volume

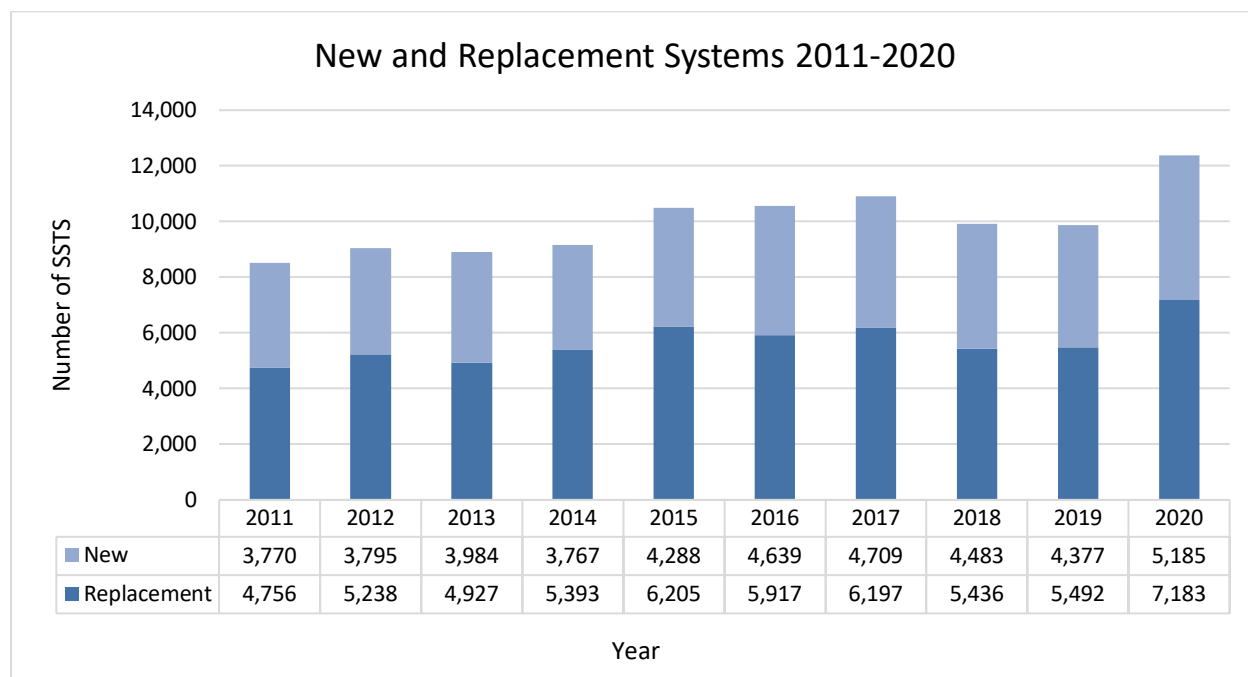
| Flow Volume (gpd) | Residential | | Other Establishment | | Total |
|--------------------|-------------|-------------|---------------------|-------------|--------|
| | New | Replacement | New | Replacement | |
| 1 – 2,499 gpd | 4,952 | 7,047 | 221 | 125 | 12,345 |
| 2,500 – 4,999 gpd | 2 | 2 | 4 | 7 | 15 |
| 5,000 – 10,000 gpd | 0 | 0 | 6 | 2 | 8 |
| Total | 4,952 | 7,049 | 231 | 134 | 12,368 |

New and replacement SSTS

The number of SSTS construction permits issued for new and replacement systems over the last ten years is presented in [Figure 11](#). Almost 100,000 construction permits have been reported by LGUs since 2011; approximately 57% were for replacement systems and 43% were for new systems.

LGUs issued 12,368 construction permits in 2020 for 5,185 new systems and 7,183 replacement systems. Existing systems may be replaced due to failing to protect groundwater (FTPGW) or posing an imminent threat to public health and safety (ITPHS). These conditions are typically identified through various local triggers such as: property transfer inspections, land use permits, building permits, conditional use permits, variances, and complaints.

Figure 11. SSTS construction permits for new and replacement systems 2011-2020



Sewage tanks installed

LGUs reported that 16,241 sewage tanks were installed in 2020, including 16,138 standard sewage tanks and 103 performance-based system tanks. Collecting tank installation data supports the administration of Minn. Stat. § 115.551, requiring installers to pay a fee of \$25 for each tank installed in the previous year. For performance-based systems, the tank fee is limited to \$25 per household system installation.

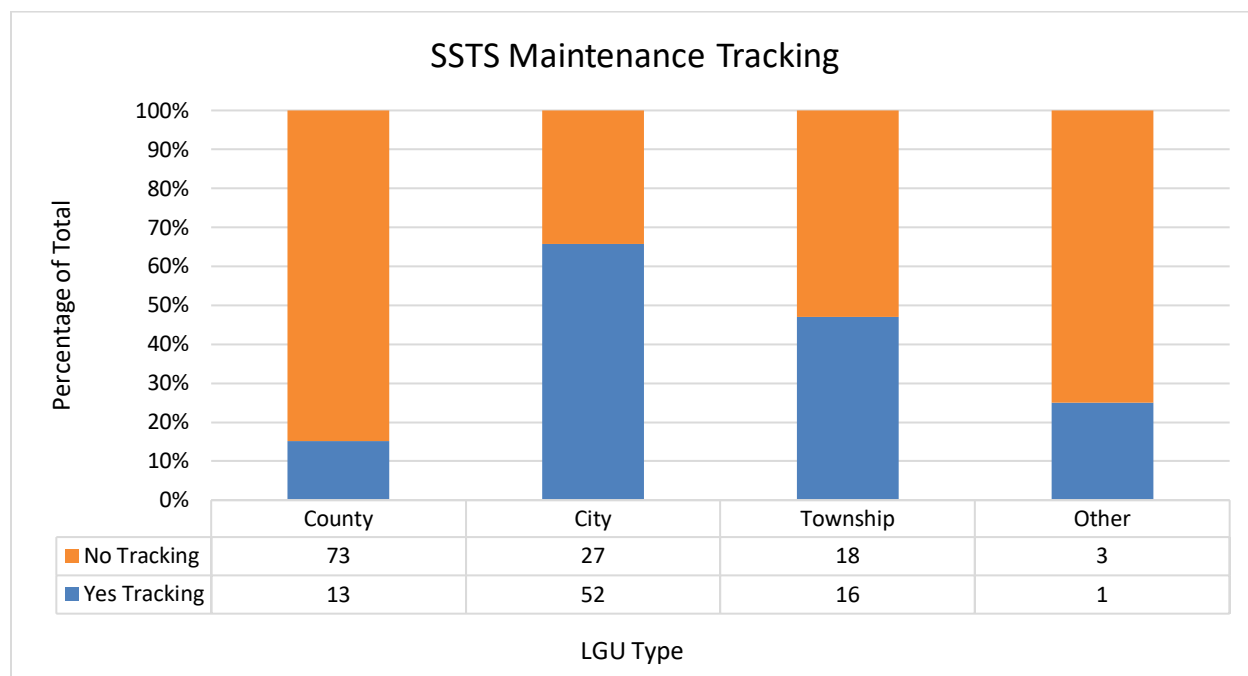
Figure 12. The installation of concrete sewage tanks



Tracking SSTS maintenance activities

The annual report survey requests LGUs to indicate if they track SSTS maintenance activities. Of the 203 LGUs with SSTS programs in 2020, 82 (40%) reported that they track the maintenance of SSTS activities. The high proportion of city programs can be attributed to entities, such as the Met Council, requiring maintenance tracking in the metropolitan area. There were 13 counties, 52 cities, 16 townships, and 1 other special purpose unit of government that reported tracking the maintenance of SSTS ([Figure 13](#)).

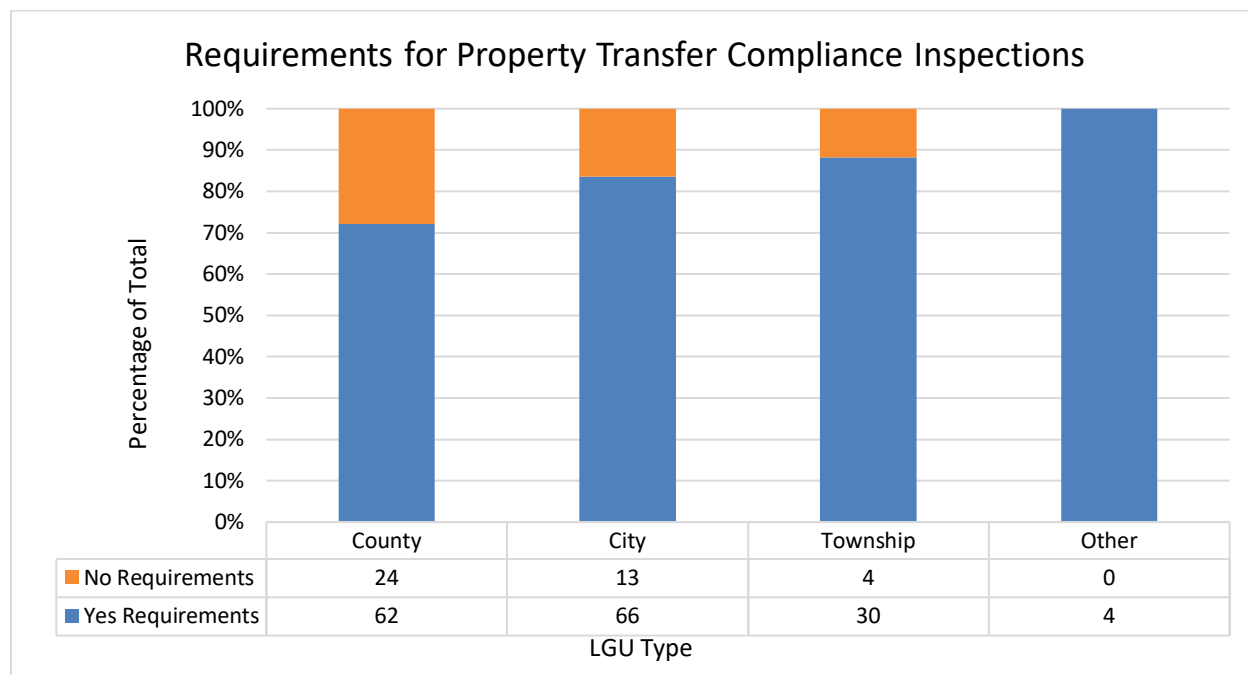
Figure 13. 2020 LGU status for tracking SSTS maintenance activities



Compliance inspections for property transfers

There is currently no state-level requirement for LGUs to implement property transfer compliance inspections in their programs; however, many LGUs have indicated that this is the most effective trigger for identifying noncompliant systems. The annual report survey requests LGUs to indicate if they require compliance inspections for property transfers. Of the 203 LGUs with SSTS programs in 2020, 162 (80%) reported that they do require compliance inspections for property transfers. The LGUs with property transfer compliance inspection requirements consist of 62 counties, 66 cities, 30 townships, and 4 other special purpose units of government ([Figure 14](#)).

