



**ON-SITE SEPTIC SYSTEM EVALUATION
PEBBLE RIDGE COMMUNITY
DOYLESTOWN TOWNSHIP, BUCKS CO. PA**

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Project No. 082527

Prepared for:

Doylestown Township Board of Supervisors
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EXECUTIVE SUMMARY

The Doylestown Township Board of Supervisors retained **Boucher & James, Inc.** to conduct an on-site observation of the single lot septic systems within the Pebble Ridge area of the Township. The study was conducted in part to provide the Board of Supervisors with the relative number of private septic system malfunctions within the study area. A similar study was conducted by **Boucher & James, Inc.** in 1998. This report also provides a comparison of the 1998 findings with current septic system status. The comparative information is of primary interest in light of the septic system maintenance program mandated for the study area in response to the 1998 findings.

Current research work performed by **Boucher & James, Inc.** involved two components. The first was research of the Bucks County Health Department Sewage files to search for system repairs and replacements since 1998. The second aspect of the investigation involved on-site observations of each lot for signs of system malfunction. Technically, from a Pennsylvania Department of Environmental Protection (PA DEP) regulatory perspective, a malfunctioning system is one which has sewage present on the ground surface. We have added a second category “suspected malfunctioning system” to include drain fields which exhibit indications that they may have or will fail at some time during the year when our observer was not present. These would include very soft ground and areas with dead or excessive growths of grass.

File research was undertaken to document system repairs or violations issued by the Bucks County Health Department since 1998. The on-site observation was a visual inspection performed between April 14 and 17, 2008.

The study area consists of 203 single lot, residential properties; 199 which are currently occupied by residential structures. One resident did not allow us to inspect their property; resulting in 198 total inspections. A total of 15 properties (8%) contained malfunctioning septic systems. Another 35 properties (18%) had systems suspected of malfunctioning at some point within the year. The remaining 148 properties (74%) had systems that did not reveal indications of malfunction concern.

Comparing the results of the 1998 to 2008 field surveys revealed that 104 properties or did not have malfunctioning or indications of malfunction during either the 1998 or 2008 inspections. Of the properties that revealed a malfunction or suspected malfunction in 1998, 23 were still experiencing indications of problems in 2008. Correspondingly, 23 of the properties that revealed a malfunction or suspected malfunction in 1998 did not reveal any indications of problems in 2008. A total of 20 properties that did not reveal problems in 1998 were found to be malfunctioning or revealed signs of a suspected malfunction during the 2008 inspection.



I. INTRODUCTION

In 1998, Doylestown Township requested the Bucks County Water & Sewer Authority to update the Township's Act 537 Sewage Facilities Plan to address Township growth and on-lot system failures. As a result, a revised draft 537 Plan was presented to the Board of Supervisors by the Water & Sewer Authority at a public meeting on October 28, 1997. Residents had several questions and concerns regarding the draft plan. In response to the residents' concerns, the Board of Supervisors appointed a Sewer Study Committee. The Committee was comprised of Township residents charged to provide further review and comment on the draft plan and to provide input on how to best serve the Township's five and ten year sewer needs.

One of the Sewer Committee's primary concerns in 1997 was to identify areas where private on-site septic system failures most often occur. The Sewer Committee mailed a questionnaire to homeowners to identify critical areas where system failures were most often found. The goal was to ensure that the septic systems in the critical areas could be addressed within the five year period. Based upon the results of the questionnaire and other background information, the Committee identified three areas which should be addressed within a five year period. These areas were the Pebble Ridge, Tedwill Road and Wilkshire Road developments. A public meeting was held to discuss the recommendations of the Sewer Study Committee. At that meeting, residents expressed their concern that additional information was needed by the Board of Supervisors prior to deciding which areas (neighborhoods) may need to be connected to public sewers within the next five years.

The Board of Supervisors retained **Boucher & James, Inc.** in 1998 to conduct on-site observations of the areas located within the Pebble Ridge and Tedwill Road areas of the Township. This information was requested to assist the Supervisors to determine the relative number of system malfunctions within the study areas. The results of the study were presented to Doylestown Township in July of 1998.

This current study involved follow-up inspection of the septic systems of the properties within the Pebble Ridge subdivision. This report presents the results of the current study as well as a comparison of the current findings to the 1998 results.



