

**To:** Members of Dublin City Council  
**From:** Marsha I. Grigsby, City Manager   
**Date:** September 18, 2014  
**Initiated By:** Megan O'Callaghan, PE, Public Service Director  
Barbara Cox, PE, Engineering Manager - Development  
**Re:** Utility Extension Policy Update - Inventory of Existing Household Sewage Treatment Systems (HSTS) and Health Risk Assessment Summary

## Background

The City periodically receives inquiries from residents who are requesting City public water and/or sewer services. As such, City Council has expressed an interest to continue the discussion regarding a policy for the extension of public sewer and water to areas that do not have access to the public utility systems. To date, significant time has been invested in creating a comprehensive data set and analysis of 22 developed and partially developed areas of the City that currently are not connected to public utility systems. A general location map is attached to the memo to provide an overview of the 22 areas.

In order to develop a policy, it is important to understand the location of privately maintained systems as well as any on-going issues with such systems. Accordingly, in 2013, the City partnered with two Franklin County agencies, the Soil and Water Conservation District (FSWCD) and Public Health (FCPH). We wanted to utilize their expertise to inventory existing Household Sewage Treatment Systems (HSTS) and analyze the quality of individual HSTS in the City. Septic tanks, leach fields, aerators, and evapo-transpiration systems are forms of onsite treatment systems. The scope of this project included:

- field verify, locate, and inspect the known HSTS within Dublin;
- assess the functional status and public health risks of the HSTS;
- use a data-driven approach to evaluate each unserved area for the potential of public health risks and to rank these areas based upon this risk assessment; and
- if requested, continue the assessment of HSTS, until sanitary sewers are available and accessible.

FCPH and FSWCD staff previously developed methods to prioritize unsewered areas for the potential of health risks in order to assist the Franklin County Commissioners in the development of policies to extend public sewer. These same methods were applied to this project.

See attached Project Scope of Work and Phases for detailed information.

## **Summary**

Franklin County and Dublin staff met earlier this summer to review the results of the site visits performed, Health Risk Assessment, and the mapping that was created from this effort. FCPH's evaluation is attached to this memo. A summary of their evaluation follows.

### *Inventory of Existing HSTS*

At the request of Dublin, FCPH and FSWCD staff visited 683 total properties. The attached flyer was provided in advance of the site visits to provide property owners information about the data collection efforts. Of these 683 properties, 305 did not have an HSTS as they are undeveloped/vacant properties.

378 HSTS were catalogued and evaluated. A breakdown of this inventory is as follows:

- Aeration Treatment Units (ATU) on-lot – 195
- Septic to leach systems – 131
- Mound Systems – 49
- ATU on-lot to Leach – 2
- Holding Tank - 1

See the attached "Household Sewage Treatment Systems (HSTS) Inventory – Entire Study Area" and "Household Sewage Treatment Systems (HSTS) Inventory – Utility Extension Areas" maps for more details.

### *Health Risk Assessment*

FCPH and FSWCD considered the following variables in its relative Health Risk Assessment:

- age of the system,
- failure rate of the system,
- ground water pollution potential, and
- soil suitability.

FCPH and FSWCD report that of the 378 parcels that currently have an HSTS, 37 of these systems demonstrated nuisance conditions ranging from non-functioning to basic maintenance needs. FCPH worked with system owners to remedy the nuisance conditions.

Overall, the findings indicate a majority of the systems within Dublin are in working condition. Referencing the attached "Household Sewage Treatment Systems (HSTS) Health-Based Risk Assessment – Entire Study Area" and "Household Sewage Treatment Systems (HSTS) Health-Based Risk Assessment – Utility Extension Areas" maps:

- The parcels shown in **green** represent the least potential for health risks and parcels shown in **red** represent the greatest potential for health risks.
- The squares shown within the parcels represent the likelihood that the HSTS on site will fail and subsequently cause public health related issues.
- The **green** squares represent soil leachfield systems, the **yellow** represent mound systems, and the **red** represent aeration systems.

The findings further indicate aeration treatment units had the majority of issues. These units are found with many of the older homes along the Scioto River corridor and are of greater concern from a public health perspective as they discharge directly to watercourses, storm sewers or drainage tiles. Also, these locations have few alternatives available for repair or replacement; especially, if the soils are unsuitable or shallow bedrock is present.

