

Michigan 2010 Statewide Failed Sewage System Evaluation Summary Report



Photo Courtesy of Midland County Health Department



August 2011



Introduction

Calendar year 2010 represents the second year of consistent failed system data collection by local health departments (LHDs). During calendar year 2010, the data collect and submitted by LHDs was based on the identical forms that were used for calendar year 2009. This report summarizes the overall statewide data.

It was a commitment to LHDs that following the first year of data collection there would be an overall joint assessment of the failed systems data collection and reporting process. This was completed by the Department of Environmental Quality (DEQ) and LHD workgroup in 2010 and has resulted in a number of changes which are also summarized herein. A modified data collection process has begun with the 2011 calendar year.

LHD accreditation reviews completed during the 2010 calendar year continued to identify instances where LHDs did not appropriately transition to the required data collection and submission process resulting in the indicator "Not Met". The need for improved communications between the DEQ and LHDs and within agencies was recognized as the mechanism for statewide improvement. This has resulted in regional training for LHDs being provided by DEQ staff during the spring of 2011.

Data Summary

For 2010, the statewide failed system data has been summarized in two ways. First the total gross data received from each LHD is represented in numeric form for each data category. Secondly, the data is summarized in a graphical representation composed of histogram graphs reported in percentages. As the data was presented across the state, several suggestions were made to have the histograms represent the percentages of failure in each category so that trends in data could be better recognized over time.

The data shows that failures, for the most part, are directly proportional to the number of installations meeting a parameter. For example, looking at soil type, the highest percentage of failures is found in soil textures containing only sand or primarily sand. However, this isn't an indication that systems fail more often in sand, but instead points to the fact that soils consisting primarily of sand is the most prominent soil texture utilized for septic systems historically.

It is anticipated that future data collected and reported will become significantly more meaningful for a number of reasons. Currently, as a state we have a large number of systems that do not have any written records with which to draw accurate data from. As time progresses it is anticipated that a higher percentage of previously permitted systems with available records will be reviewed. Current data reflects that upwards of 40 percent of systems evaluated lack historical records. Also, as more advanced treatment systems are installed and current advanced treatment units stand the test of time, collection and reporting of data at a statewide level will identify any particular technologies that may not be performing adequately. Lastly, it is anticipated that process modifications which were implemented in 2011 will remain as the consistent standard of practice for the foreseeable future which will allow for identification of long term trends.

DEQ Failed System 2010 Data Submission Report Totals

Total number of failed systems = 4,559

Number of **Residential** failures = 4436 Number of **Commercial** failures = 123

Water Usage Totals:

<u>203</u> <2 bedroom	<u>1009</u> 2 bedroom	<u>2275</u> 3 bedroom
<u>693</u> 4 bedroom	<u>147</u> >4 bedroom	

Septic Tank Size - Total Gallons:

<u>1324</u> <1,000	<u>2172</u> >1,000 – 1,500	<u>207</u> >1,500 – 2,000
<u>29</u> >2,000 – 3,000	<u>10</u> >3,000	<u>780</u> Unknown

System Design Totals:

<u>1676</u> Gravity Bed	<u>112</u> Dosed Bed	<u>18</u> Pressure Dosed Bed
<u>974</u> Gravity Trenches	<u>9</u> Dosed Trenches	<u>1</u> Pressure Dosed Trenches
<u>31</u> Gravity Mound	<u>19</u> Dosed Mound	<u>8</u> Pressure Dosed Mound
<u>40</u> Chambers	<u>717</u> Drywells	<u>281</u> Other
<u>693</u> Unknown	<u>16</u> Advanced Treatment Units	

System Age Totals in Years:

<u>30</u> 0 – 5	<u>124</u> 6 – 10	<u>207</u> 11 – 15	<u>278</u> 16 – 20
<u>339</u> 21 – 25	<u>285</u> 26 – 30	<u>1678</u> > 30	<u>1604</u> Unknown

Soil Texture Totals:

2070 Coarse Sand, Medium Sand 1113 Fine sand, Loamy sand 450 Sandy loam
366 Loam, Sandy clay loam 445 Clay loam, Silt loam 81 Clay, Silt
52 Organic soil, Fill soil

Seasonal High Water Table (inches below grade):

452 0 – 12 539 13 – 24 391 25 - 36 374 37 – 48
780 > 48 1853 Not present

Bed Size ft²:

331 100 – 300 432 301 – 500 374 501 – 700 150 701 – 900
69 901 – 1100 53 1101 – 1300 29 1301 – 1500 35 1501 – 1700
8 1701 – 1900 7 1901 – 2100 12 > 2100 1236 Unknown

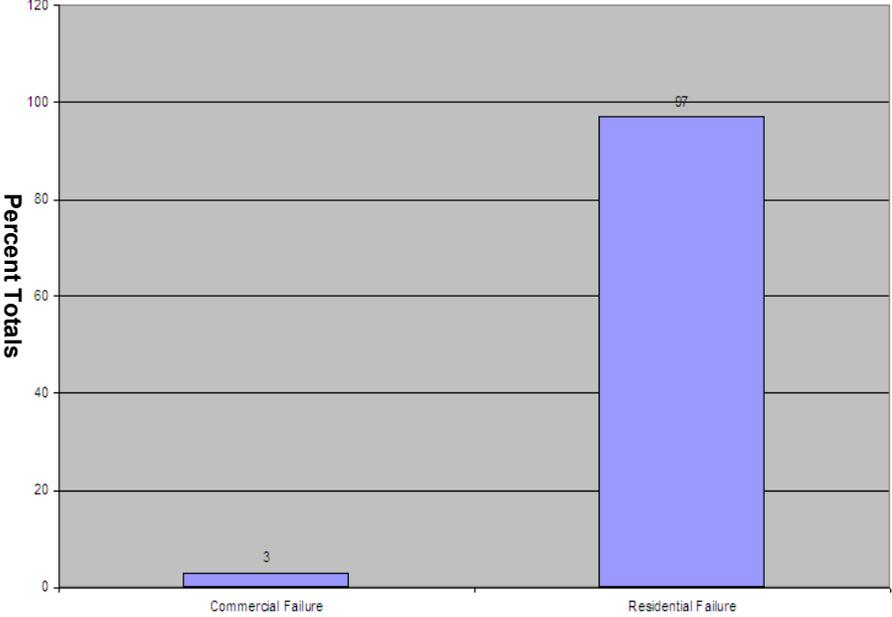
Trench Size ft²:

266 100 – 300 245 301 – 500 187 501 – 700 83 701 – 900
23 901 – 1100 20 1101 – 1300 6 1301 – 1500 2 1501 – 1700
1 1701 – 1900 1 1901 – 2100 5 > 2100 671 Unknown

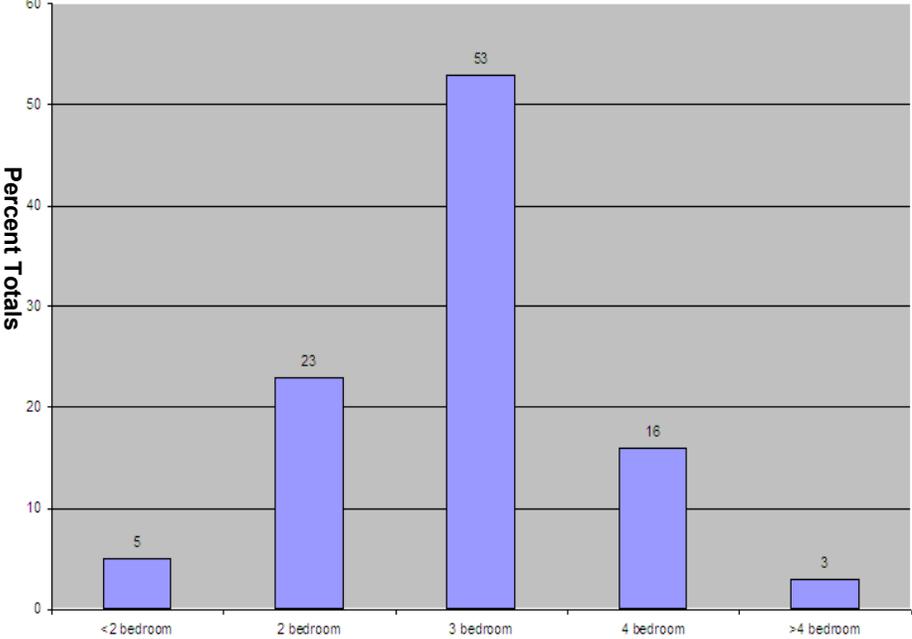
Most Probable Causes of Failure Totals:

250 Septic Tank Failure 170 Infrequent tank pumping 121 Pipe filled with solids
113 Damaged/collapsed piping system 442 Hydraulic Overload 709 System Undersized
335 Insufficient isolation to water table 589 Root intrusion 78 Installation errors
39 Unsuitable Fill 16 Dirty stone 69 Excess cover 284 Lack of Maintenance
2511 System Age 301 Unknown 468 Other

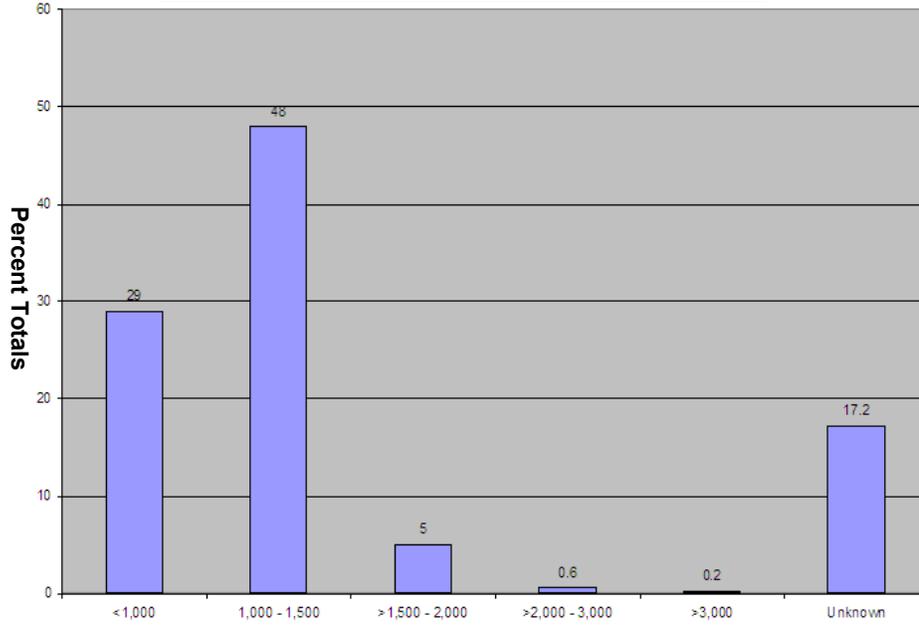
System Type



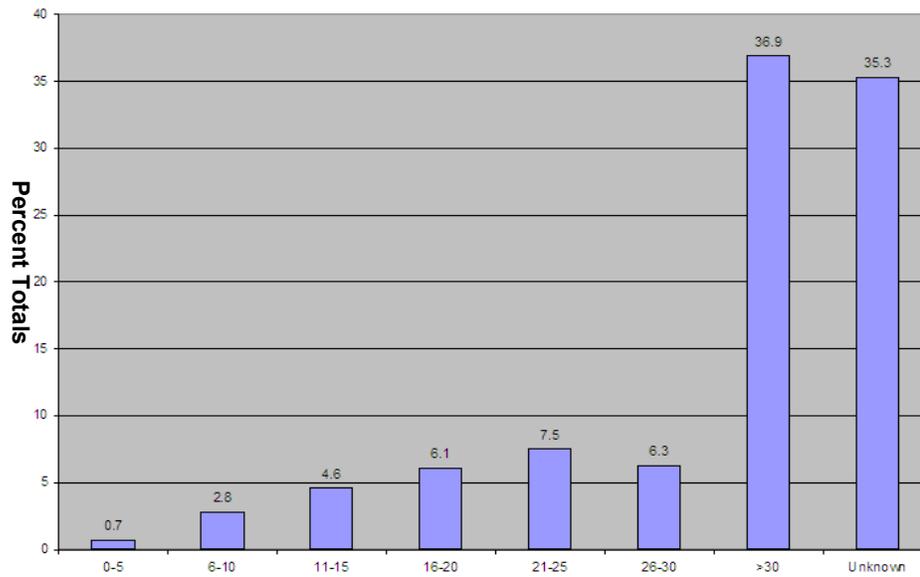
Residential Water Use



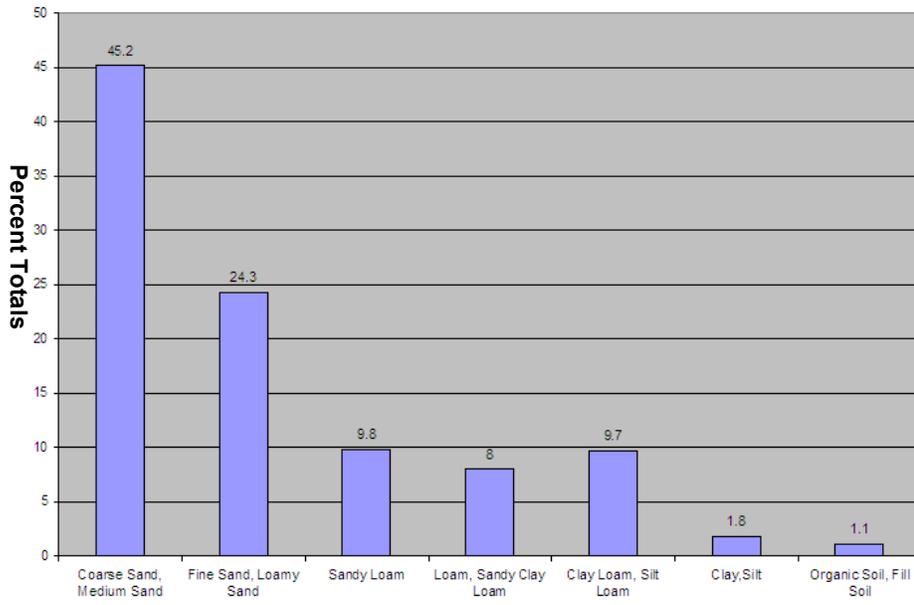
Tank Size – Total Gallons



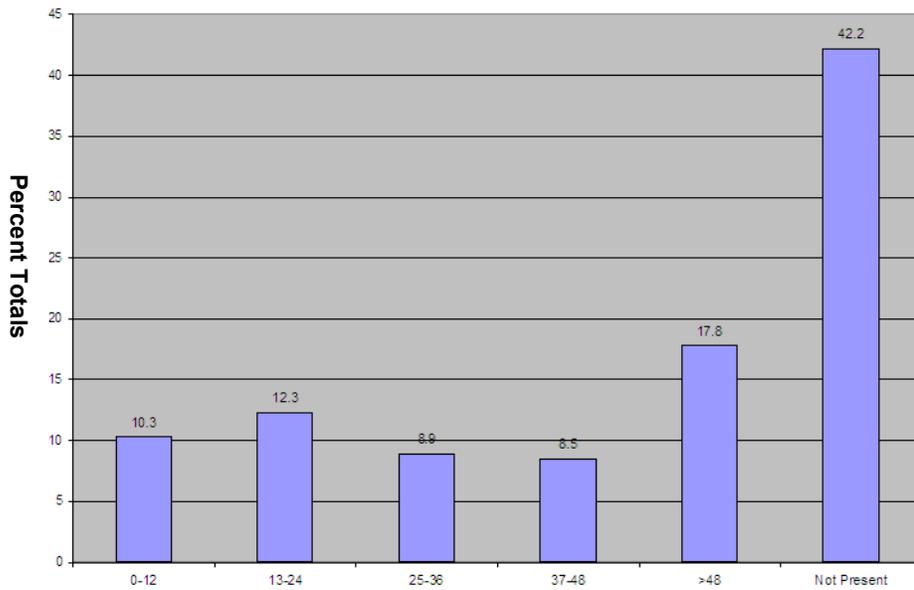
System Age



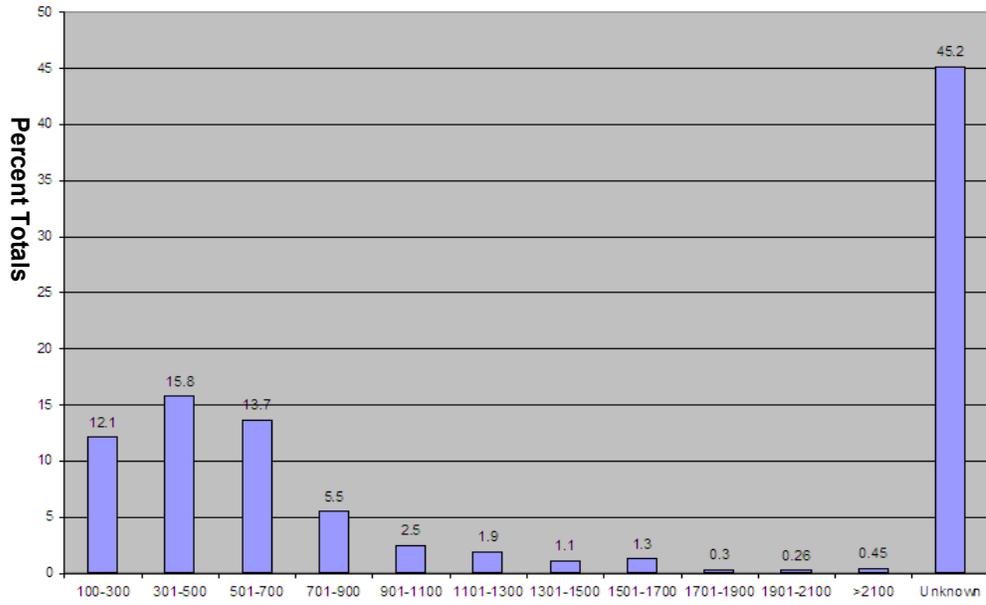
Soil Type



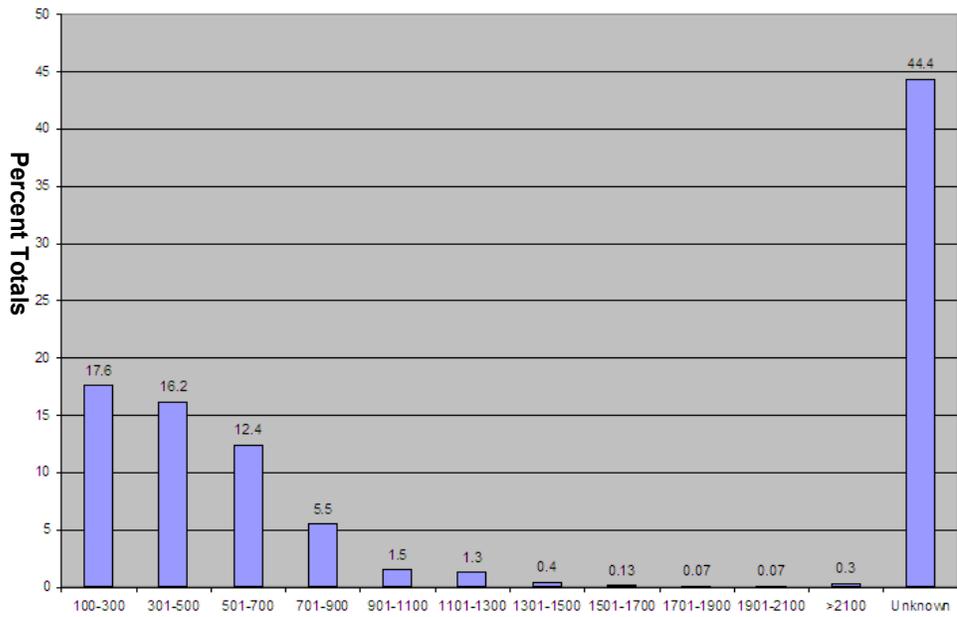
Seasonal High Water Table



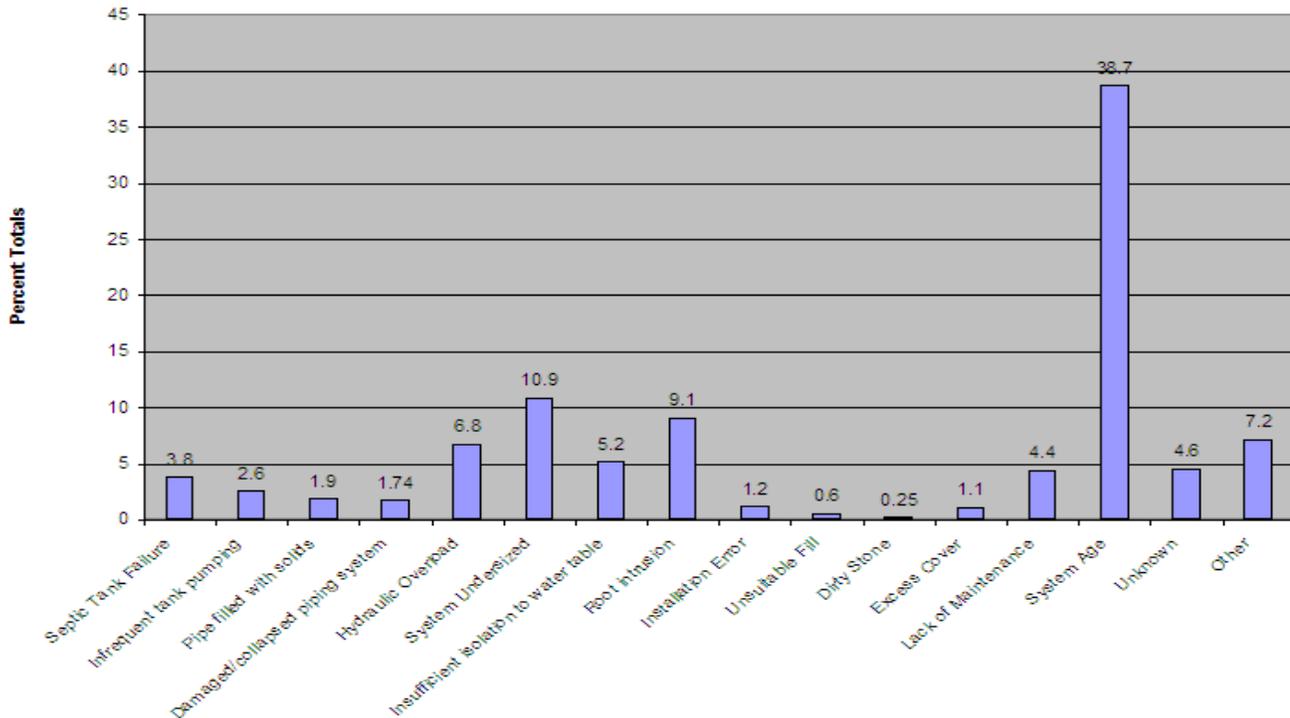
Bed Size



Trench Size



Most Probable Cause Of Failure



Observations