II. SCOPE OF WORK

Current research work performed by **Boucher & James, Inc.** involved two components. The first was research of the Bucks County Health Department Sewage files to search for system repairs and replacements since 1998. The second aspect of the investigation involved on-site observations of each lot for signs of system malfunction.

File research was undertaken to document system repairs or violations issued by the Bucks County Health Department since 1998. The on-site observation was a visual inspection performed between April 14 and 17, 2008.

Professional observers of **Boucher & James, Inc.** used a “checklist” and available information obtained from Bucks County Health department, to look for the following signs of system malfunction or suspected malfunction: 1) effluent on lawn surface, 2) the presence of by-pass pipes discharging to storm water swales or adjacent streams, 3) dead grass, 4) excessive grass growth, 5) soft soils, and 6) sewage odors.

The checklist also provided a category for the observer to comment on unusual situations or conditions encountered and any information volunteered by the home owner if present at the time of observation. The observation did not involve any of the following: entry into the residence, dye testing, inspection of septic tanks or distribution boxes, excavation of drain fields, or any other intensive evaluation method. If signs of malfunction were found, photographs were taken and site specific notes produced describing the malfunction. A compilation of the field forms and Health Department file information has been provided to Doylestown Township as an addendum to this report.

A “malfunctioning septic system” was defined by the observer, using the Pennsylvania Department of Environmental Protection’s (PA DEP) criteria of a malfunctioning system. PA DEP defines a malfunctioning system as one which reveals effluent or partially treated effluent is present on the ground surface. **Boucher & James, Inc.** added a second category which we termed a “Suspected malfunctioning septic system”. This included properties where conditions over the drainfield did not reveal conditions worthy of being classified as a malfunctioning system but exhibited one or more of the following: dead grass, excessive grass growth or soft soils within the drainfield. To make a valid comparison of the 2008 findings with the 1998 inspection findings, the 1998 observations were reviewed and reclassified according to the 2008 rating system.

Three properties observed in 2008 which contained holding tanks were classified as malfunctions. This is because the tanks were installed because of serious problems with their on-lot septic drainfields. Also, holding tanks are not considered a permanent sewage disposal method.

Five properties installed new septic systems from 1998 to 2008. Three of the five systems replaced existing on-lot septic systems that were malfunctioning. The remaining two systems were installed for new home construction.