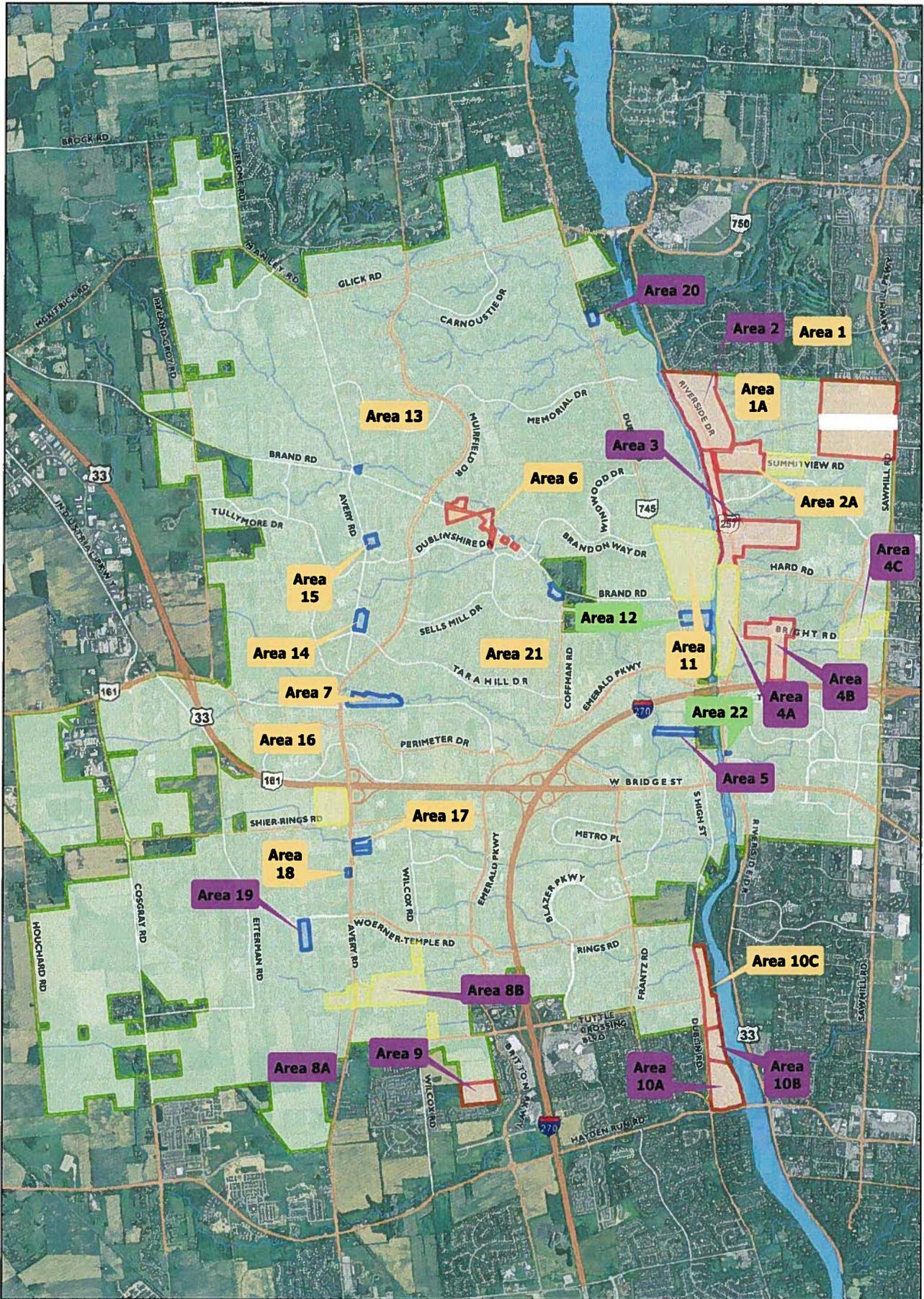
There are also several areas that utilize soil-based systems that raise concern. These areas are on and around Grandee Cliffs Drive, and the areas of Summit View Road, Glen Cree Place, and Trails End Drive. Many of these systems were installed when the houses were built and may be toward the end of their lifespan. Replacement of failing soil-based systems can be difficult due to poor soils, shallow bedrock, and other factors.

### **Recommendation**

This is an informational memo. A draft policy will be provided for City Council's consideration at the October 27, 2014 City Council meeting. The purpose of the draft policy will be to establish a written, uniform, systematic, and calculable approach to providing City water and/or sewer utilities to properties that are currently unserved.