Overall, this methodology of collecting and reporting data for failed sewage systems is recognized as a success. While there are limitations to the amount of specific analysis that can be done with the statewide compiled data, the main objectives to simplify the overall data collection and reporting, combined with warehousing the data all in one location continues to achieve consistency in the process. Although, it was learned that the data collection process and the interpretation of the data elements to be collected varies widely amongst LHDs, we believe the change in methodology is a move in the right direction.

Process Modification

Based on workgroup suggestions from the DEQ/Michigan Association for Local Environmental Health Administrators Environmental Affairs Committee, efforts were undertaken to implement data collection changes during the Summer/Fall 2010. The workgroup suggestions are summarized as follows:

- Development of a guidance document to establish greater consistency with data collection and submission.
- Modification of the data collection form to:
 - Allow for more specific data relative to commercial (non-residential) sewage system failures to be collected.
 - Capture more specific information on the different types of septic tanks, such as single tank, two-compartment tank, more than one tank and when no tank exists.
 - Capture the absence of a sewage system.
 - Eliminate “Not Present” as an option for seasonal high water table.
 - Eliminate “System Age” as an option for most probable cause of failure.

In the fall of 2010, modifications to the failed system data collection process were formally adopted with support of LHDs to address each of these specific recommendations. These include:

- Development of a separate, two-page guidance document.
- A separate data collection form was established specific to non-residential systems.
- Modification of data collection forms reflective of the above suggestions.
- Modification of the DEQ database for data recording was completed to allow separate reports to be generated for residential and non-residential failures.

The modified process has taken effect beginning for the 2011 calendar year. It is anticipated that the modified process will be utilized for the foreseeable future. In preparation for data collection and submission for 2011, the last year of Cycle 4, regional LHD training sessions were held at five locations in months of March, April and May of this year. These sessions were well attended reaching out to an approximate total of 140 LHD professional staff. Communication and interaction during the training is expected to have benefitted the quality and consistency of the data collection effort statewide.