III. SUMMARY OF FINDINGS

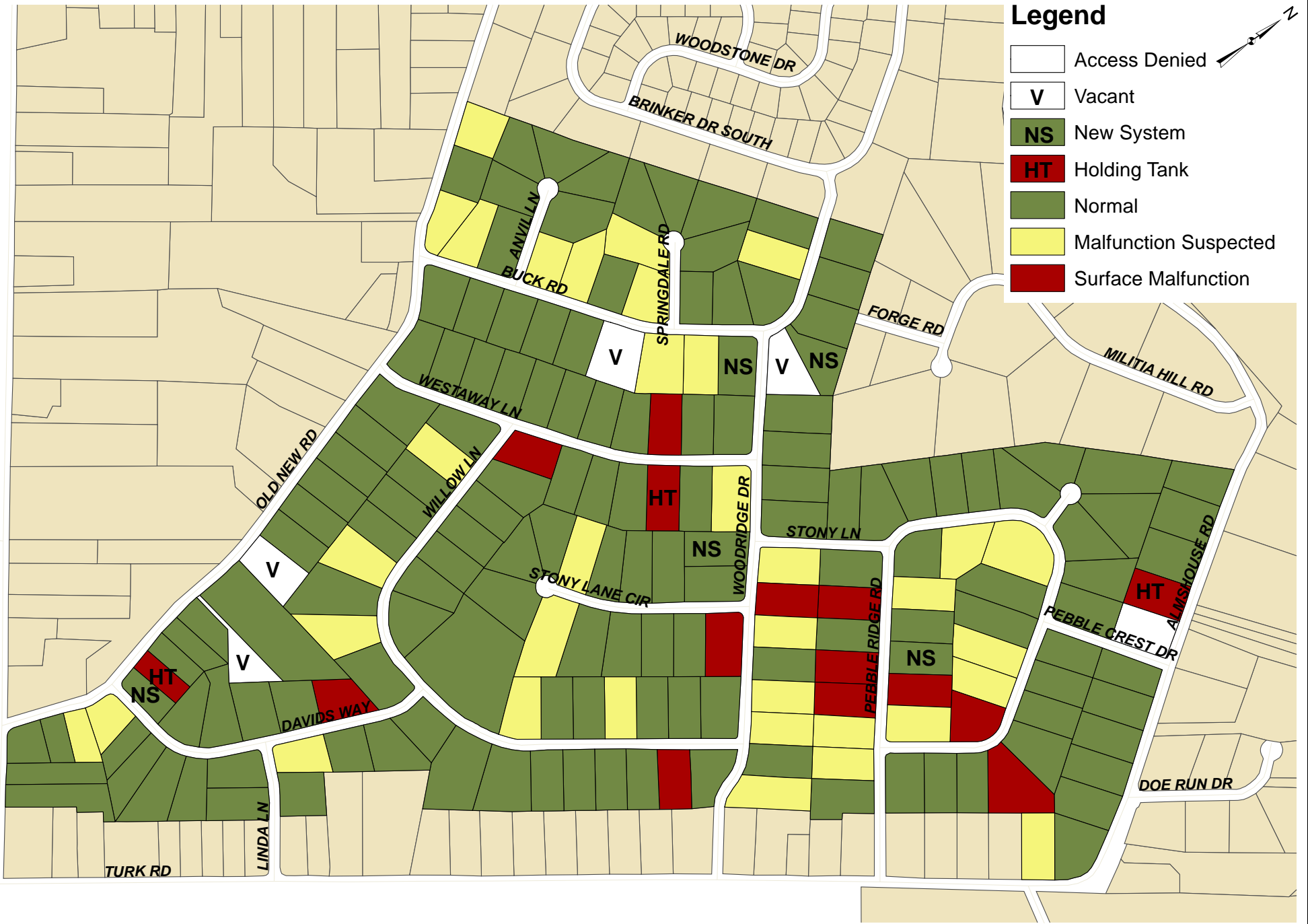
The study area consisted of 203 single lot residential properties; 199 which are currently occupied by single family residential structures. One resident did not allow us to inspect their property which resulted in 198 total inspections conducted in 2008.

Plan I provides a visual summary of the 2008 field observation findings for the entire study area. In 2008, a total of 15 properties (8%) revealed confirmed malfunctioning septic systems. Another 35 properties (18%) had systems that were suspected of malfunctioning at some time during the year. The remaining 148 properties (74%) appeared to not have a malfunction or did not show signs of a malfunction.

Plan II provides a visual summary of the 1998 field observations for the entire study area. The 1998 findings depicted on Plan II employ the same criteria to define a “malfunctioning” and “suspect malfunctioning” septic system as the 2008 study.

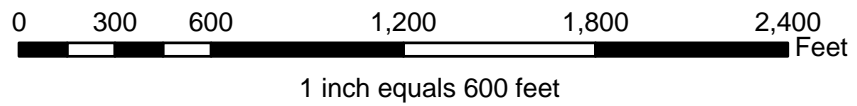
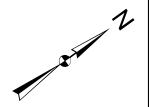
Plan III provides a visual comparison of the 1998 findings to the 2008 inspection results. Comparing the 1998 results to 2008 reveals that 104 properties did not reveal a malfunction or indication of a malfunction during either the 1998 or 2008 inspections. Of the properties that revealed a malfunction or suspected malfunction in 1998, 23 were still experiencing a malfunction or suspected malfunction in 2008. Correspondingly, 23 of the properties that revealed a malfunction or suspected malfunction in 1998 did not reveal any indication of a malfunction or suspected malfunction in 2008. A total of 20 properties that did not reveal a malfunction or suspected malfunction in 1998 were found to be malfunctioning or revealed signs of a suspected malfunction during the 2008 inspection.