Figure 14. 2020 LGU status for requiring compliance inspections for property transfers



Existing system compliance inspections

LGUs reported that there were 15,764 existing system compliance inspections in 2020, representing a 4.4% increase from 2019 (15,099). Compliance inspections are an important part of addressing existing systems that pose an environmental or human health risk. LGUs include inspection triggers in their ordinances, such as at the time of property transfer or when a building permit is sought, to create a mechanism for verifying system compliance and correcting noncompliant systems.

The number of existing system compliance inspections broken down by LGU type is provided in [Table 5](#); counties reported 13,403, cities reported 1,604, townships reported 476, and other special purpose units of government reported 281. [Figure 15](#) displays the total number of existing system compliance inspections reported countywide. [Figure 16](#) displays the amount of existing system compliance inspections for 2020 as a percentage of total SSTS reported countywide.

Table 5. 2020 existing system compliance inspections by LGU type

| Local unit of government | Number of existing system compliance inspections | LGU percentage of total compliance inspections |
|--------------------------|--|--|
| County | 13,403 | 85.0% |
| City | 1,604 | 10.2% |
| Township | 476 | 3.0% |
| Other | 281 | 1.8% |
| Total | 15,764 | 100% |

Figure 15. 2020 existing system compliance inspections per county

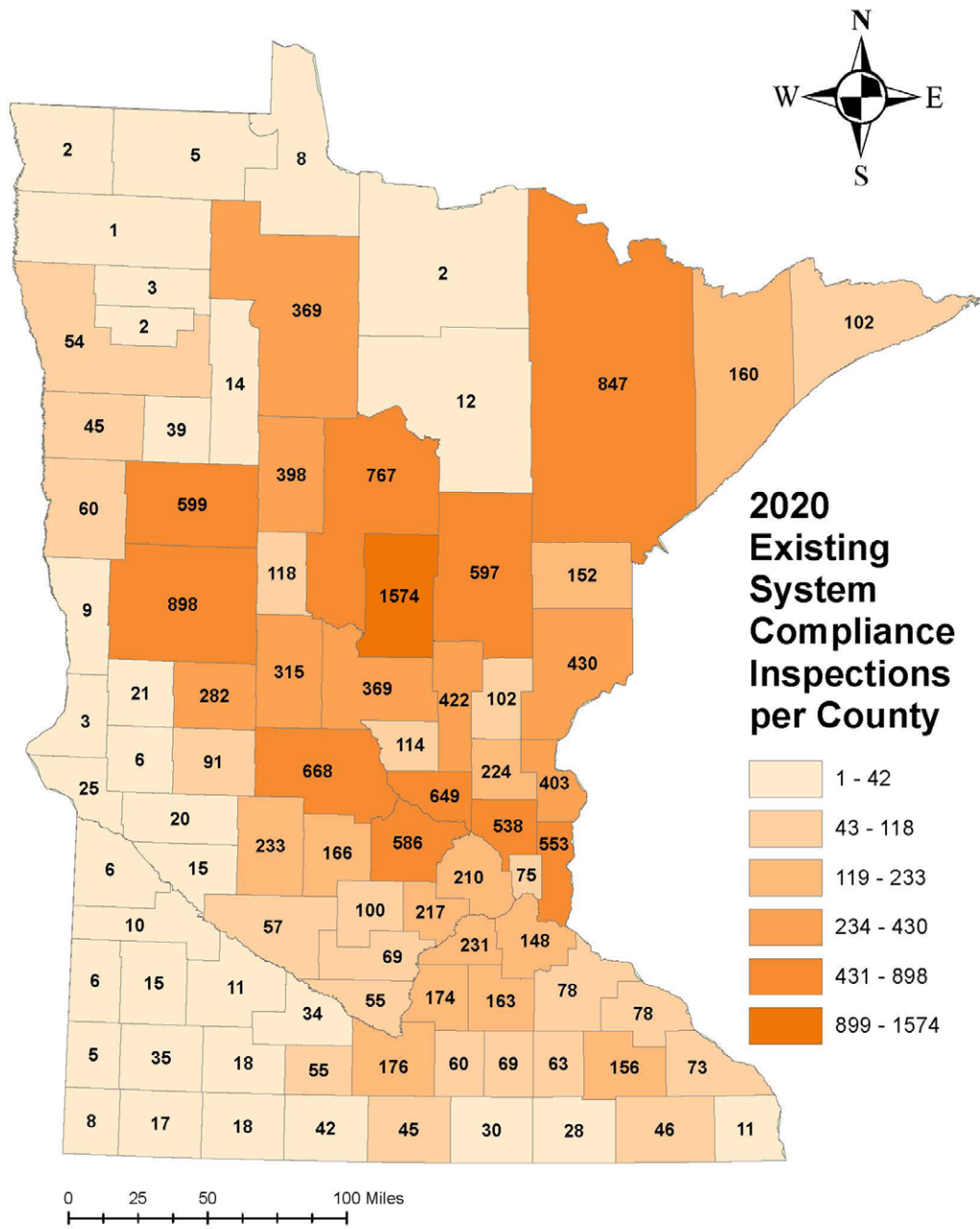
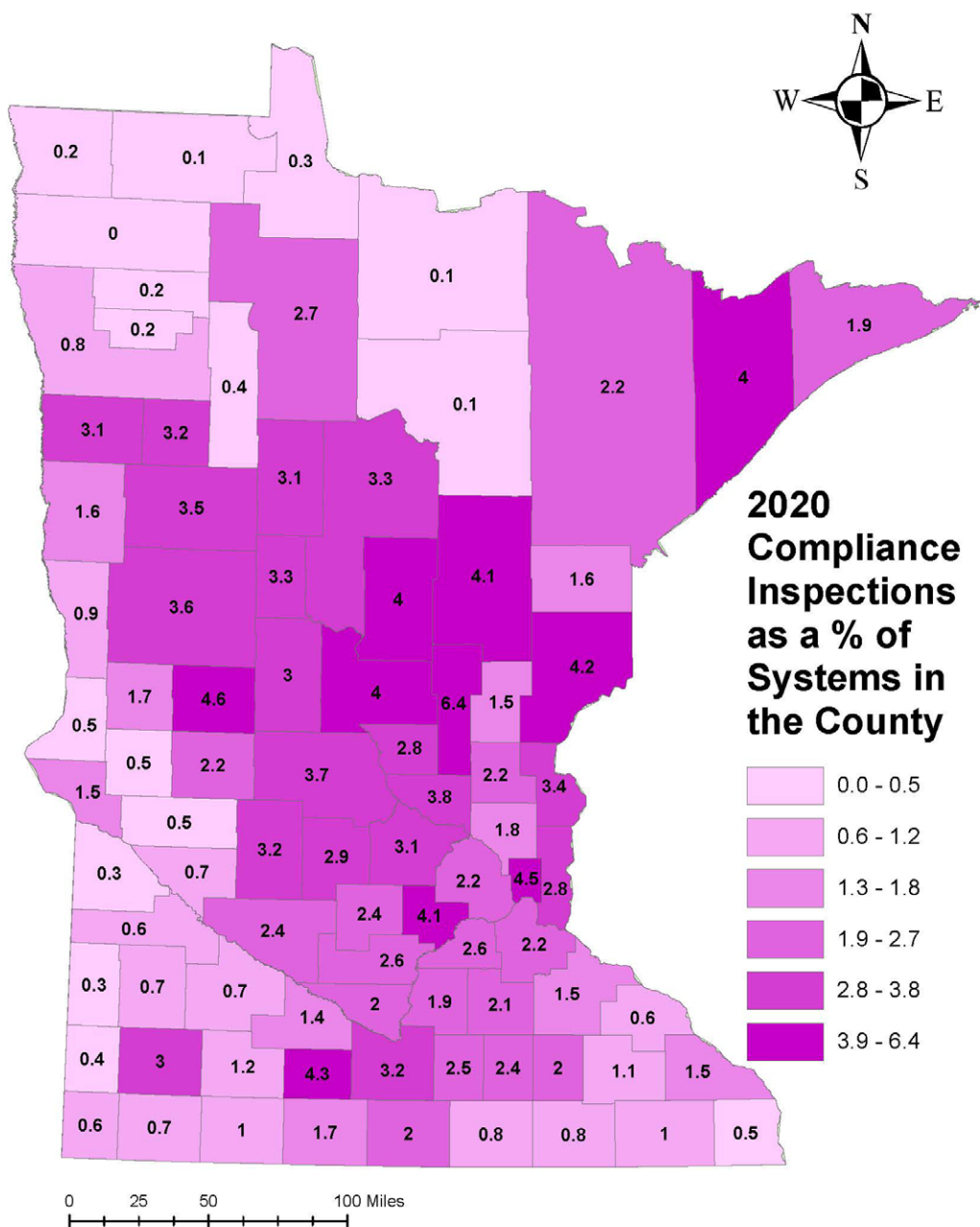


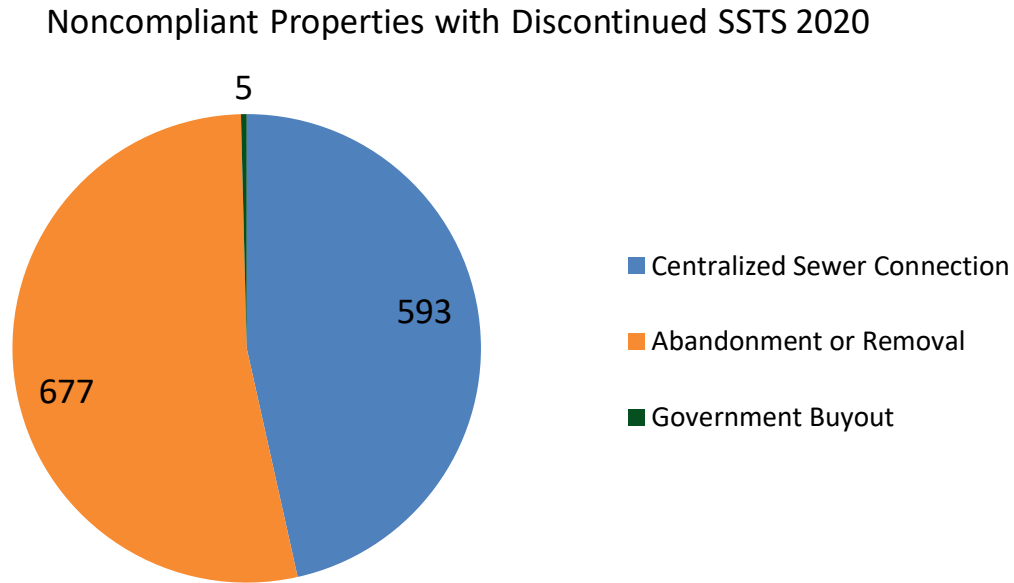
Figure 16. 2020 existing system compliance inspections presented as a percentage of total systems in county



Noncompliant properties mitigated by centralized sewer connection, abandonment or removal, or government buyout

