

NORTHWEST QUADRANT QUESTIONNAIRE RESULTS, MAPPING AND ANALYSIS

Willistown Township has completed sewage facilities planning activities for the Northwest Quadrant area of the Township. The purpose of the investigation was to assess the condition of on-lot disposal systems (OLDS) in the Township through self-reporting by property owners, using an on-lot disposal system questionnaire. Based on data collected from questionnaire responses, the Township would determine if official planning activities under PA Act 537 should be pursued; and/or if the extension of public sewers is warranted.

The Northwest Quadrant area comprises 478 parcels, and generally covers the area of the Township north of Paoli Pike and west of Sugartown Road to the East Whiteland and East Goshen Township borders. In December 2018, the Township mailed a summary letter and questionnaire to property owners in the Northwest Quadrant. The summary letter provided background on the purpose of the questionnaire; next steps after the data from the questionnaire was reviewed; and the process and costs associated with the construction of sanitary sewers if the Township determined that sewers were needed in some or all of the Northwest Quadrant. The questionnaire requested general information about the OLDS on a resident's property such as: type, location and age of system; system nuisances; frequency and cost of pumping; known septic problems in the area; type of water facilities, and if private well, location and quality of the well; satisfaction with OLDS; and comments or concerns.

The Township received questionnaire responses from 246 property owners representing a 52% rate of return. Data from the questionnaires was entered into the Township's geographic information system (GIS) to facilitate mapping and analysis of the data. Initial mapping and analysis focused on basic data provided in the questionnaire responses such as location, type, age, and well impact from OLDS.

Maps were created and color coded to reflect specific issues with OLDS such as types of OLDS problems reported or location of OLDS on the property, or date range for the age of OLDS.

The initial mapping provides a snapshot of OLDS information in the Northwest Quadrant from which specific OLDS factors that may indicate OLDS issues in the area can be established. Examples of how the initial mapping data were evaluated include:

- System age where the OLDS is greater than 25-years old. OLDS greater than 25-years are likely to be conventional in ground systems (septic tank and drain field) that would typically not be able to receive a permit if constructed today.
- Obsolete system types where the system type is conventional in ground, or cesspool. Again, these types of system typically cannot be permitted today.

Six factors were established for further evaluation of OLDS in the Northwest Quadrant:

- Septic problems reported including plumbing backups, odors, surface discharges or wet ground. These types of problems are indicative of poor soil conditions either when the OLDS was constructed; or long periods between system pumping, which causes solids to flow into septic tank drain piping, reducing the effectiveness of the OLDS.
- OLDS impacts on private wells. Poor siting of wells in relation to OLDS can result in bacteriological contamination of the well from both OLDS on the property and from adjacent properties; if the OLDS is not properly functioning.
- Obsolete OLDS types, generally conventional in ground systems, or cesspools. These types of OLDS are typically not constructed today, because they cannot be permitted by local agencies.

- Age of OLDS focusing on OLDS greater than 25-years old. As with obsolete OLDS types, OLDS greater than 25 years old are likely to be conventional in grounds systems or cesspools. While these OLDS may continue to function properly especially when properly maintained; permits for major repairs may not be able to be obtained, resulting in more costly replacement systems.
- Pumping frequency of OLDS greater than 3-years. Less frequent OLDS pumping indicates that the OLDS is not being maintained. Longer durations between pumping can result in solids overflow into drain fields reducing the OLDS effectiveness. Frequent system pump also allows minor issues such as broken septic tank baffles to be identified and repaired so systems continue to function properly
- Treatment of private wells. Treatment of wells indicates a real or perceived issue with OLDS either on a respondent's property or adjacent property. OLDS that are not properly maintained can cause well contamination resulting in higher operating costs for the property owner, and if widespread, the need for installation of public water systems.

Six OLDS factors maps created to show the distribution of properties reporting each factor in the Northwest Quadrant area. The individual OLDS factors maps were then combined in a summary map that shows all properties in the Northwest Quadrant that reported one or more OLDS factors. In addition to mapping properties based on the number of OLDS factors reported, the individual factors were labeled on the map so show how multiple OLDS factors were distributed.

Properties on the summary map were totaled to list the number of properties with one, to five factors. The table below summarizes the questionnaire responses based on the number of OLDS factors identified.

Willistown Township
Northwest Quadrant
Summary of Questionnaire Responses

Letters sent	478		
Total responses received	246		
Response Category	Number of Responses	Percentage of Responses Received	Percentage of Total Properties
Obsolete System	78	32%	16%
Obsolete System, System 25+ Years Old	109	44%	23%
Obsolete System, System 25+ Years Old, System Problem Reported	35	14%	7%
Obsolete System, System 25+ Years Old, System Problem Reported, 3+ Years Since System Pumped	9	4%	2%
Obsolete System, System 25+ Years Old, System Problem Reported, 3+ Years Since System Pumped, Well Impacted	2	1%	0%
Responses- Six or more factors reported	0	0%	0%
Other	13	5%	3%

Looking at all 478 parcels in the Northwest Quadrant, 49% were identified having at least one OLDS factor that may indicate an issue based on the 52% of responses received. Of the properties identified has having OLDS factors, a majority reported either obsolete OLDS and/or OLDS age greater than 25 years. Obsolete OLDS or OLDS age greater than 25 years are more indicative of the age of the neighborhood rather than how well and OLDS is functioning. Therefore, only 10% of all properties in the Northwest Quadrant reported more than 2 OLDS factors including well impacts, treatment of wells or pump frequency greater than 3 years. Combined with obsolete OLDS and OLDS age greater than 25 years, these factors may indicate more serious issues with an OLDS on a specific property.

However, reviewing the OLDS factors summary mapping shows that properties reporting 3 or more OLDS factors are distributed throughout the Northwest Quadrant. No “cluster” of properties with 3 or more OLDS factors can be observed from the summary map.

The Townships conclusion after reviewing questionnaire responses, mapping response categories and analyzing mapping of responses is that there are no OLDS issues in the Northwest Quadrant that warrant further sewage facilities planning or construction of public sewers.