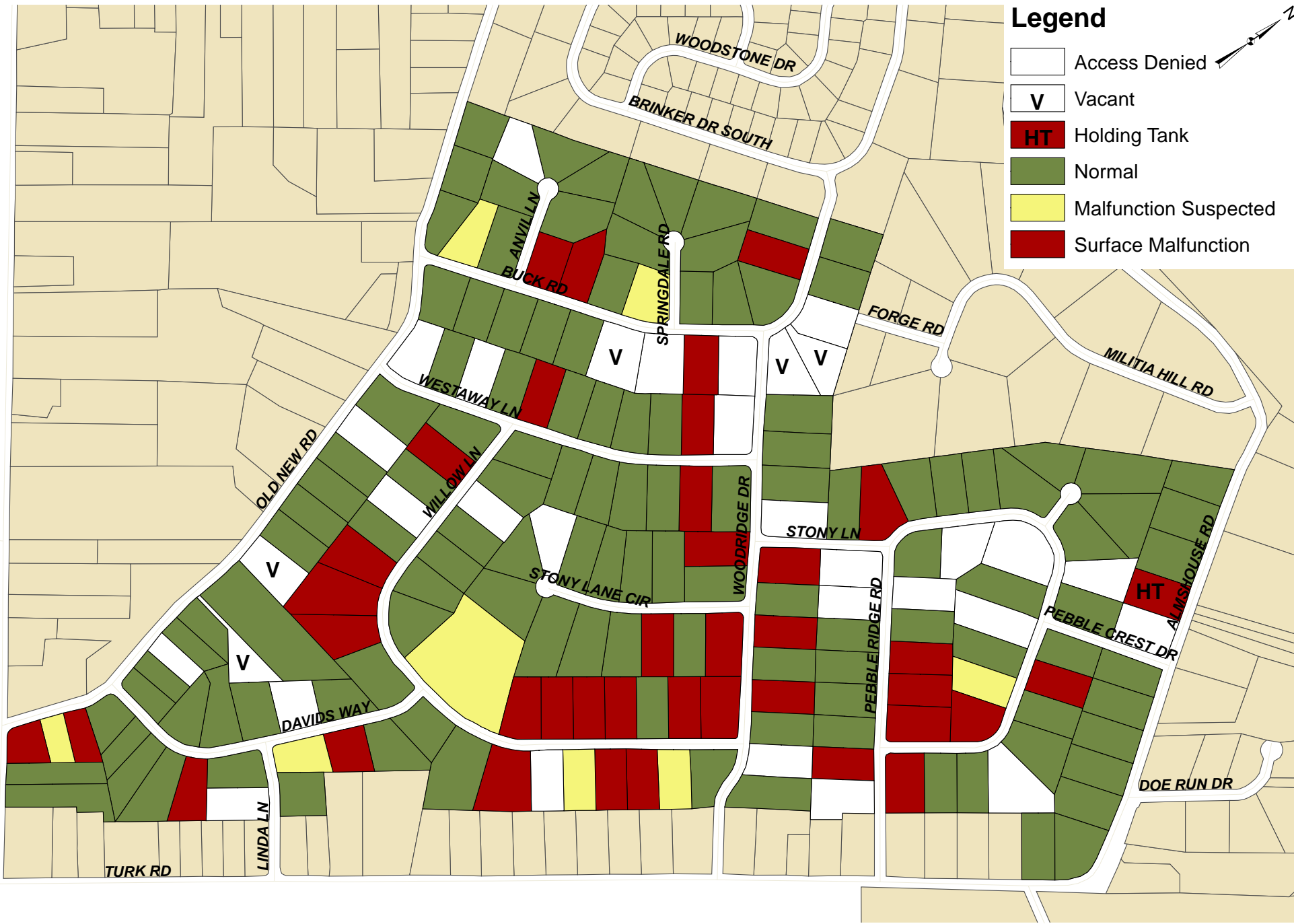




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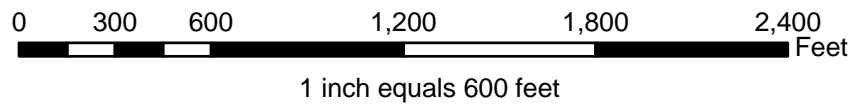
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- V Vacant
- New System
- Holding Tank
- Normal
- Malfunction Suspected
- Surface Malfunction