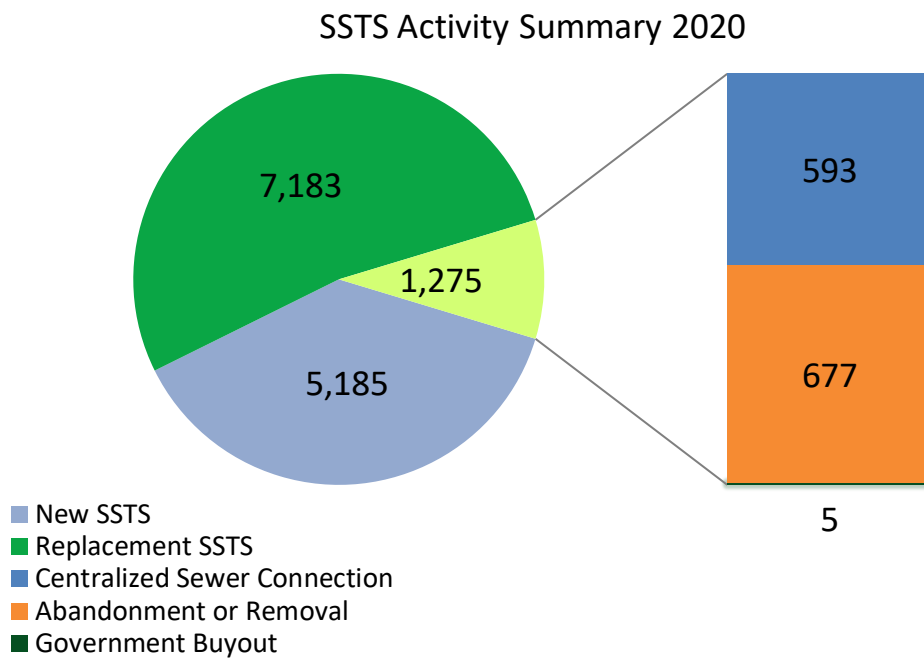
The number of noncompliant properties mitigated in 2020 by 1) connecting to centralized sewer, 2) abandonment or removal, or 3) a government buyout is provided in [Figure 17](#). LGUs reported that 1,275 noncompliant properties had SSTS discontinued through one of these three mechanisms. Of the noncompliant properties with SSTS discontinued in 2020, 593 were connected to centralized sewer, 677 were abandoned or removed, and 5 were part of a government buyout program.

Figure 17. Noncompliant properties with discontinued SSTS in 2020



[Figure 18](#) presents a summary of SSTS activity for 2020, including new SSTS permitted, replacement SSTS permitted, and noncompliant properties with SSTS discontinued through centralized sewer connection, abandonment or removal, or a government buyout. The total number reported for these SSTS activities in 2020 was 13,643.

Figure 18. Summary of new SSTS, replacement SSTS, noncompliant properties with discontinued SSTS in 2020



SSTS compliance trends

Each LGU was requested to provide their *best estimates* of SSTS compliance. This included the following information:

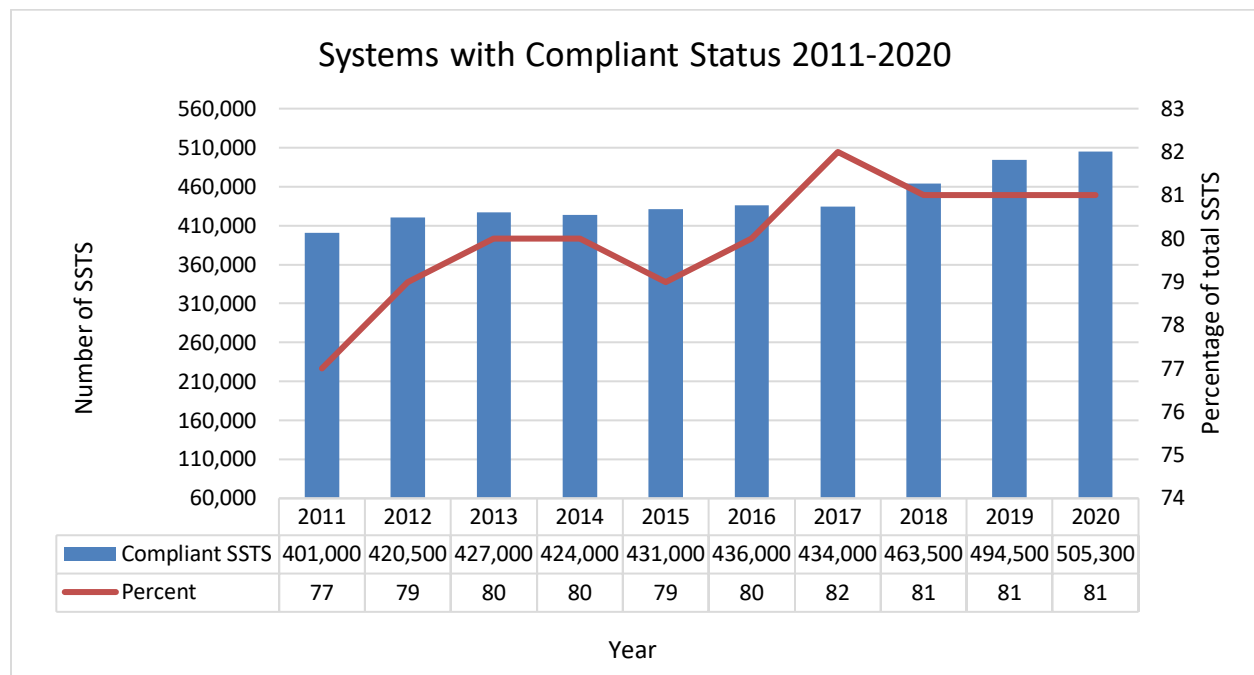
- Total number of SSTS in jurisdiction;
- Number of SSTS estimated to be compliant;
- Number of SSTS estimated to be an ITPHS; and
- Number of SSTS estimated to be FTPGW.

Figures 19, 20, and 21 present annual estimates of SSTS compliance status from 2011 to 2020.

Overall, SSTS in Minnesota are becoming increasingly compliant year to year. Negative trends in some years can conflict with overall compliance trends. Many LGUs are involved with developing databases, reviewing old files, completing inventories, and other processes that facilitate more accurate data.

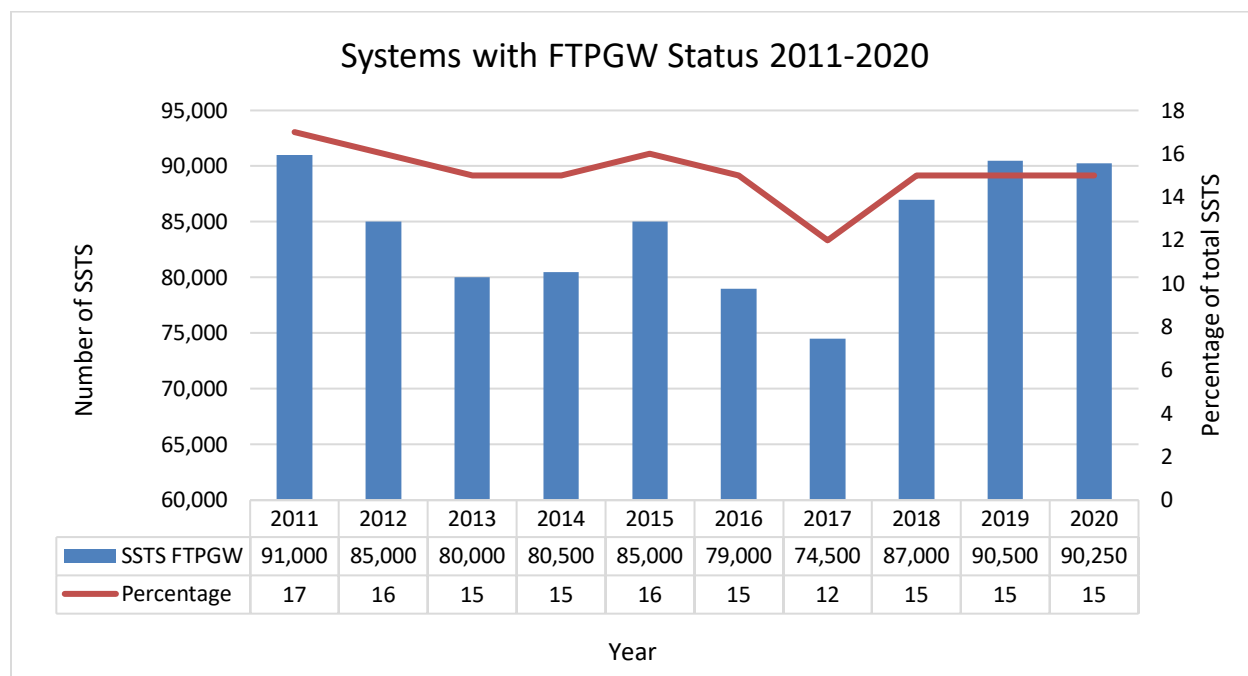
The number of estimated compliant SSTS has increased over the last ten years, from approximately 401,000 systems in 2011 to 505,300 systems in 2020. Additionally, the estimated percentage of compliant SSTS out of total SSTS increased from 77% in 2011 to 81% in 2020. Figure 19 displays the number and percentage of SSTS with compliant status estimated by LGUs over the last ten years.

Figure 19. Estimated SSTS with compliant status 2011-2020



The estimated number of SSTS FTPGW has decreased over the last ten years, from approximately 91,000 (17%) systems in 2011 to 90,250 (15%) systems in 2020. Figure 20 displays the number and percentage of SSTS with FTPGW status estimated by LGUs over the last ten years.

Figure 20. Estimated SSTS with FTPGW status 2011-2020



The estimated number of SSTS with an ITPHS status has decreased over the last ten years, from approximately 30,000 (6%) systems in 2011 to 22,800 (4%) systems in 2020. [Figure 21](#) displays the number and percentage of SSTS with ITPHS status estimated by LGUs over the last ten years. Systems that have been identified as an ITPHS may include when there is sewage backup into the dwelling or other establishment, sewage discharge to the ground surface or surface waters, and unsecured or damaged maintenance hole covers (see [Figure 22](#)). Per state statute, systems identified as an ITPHS must be upgraded, replaced, repaired, or discontinued within ten months of receipt of a notice of noncompliance or within a shorter period if required by local ordinance.

Figure 21. Estimated SSTS with ITPHS status 2011-2020

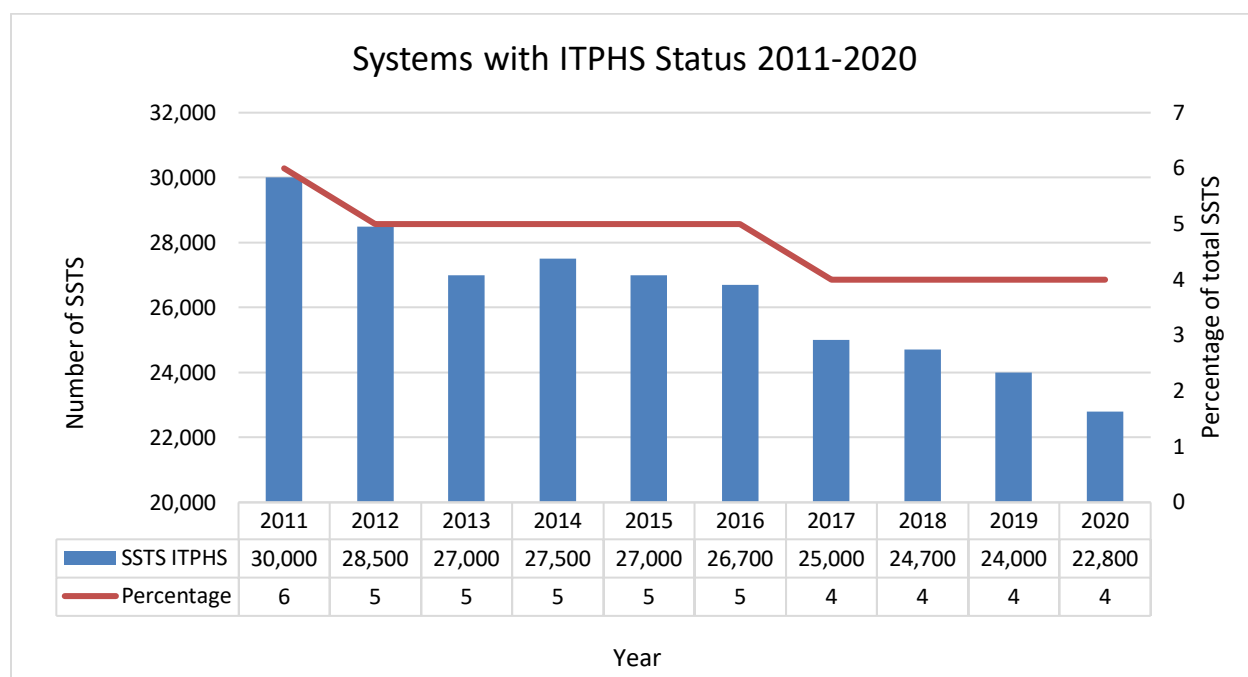


Figure 22. Maintenance hole covers identified as structurally unsound or unsecured are an ITPHS



SSTS certification and licensing

Following the adoption of the Individual Sewage Treatment System standards by the MPCA Citizens' Board in 1978, the University of Minnesota and the MPCA worked cooperatively to provide voluntary Onsite Sewage Treatment System workshops. In 1994, the Minnesota Legislature made the certification and licensing of SSTS professionals mandatory.

Since the administration of the statewide certification and licensing program began through the end of 2020, over 1,200 workshops have occurred throughout Minnesota with nearly 60,000 learners participating. Individuals have taken more than 27,000 certification exams and the MPCA has awarded over 1,500 business licenses and 9,000 individual certifications to SSTS designers, installers, maintainers, service providers, and inspectors.

Certification workshops and exam sessions were impacted in 2020 due to the Covid-19 pandemic. Training opportunities were postponed during the Stay at Home Executive Order issued by Governor Walz. The University of Minnesota began offering virtual training workshops for the Introduction to Onsite Systems and Installing Onsite Systems courses in June 2020. In-person workshops resumed in September 2020 following Covid-19 protocols, which included mandatory masks, social distancing, and occupancy restrictions.

[Figure 23](#) presents 2020 data for all SSTS certification exam types. [Figure 24](#), [25](#), [26](#), [27](#), [28](#), [29](#), [30](#), [31](#), [32](#), and [33](#) present data on individual certification exam types over the last ten years.