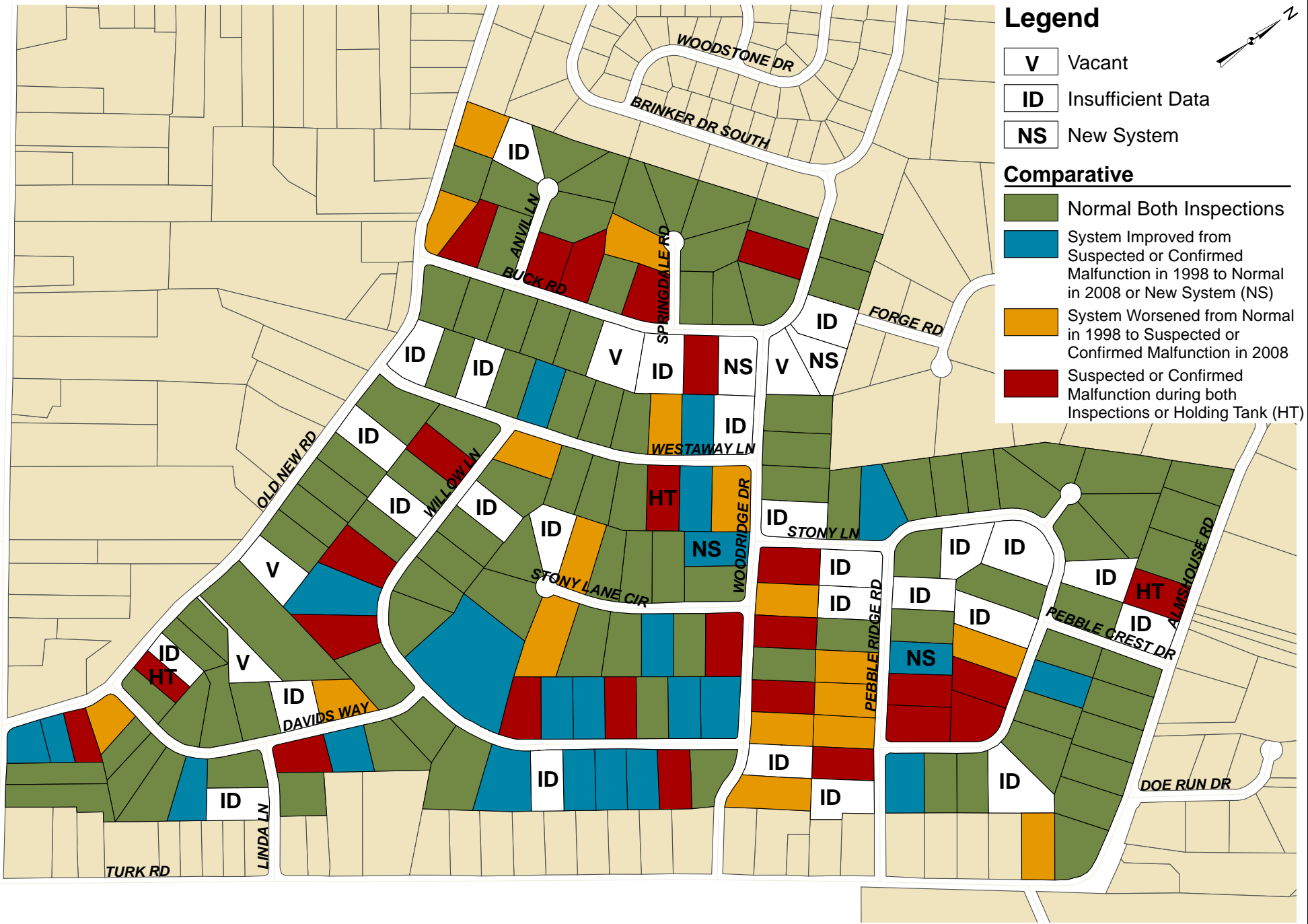




Legend

- Access Denied
- V Vacant
- HT Holding Tank
- Normal
- Malfunction Suspected
- Surface Malfunction





Legend

- V** Vacant
- ID** Insufficient Data
- NS** New System

Comparative

- Normal Both Inspections
- System Improved from Suspected or Confirmed Malfunction in 1998 to Normal in 2008 or New System (NS)
- System Worsened from Normal in 1998 to Suspected or Confirmed Malfunction in 2008
- Suspected or Confirmed Malfunction during both Inspections or Holding Tank (HT)