Figure 23. 2020 SSTS certification exams by specialty area

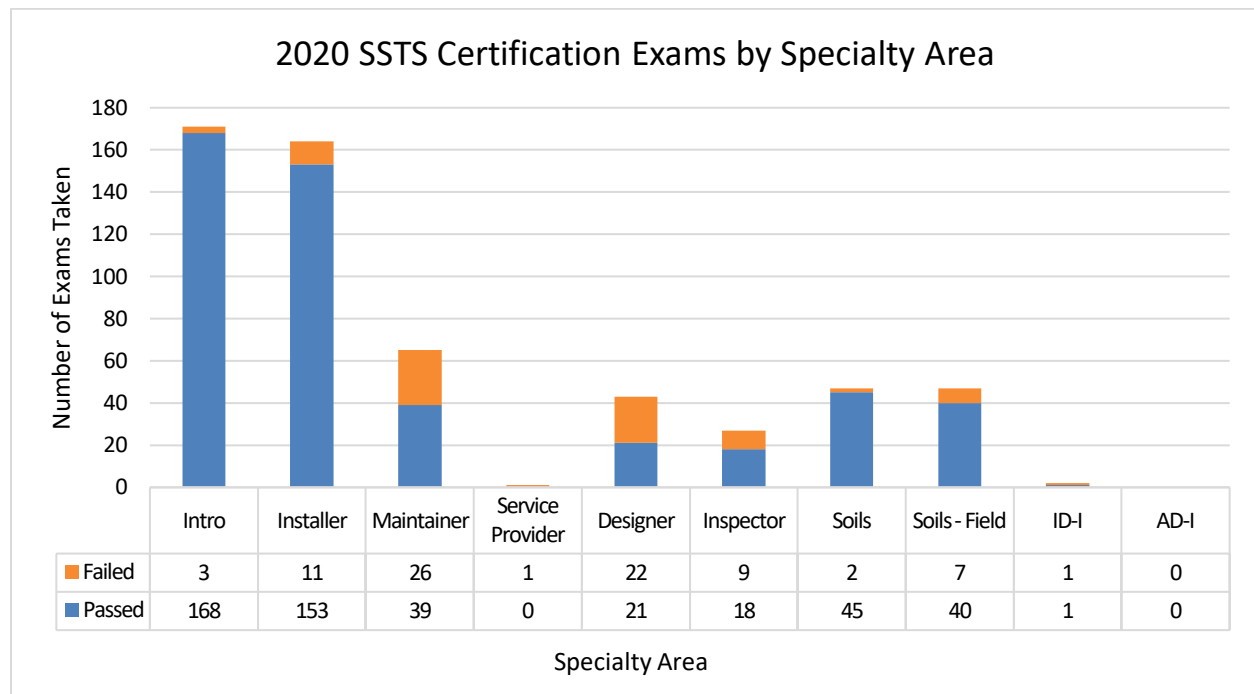


Figure 24. Introduction to Onsite Systems certification exams 2011-2020

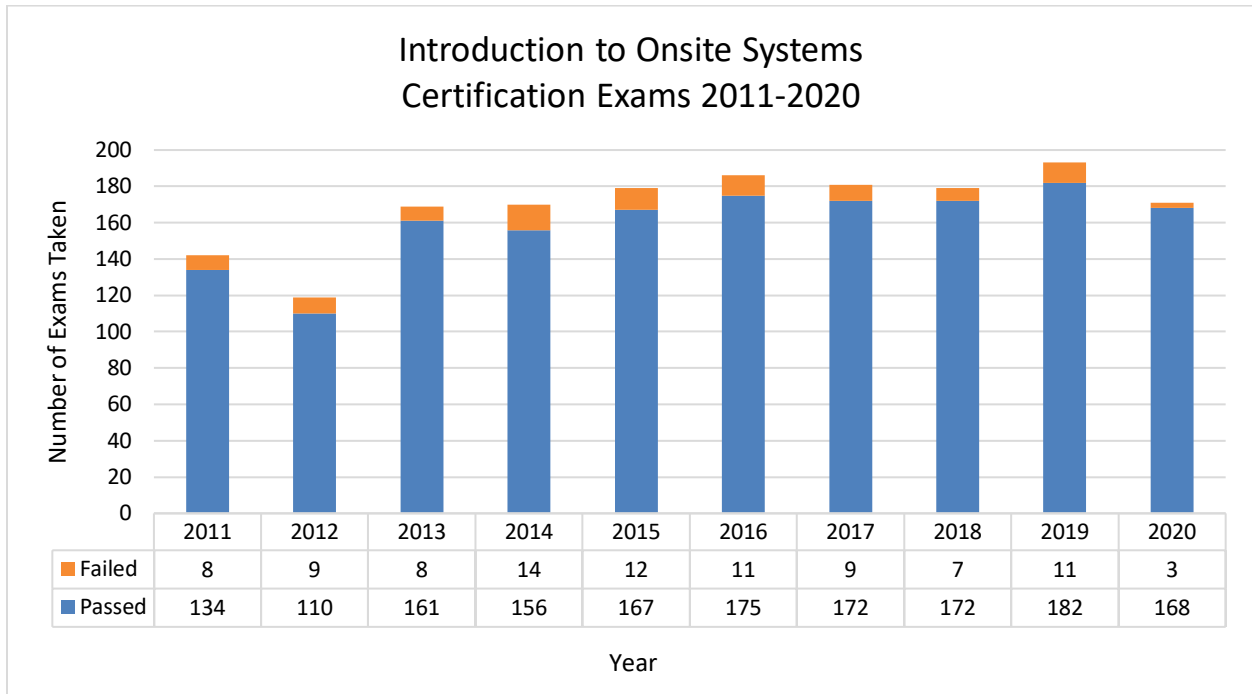


Figure 25. Installing Onsite Systems certification exams 2011-2020

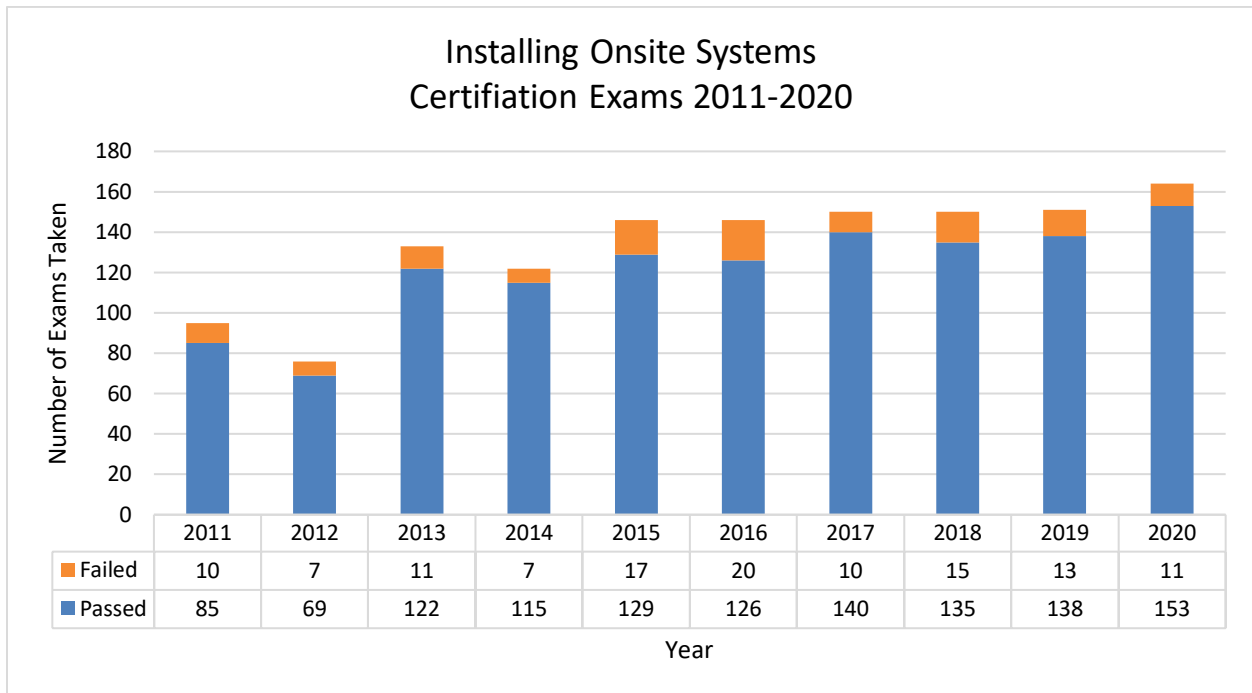


Figure 26. Maintaining Onsite Systems certification exams 2011-2020

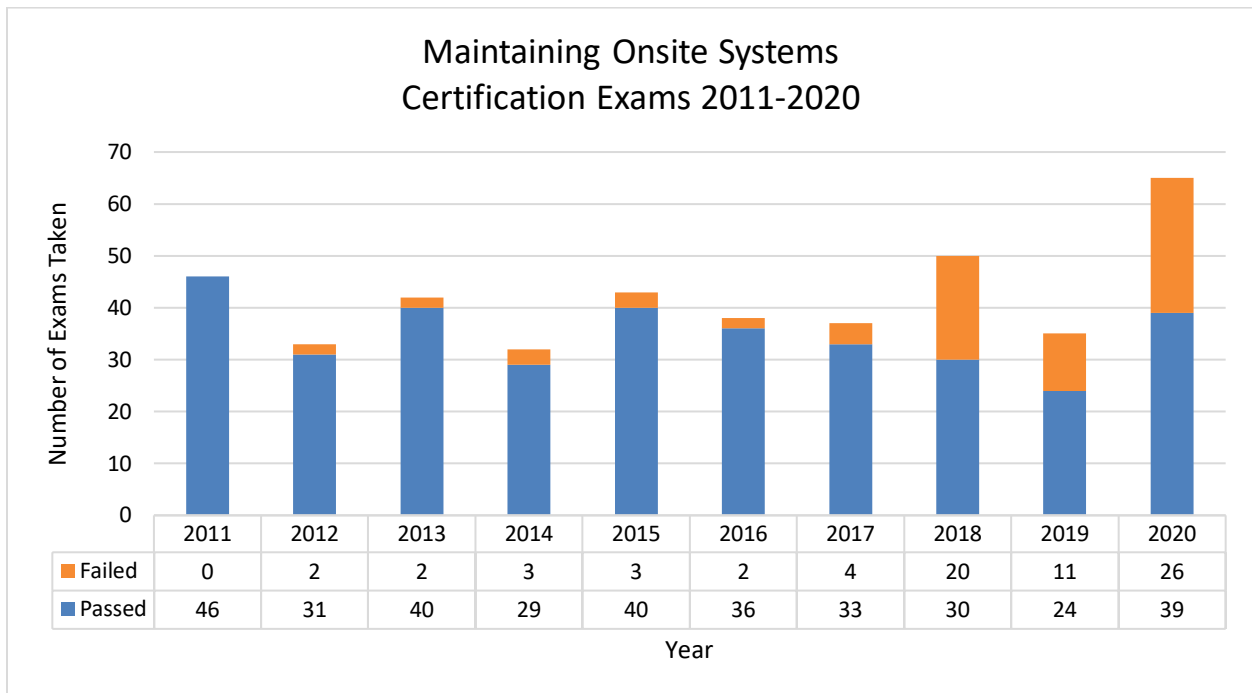


Figure 27. Service Provider for Onsite Systems certification exams 2011-2020

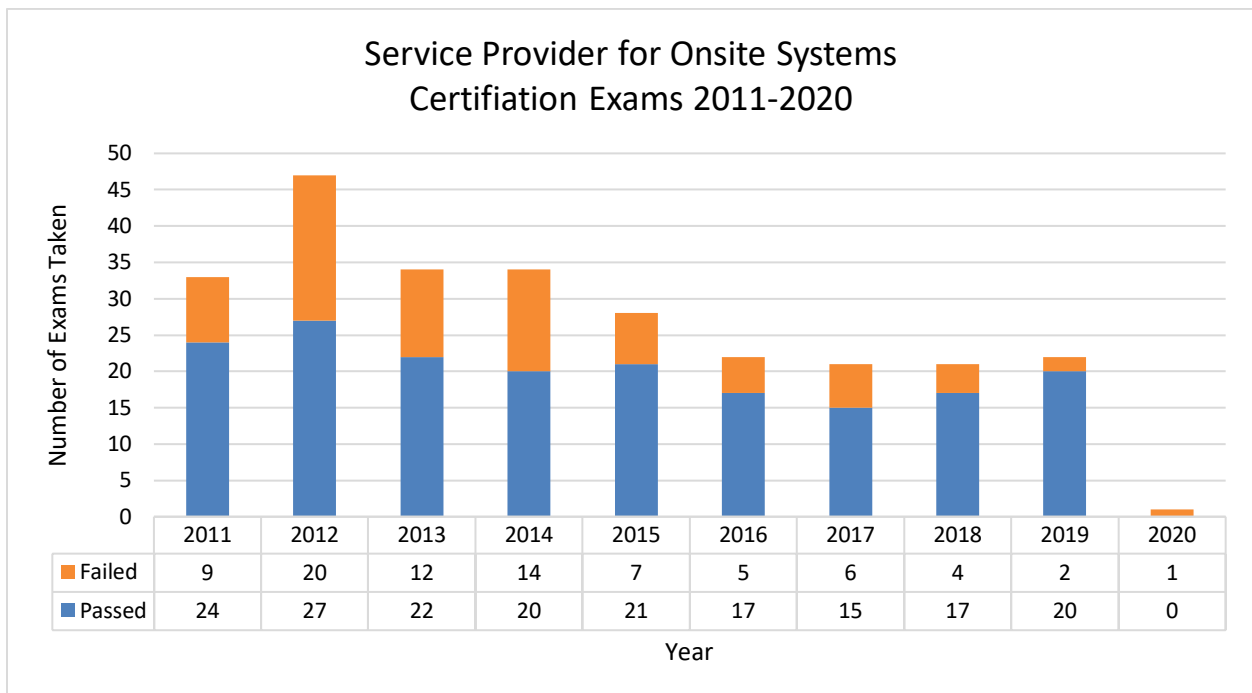


Figure 28. Designing Onsite Systems certification exams 2011-2020

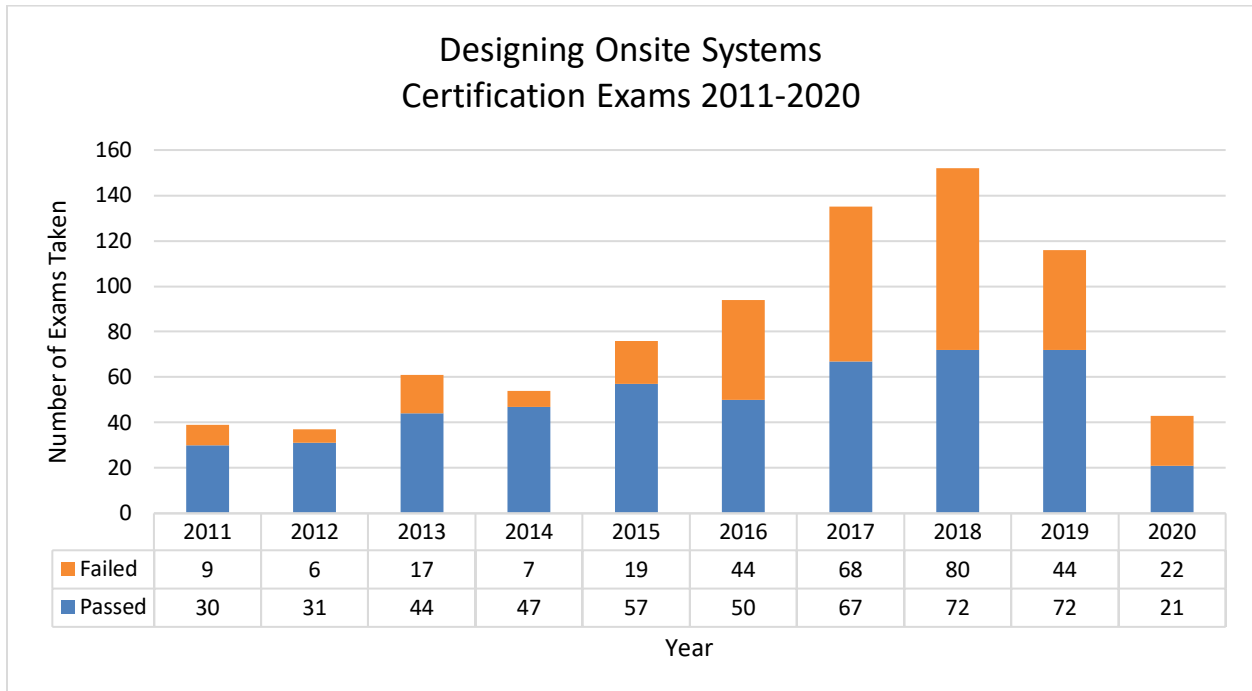


Figure 29. Inspecting Onsite Systems certification exams 2011-2020

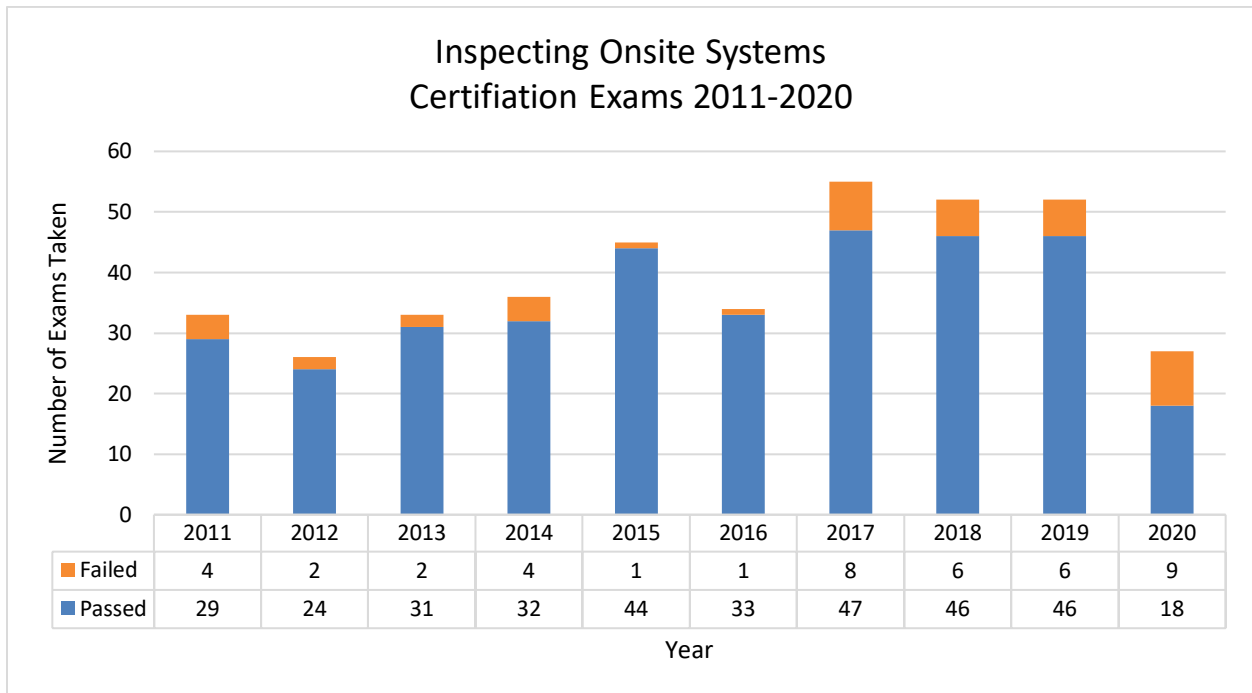


Figure 30. Soils and Onsite Systems certification exams 2011-2020

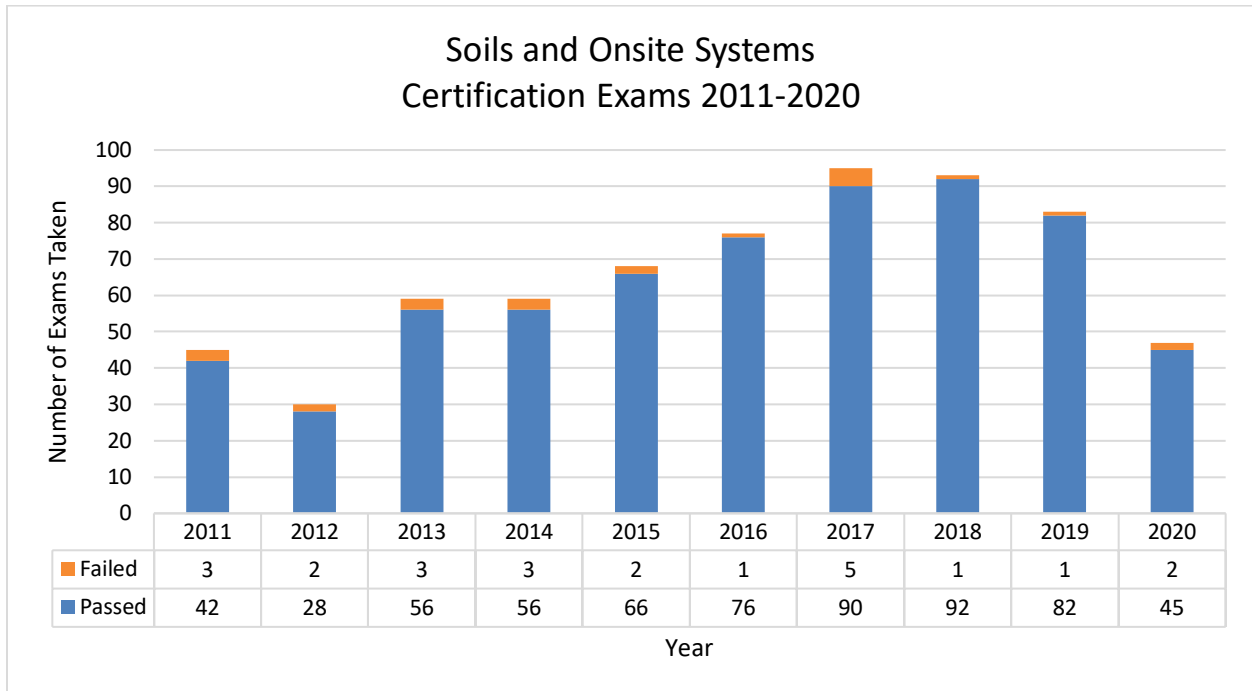


Figure 31. Soils (Field Portion) and Onsite Systems certification exams 2011-2020

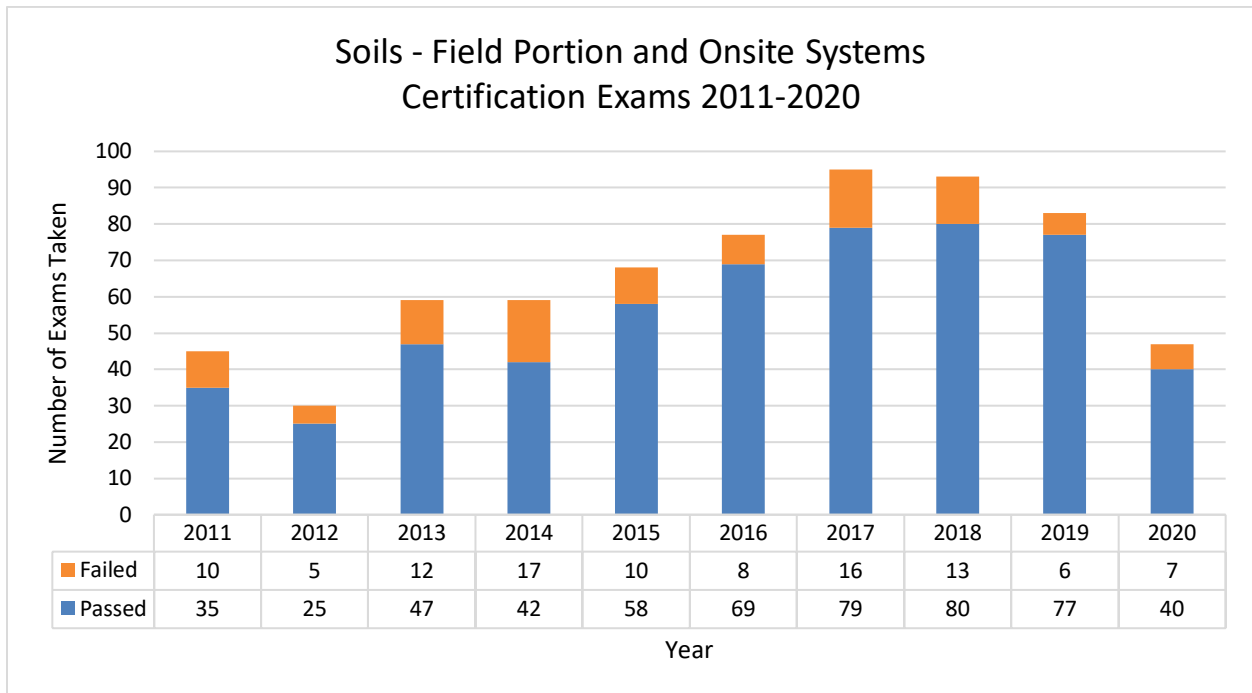
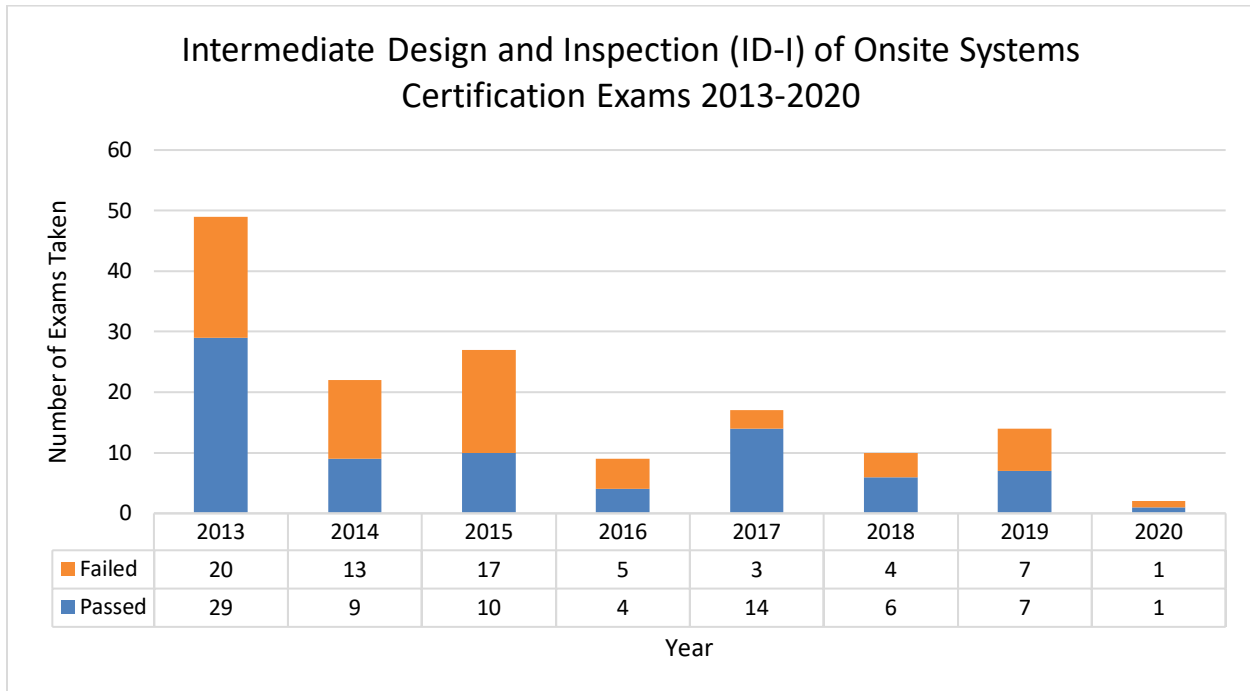
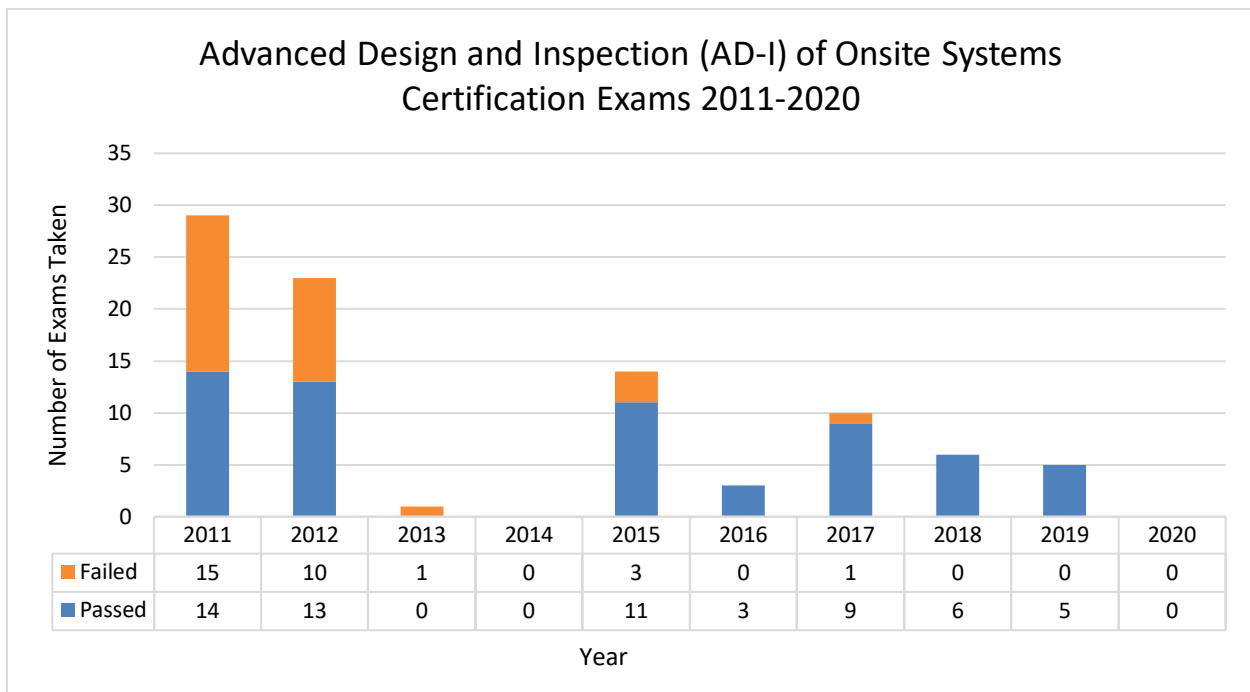


Figure 32. Intermediate Design and Inspection (ID-I) of Onsite Systems certification exams 2013-2020



*Intermediate Design and Inspection of Onsite Systems was not offered prior to 2013.

Figure 33. Advanced Design and Inspection (AD-I) of Onsite Systems certification exams 2011-2020



Summary and conclusions

Minn. R. 7082.0040 requires local SSTS programs to submit annual reports to the MPCA by February 1 documenting their SSTS activities for the previous calendar year. In December 2020, the MPCA sent out a web-based annual report survey to LGUs with known SSTS programs to complete. The annual report survey was used to obtain data from each local SSTS program so that relevant information could be summarized into a statewide 2020 SSTS Annual Report.

There were 203 LGUs (86 counties, 79 cities, 34 townships, and 4 other special purpose units of government with permitting authority) who administered SSTS programs in 2020 that submitted annual report data.

A total of 618,102 SSTS were reported across Minnesota, representing an estimated 42.3 billion gallons of wastewater treated by SSTS per year (assuming 2.5 person/permit; 75 gallons/person; 365 days/year).

LGUs issued 12,368 SSTS construction permits in 2020 for 5,185 new systems and 7,183 replacement systems. Of the SSTS permitted in 2020, approximately 97% are serving residential dwellings and 3% are serving other establishments.

Over 76% of the SSTS permitted in 2020 were Type I systems, including 5,458 Type I mounds. There were 1,428 Type II systems, 1,426 Type III systems, 109 Type IV systems, and 8 Type V systems permitted in 2020.

The majority of SSTS construction permits issued in 2020 were for systems with a flow volume between 1-2,499 gallons per day (gpd); however, there were 15 systems with a flow volume between 2,500-4,999 gpd and 8 systems with a flow volume between 5,000-10,000 gpd permitted.

LGUs reported that 16,241 sewage tanks were installed in 2020.

There were 15,764 existing system compliance inspections conducted in 2020. LGUs reported that 1,275 noncompliant properties were mitigated by centralized sewer connection, abandonment or removal, or a government buyout in 2020.

Of the 203 LGUs with SSTS programs in 2020, 98% approve SSTS designs before issuing construction permits, 97% verify soils at some point during the review process, 40% track SSTS maintenance activities, and 80% have property transfer compliance inspection requirements.

Almost 100,000 SSTS construction permits have been issued within the last 10 years, indicating that over 16% of Minnesota's 618,102 SSTS have been newly constructed within the last ten years or contain components that are less than ten years old

The number of estimated compliant SSTS has increased over the last ten years, from approximately 401,000 systems in 2011 to 505,300 systems in 2020.

Trends observed from the 2020 SSTS Annual Report suggest continued improvements in subsurface wastewater treatment across the state.

Appendix A

Countywide statistics

| County | Total SSTS reported in 2020 | SSTS construction permits issued in 2020 | SSTS construction permits issued 2002-2020 | Existing system compliance inspections conducted in 2020 | Percentage of existing SSTS inspected in 2020 out of total SSTS | Counties with property transfer compliance inspection requirements |
|------------|-----------------------------|--|--|--|---|--|
| Aitkin | 14621 | 264 | 5048 | 597 | 4.1% | Yes |
| Anoka* | 29634 | 560 | 8686 | 538 | 1.8% | No |
| Becker | 16906 | 432 | 6310 | 599 | 3.5% | No |
| Beltrami* | 13668 | 273 | 4112 | 369 | 2.7% | Yes |
| Benton | 4001 | 130 | 2005 | 114 | 2.8% | Yes |
| Big Stone | 1709 | 18 | 544 | 25 | 1.5% | Yes |
| Blue Earth | 5447 | 115 | 2601 | 176 | 3.2% | Yes |
| Brown | 2346 | 52 | 1082 | 34 | 1.4% | Yes |
| Carlton | 9609 | 159 | 2660 | 152 | 1.6% | No |
| Carver* | 5306 | 95 | 1997 | 217 | 4.1% | Yes |
| Cass* | 22944 | 472 | 9064 | 767 | 3.3% | Yes |
| Chippewa | 2173 | 28 | 604 | 15 | 0.7% | No |
| Chisago* | 11763 | 216 | 3947 | 403 | 3.4% | Yes |
| Clay | 3810 | 58 | 1624 | 60 | 1.6% | Yes |
| Clearwater | 3568 | 39 | 758 | 14 | 0.4% | No |
| Cook | 5268 | 103 | 2629 | 102 | 1.9% | No |
| Cottonwood | 1543 | 40 | 670 | 18 | 1.2% | Yes |
| Crow Wing* | 39267 | 533 | 9442 | 1574 | 4.0% | Yes |
| Dakota* | 6586 | 147 | 3189 | 148 | 2.2% | Yes |
| Dodge | 3095 | 110 | 1394 | 63 | 2.0% | Yes |
| Douglas* | 6079 | 226 | 3809 | 282 | 4.6% | Yes |
| Faribault | 2202 | 37 | 1346 | 45 | 2.0% | Yes |
| Fillmore | 4531 | 142 | 1805 | 46 | 1.0% | Yes |
| Freeborn | 3958 | 66 | 1950 | 30 | 0.8% | Yes |
| Goodhue | 5289 | 132 | 2216 | 78 | 1.5% | Yes |
| Grant | 1227 | 30 | 593 | 21 | 1.7% | Yes |
| Hennepin* | 9427 | 183 | 2673 | 210 | 2.2% | No |
| Houston | 2290 | 50 | 1089 | 11 | 0.5% | No |
| Hubbard* | 12678 | 322 | 5250 | 398 | 3.1% | No |
| Isanti* | 10146 | 245 | 3281 | 224 | 2.2% | Yes |
| Itasca* | 19460 | 260 | 6316 | 12 | 0.1% | Yes |
| Jackson | 1881 | 40 | 843 | 18 | 1.0% | Yes |
| Kanabec* | 6823 | 130 | 1613 | 102 | 1.5% | Yes |
| Kandiyohi* | 7375 | 162 | 3415 | 233 | 3.2% | Yes |
| Kittson | 980 | 10 | 184 | 2 | 0.2% | No |

| County | Total SSTS reported in 2020 | SSTS construction permits issued in 2020 | SSTS construction permits issued 2002-2020 | Existing system compliance inspections conducted in 2020 | Percentage of existing SSTS inspected in 2020 out of total SSTS | Counties with property transfer compliance inspection requirements |
|--------------------|-----------------------------|--|--|--|---|--|
| Koochiching | 2220 | 20 | 766 | 2 | 0.1% | No |
| Lac qui Parle | 1827 | 40 | 574 | 6 | 0.3% | Yes |
| Lake | 3981 | 94 | 1695 | 160 | 4.0% | Yes |
| Lake of the Woods* | 2932 | 41 | 2795 | 8 | 0.3% | No |
| Le Sueur | 8961 | 125 | 2561 | 174 | 1.9% | Yes |
| Lincoln | 1775 | 1 | 747 | 6 | 0.3% | Yes |
| Lyon | 2125 | 34 | 934 | 15 | 0.7% | Yes |
| Mahnomen | 1236 | 10 | 331 | 39 | 3.2% | No |
| Marshall | 2100 | 16 | 305 | 1 | 0.0% | No |
| Martin | 2490 | 67 | 1075 | 42 | 1.7% | Yes |
| McLeod | 4255 | 84 | 1999 | 100 | 2.4% | Yes |
| Meeker | 5693 | 132 | 2606 | 166 | 2.9% | Yes |
| Mille Lacs* | 6545 | 225 | 3419 | 422 | 6.4% | Yes |
| Morrison | 9337 | 198 | 5007 | 369 | 4.0% | Yes |
| Mower | 3460 | 128 | 1635 | 28 | 0.8% | Yes |
| Murray | 1156 | 25 | 764 | 35 | 3.0% | Yes |
| Nicollet | 2709 | 69 | 1224 | 55 | 2.0% | Yes |
| Nobles | 2531 | 55 | 691 | 17 | 0.7% | Yes |
| Norman | 1429 | 17 | 240 | 45 | 3.1% | No |
| Olmsted* | 14841 | 169 | 2437 | 156 | 1.1% | Yes |
| Otter Tail* | 24750 | 830 | 9379 | 898 | 3.6% | Yes |
| Pennington | 1812 | 23 | 376 | 3 | 0.2% | No |
| Pine* | 10332 | 343 | 3738 | 430 | 4.2% | Yes |
| Pipestone | 1116 | 27 | 514 | 5 | 0.4% | Yes |
| Polk | 6580 | 102 | 1652 | 54 | 0.8% | No |
| Pope* | 4119 | 94 | 1562 | 91 | 2.2% | Yes |
| Ramsey* | 1660 | 22 | 352 | 75 | 4.5% | N/A |
| Red Lake | 890 | 25 | 217 | 2 | 0.2% | Yes |
| Redwood | 1500 | 39 | 935 | 11 | 0.7% | No |
| Renville | 2382 | 68 | 1250 | 57 | 2.4% | Yes |
| Rice* | 7735 | 140 | 2764 | 163 | 2.1% | Yes |
| Rock | 1361 | 16 | 465 | 8 | 0.6% | No |
| Roseau | 3617 | 28 | 279 | 5 | 0.1% | No |
| Scott | 8718 | 175 | 2785 | 231 | 2.6% | No |
| Sherburne* | 17247 | 466 | 10582 | 649 | 3.8% | Yes |
| Sibley | 2689 | 63 | 1202 | 69 | 2.6% | Yes |
| St. Louis | 39061 | 700 | 12740 | 847 | 2.2% | Yes |
| Stearns | 17828 | 332 | 8175 | 668 | 3.7% | Yes |

| County | Total SSTS reported in 2020 | SSTS construction permits issued in 2020 | SSTS construction permits issued 2002-2020 | Existing system compliance inspections conducted in 2020 | Percentage of existing SSTS inspected in 2020 out of total SSTS | Counties with property transfer compliance inspection requirements |
|-----------------|-----------------------------|--|--|--|---|--|
| Steele | 2913 | 51 | 1228 | 69 | 2.4% | Yes |
| Stevens | 1222 | 23 | 456 | 6 | 0.5% | No |
| Swift | 3965 | 25 | 513 | 20 | 0.5% | Yes |
| Todd* | 10513 | 157 | 3469 | 315 | 3.0% | Yes |
| Traverse | 598 | 15 | 264 | 3 | 0.5% | Yes |
| Wabasha | 13095 | 66 | 1301 | 78 | 0.6% | No |
| Wadena | 3568 | 123 | 1806 | 118 | 3.3% | Yes |
| Waseca | 2384 | 51 | 1076 | 60 | 2.5% | Yes |
| Washington* | 19462 | 362 | 5020 | 553 | 2.8% | Yes |
| Watonwan | 1282 | 33 | 555 | 55 | 4.3% | Yes |
| Wilkin* | 1042 | 22 | 547 | 9 | 0.9% | Yes |
| Winona | 5024 | 97 | 1771 | 73 | 1.5% | Yes |
| Wright* | 18722 | 392 | 5773 | 586 | 3.1% | Yes |
| Yellow Medicine | 1702 | 29 | 622 | 10 | 0.6% | No |
| Total | 618,102 | 12,368 | 219,922 | 15,764 | 2.6% | Yes (62) |

*County, city, township, and other special purpose units of government data were added to their respective counties to tabulate this information.

Appendix B

Appendix B1

City programs

| County (# of city SSTS programs) | City |
|----------------------------------|----------------------|
| Anoka County (12) | Andover City |
| | Anoka City |
| | Blaine City |
| | Columbus City |
| | Coon Rapids City |
| | East Bethel City |
| | Ham Lake City |
| | Lino Lakes City |
| | Nowthen City |
| | Oak Grove City |
| | Ramsey City |
| | Saint Francis City |
| Beltrami County (1) | Wilton City |
| Carver County (1) | Chanhassan City |
| Cass County (2) | East Gull Lake City |
| | Lake Shore City |
| Chisago County (5) | North Branch City |
| | Shafer City |
| | Stacy City |
| | Taylor's Falls City |
| | Wyoming City |
| Crow Wing County (13) | Baxter City |
| | Crosby City |
| | Crosslake City |
| | Cuyuna City |
| | Deerwood City |
| | Emily City |
| | Fifty Lakes City |
| | Garrison City |
| | Jenkins City |
| | Manhattan Beach City |
| | Nisswa City |
| Pequot Lakes City | |
| Trommald City | |
| Dakota County (17) | Apple Valley City |

| County (# of city SSTS programs) | City |
|---|--------------------------|
| | Burnsville City |
| | Coates City |
| | Eagan City |
| | Farmington City |
| | Hampton City |
| | Hastings City |
| | Inver Grove Heights City |
| | Lakeville City |
| | Lilydale City |
| | Mendota Heights City |
| | Miesville City |
| | Rosemount City |
| | South Saint Paul City |
| | Sunfish Lake City |
| | Vermillion City |
| | West Saint Paul City |
| Douglas County (1) | Alexandria City |
| Hennepin County (5) | Dayton City |
| | Independence City |
| | Medina City |
| | Orono City |
| | Woodland City |
| Hubbard County (1) | Park Rapids City |
| Itasca County (1) | Cohasset City |
| Lake of the Woods (1) | Baudette City |
| Mille Lacs County (1) | Princeton City |
| Pine County (2) | Rock Creek City |
| | Pine City |
| Pope County (1) | Glenwood City |
| Ramsey County (7) | Gem Lake City |
| | Little Canada City |
| | Maplewood City |
| | North Oaks City |
| | Saint Paul City |
| | Shoreview City |
| | White Bear Lake City |
| Rice County (1) | Northfield City |
| Sherburne County (3) | Becker City |
| | Elk River City |
| | Zimmerman City |
| Washington County (1) | Dellwood City |

| County (# of city SSTS programs) | City |
|---|--------------------|
| Wilkin County (1) | Doran City |
| Wright County (2) | Otsego City |
| | Saint Michael City |

Appendix B2

Township programs

| County (# of township SSTS programs) | Township |
|--------------------------------------|------------------------|
| Anoka County (1) | Linwood Township |
| Chisago County (1) | Lent Township |
| Crow Wing County (2) | Crow Wing Township |
| | Irondale Township |
| Dakota County (11) | Castle Rock Township |
| | Douglas Township |
| | Empire Township |
| | Eureka Township |
| | Greenvale Township |
| | Hampton Township |
| | Marshan Township |
| | Nininger Township |
| | Ravenna Township |
| | Scotia Township |
| | Vermillion Township |
| Douglas County (1) | Alexandria Township |
| Isanti County (1) | Athens Township |
| Kanabec County (1) | Arthur Township |
| Kandiyohi County (1) | Saint Johns Township |
| Mille Lacs County (1) | Greenbush Township |
| Pine County (7) | Arlone Township |
| | Arna Township |
| | Bremen Township |
| | Munch Township |
| | Pine City Township |
| | Pokegema Township |
| | Royalton Township |
| Ramsey County (1) | White Bear Township |
| Rice County (1) | Bridgewater Township |
| Sherburne County (1) | Becker Township |
| Todd County (3) | Bertha Township |
| | Bruce Township |
| | Stowe Prairie Township |
| Wright County (1) | Middleville Township |

Appendix B3

Other special purpose units of government programs

| County (# of other special purpose units of government SSTS programs) | Special purpose unit of government |
|--|---|
| Beltrami County (1) | Bemidji Joint Powers Board |
| Olmsted County (1) | Township Cooperative Planning Association |
| Otter Tail (1) | Otter Tail Water Management District |
| Other (1) | University of Minnesota |

Appendix C

List of 2020 SSTS Annual Report questions

1. General program information – Yes or No answer.

- a. Alternative Local Standards (ALS) for existing systems?
 - i. ALS are standards that are less restrictive than Minn. R. chs. 7080-7083, do not confuse them with the old system category of 'Alternative Systems' (floodplains, holding tanks, privies).
- b. ALS new or replacement SSTS using a minimum of two foot of separation in allowable areas of the LGU?
- c. ALS new or replacement SSTS using 2006 Rules?
- d. Do you track SSTS maintenance/pumping?
- e. Do you have jurisdiction-wide compliance inspections for property transfer?
- f. Do you approve SSTS design before issuing permit?
- g. When in your permitting process do you verify soils?

2. Residential SSTS by system type – Write number of permits issued for each category.

- a. # permits issued for Type I/Rock Trenches.
- b. # permits issued for Type I/EZflow.
- c. # permits issued for Type I/Chamber Trenches.
- d. # permits issued for Type I/Seepage or Pressure Beds.
- e. # permits issued for Type I/Mounds.
- f. # permits issued for Type I/At-Grades.
- g. # permits issued for Type II/Privies, Holding Tanks, and Floodplain Areas.
 - i. # Holding tank operating permits issued.
 - a) The number of holding tank operating permits should be the same as the number of holding tanks entered in Type II/ Privies, Holding Tanks, and Floodplain Areas above if the LGU issues operating permits for holding tanks.
- h. # permits issued for Type III.
- i. # permits issued for Type IV/Registered Product Systems.
 - i. # Type IV Operating Permits issued.
- j. # permits issued for Type V.
 - i. # Type V Operating Permits issued.

Note – If you have 'tank only' installations (ex: drainfield is compliant but tank needed replacement) please enter this in the 'Repair' column and note as such on the spreadsheet.

3. Residential SSTS by flow volume – Write number of permits issued for each category.

- a. New systems 1-2,499 gpd.
- b. New systems 2,500-4,999 gpd.
- c. New systems 5,000-10,000 gpd.
- d. Replacement systems 1-2,499 gpd.
- e. Replacement systems 2,500-4,999 gpd.
- f. Replacement systems 5,000-10,000 gpd.

4. Other establishment SSTS by system type – Write number of permits issued for each category.
 - a. # permits issued for Type I/Rock Trenches.
 - b. # permits issued for Type I/EZflow.
 - c. # permits issued for Type I/Chamber Trenches.
 - d. # permits issued for Type I/Seepage or Pressure Beds.
 - e. # permits issued for Type I/Mounds.
 - f. # permits issued for Type I/At-grades.
 - g. # permits issued for Type II/Privies, Holding Tanks, and Floodplain Areas.
 - i. # Holding tank operating permits issued.
 - a) The number of holding tank operating permits should be the same as the number of holding tanks entered in Type II/ Privies, Holding Tanks, and Floodplain Areas above if the LGU issues operating permits for holding tanks.
 - h. # permits issued for Type III.
 - i. # permits issued for Type IV/Registered Product Systems.
 - i. # Type IV Operating Permits issued.
 - j. # permits issued for Type V.
 - i. # Type V Operating Permits issued.

Note – If you have ‘tank only’ installations (ex: drainfield is compliant but tank needed replacement) please enter this in the ‘Repair’ column and note as such on the spreadsheet.

5. **Other establishment SSTS by flow volume – Write number of permits issued for each category.**
 - a. New systems 1-2,499 gpd.
 - b. New systems 2,500-4,999 gpd.
 - c. New systems 5,000-10,000 gpd.
 - d. Replacement systems 1-2,499 gpd.
 - e. Replacement systems 2,500-4,999 gpd.
 - f. Replacement systems 5,000-10,000 gpd.
6. **Permits issued for SSTS repairs – Write number of permits issued for each category.**
Complete this part only if you issue repair permits or if you have ‘tank only’ installations.
 - a. Residential SSTS repairs.
 - b. Other establishment SSTS repairs.
7. **Jurisdiction-wide SSTS questions – Write number for each category.**
 - a. # Fulltime dwellings with SSTS.
 - b. # Seasonal dwellings with SSTS.
 - c. # Cluster SSTS.
 - i. # Dwellings served by Cluster SSTS.
 - d. # other establishments with SSTS.
8. **SSTS compliance – Write whole numbers only, do not use a decimal or use the percent sign. For example, if your answer is <1%, enter 1.**
 - a. Percentage of failing systems within jurisdiction.
 - b. Percentage of imminent systems within jurisdiction.

- c. Percentage of compliant SSTS within jurisdiction.
- d. Total percentage SSTS – You do not enter anything here, the spreadsheet will calculate this answer.
 - i. This should total 100, if it does not check your answers to a, c, and/or e and adjust accordingly.

9. The number of compliance inspections of existing SSTS conducted in their jurisdiction.

10. The number of noncompliant properties connected to centralized sewer.

11. The number of noncompliant properties mitigated by abandonment or removal of a dwelling.

12. The number of noncompliant properties mitigated through government buyout.

13. Inspector information.

- a. Name of department head.
- b. Name of Trained Administrator.
- c. Name and email address of SSTS contact.
- d. Inspector(s) name(s) and;
 - i. License numbers if inspections are contracted out to a licensed SSTS inspection business.
 - ii. Certification numbers if inspections are done in-house by LGU staff certified as SSTS inspectors.

14. Tank Installation Report.

- a. Installer name.
- b. Installer license number.
- c. Number of septic tanks installed.
 - i. This includes pump/lift tanks and holding tanks.
- d. Number of Performance/Type V systems installed.
 - i. Minn. Stat. § 115.551 limits the number of septic tanks for Performance/Type V systems to one per household.
- e. Number of tanks installed by homeowners (if allowed in your jurisdiction).
 - i. Name of homeowner.
 - ii. Address.