#### **Attachments:**

- Water/Sewer Extension Study, General Location Map
- Project Scope of Work and Phases
- FCPH Summary of HSTS Evaluation
- Utility Extension Program Site Visits Flyer
- Household Sewage Treatment Systems (HSTS) Inventory – Entire Study Area map
- Household Sewage Treatment Systems (HSTS) Inventory – Utility Extension Areas map
- Household Sewage Treatment Systems (HSTS) Health-Based Risk Assessment – Entire Study Area map
- Household Sewage Treatment Systems (HSTS) Health-Based Risk Assessment – Utility Extension Areas map



**Water/Sewer Extension Study  
General Location Map  
October 2012**

Utility Extension Type	Priority
Orange	High
Purple	Medium
Green	Low
Blue	Low

## **1. Project Scope of Work and Phases**

The following is a proposal to: 1) catalog, locate, and describe all of the known HSTS within Dublin, 2) assess the current functional status and public health risks of HSTS, 3) use a data-driven approach to evaluate each unsewered area for the potential of public health risks and to rank these areas based upon this risk assessment, and 4) to continue the assessment of HSTS if requested until sanitary sewers are available and accessible. Franklin County Public Health (FCPH) and Franklin Soil and Water Conservation District (FSWCD) staff developed methods to prioritize unsewered areas for the potential of health risks to assist the Franklin County Commissioners in the development of policies to extend public sewer and will apply these same methods to this project. **The involvement of FCPH and FSWCD in the project is conditioned upon funding and staffing levels, the negotiated scope of the project, and expected timeframes.**

### **Phase I**

- FCPH, FSWCD, and Dublin officials (hereafter referred to as "Dublin") will determine the boundaries of the project as corporation limits, service area, or other areas of inclusion or exclusion. The areas to be included in this study are: 1, 1A, 2, 2A, 3, 4A, 4B, 6, 8A, 8B, 9, all 10s, and 11.
- FCPH and FSWCD will collect all available electronic and paper data of the parcels that contain all known HSTS within the boundaries of the project.
- FCPH and FSWCD will collect all available reports and data that have been collected prior to this project on surface and ground water public health risks, sewage nuisance complaints and storm water pollution, unsewered areas, and existing sewer extension policies, including but not limited to annual inspections of aeration systems, existing private water system records, dry weather screening results (if completed) as required by Dublin's OEPA National Pollution Discharge Elimination System (NPDES) Storm Water Permit and existing reports and minutes of Dublin's Council and its special committees related to this issue.
- FCPH will summarize the findings of Phase I in an interim report to refine the scope of work for the proposed second phase of the project.
- **Timeframe: June 15, 2012 to July 20, 2012**

### **Phase II**

- Based upon the findings in Phase I, FCPH, FSWCD, and Dublin will determine the extent of additional data that will be necessary to complete the project's original scope of work.
  - If additional data is necessary, FCPH, FSWCD, and Dublin will re-negotiate the scope of work and attach a written addendum to the contract agreeable to all parties.
- FCPH and FSWCD will provide: 1) a **site-specific location** of all HSTS using electronic and paper records and field investigations, 2) a **detailed description** and mapping of the HSTS using GPS coordinates and data collected on HSTS type, tank location(s), effluent discharge pipe location, curtain drain discharge pipe location, inspection box location, soil absorption field location, and 3) a **current assessment** of the function of all HSTS in Dublin and summarize its findings in an interim report.

- This assessment will be a survey and will not include any enforcement actions against individual property owners, unless agreed upon by FCPH and Dublin.
- FCPH and FSWCD will collect additional field data if necessary and summarize the findings in an interim report.
- **Timeframe: July 23, 2012 to November 16, 2012 (based upon +/- 300 HSTS to be located, described, and assessed)**

### Phase III

- FSWCD will present to Dublin the evaluation method and metric used to prioritize unsewered areas for the potential of health risks for the Franklin County Commissioners.
- FSWCD, FCPH, and Dublin will review this metric and determine if it is appropriate for the Dublin project.
- FCPH and FSWCD will use those data and the agreed upon evaluation metric to prioritize and rank unsewered areas for potential public health risks<sup>1,2,3</sup> and summarize the findings in a draft final report.
  - Dublin will be given the opportunity to review and comment on the draft final report prior to publication. The draft final report will be a public record and subject to public records requests. FCPH will provide to the City of Dublin a priority ranking of unsewered areas for potential public health risks. This ranking data will be one of several factors used by the City of Dublin to prioritize the deployment of sanitary sewer infrastructure.
- **Timeframe: January 1, 2013 to March 8, 2013**

### Phase IV

- FCPH will continue the assessment of all existing HSTS within Dublin and provide an annual report if requested.
  - These "assessments" will be considered investigations to determine the existence of public health nuisances and could result in enforcement actions, with consideration given to the timeframe of the extension of sanitary sewers and the effectiveness of repairs and upgrades of the HSTS to abate the public health nuisance<sup>3</sup>.
  - Phase IV will include the assessment of Septic Tank and Leach Field HSTS, the only HSTS currently NOT inspected annually by FCPH. An annual \$50 operation permit paid by the HSTS owner to FCPH will fund this inspection program. Dublin will need to adopt an ordinance to require owners of septic tank and leach field HSTS to purchase an annual operation permit, because the Franklin County Board of Health's Sewage Treatment Systems Regulation 720 does not require the annual inspection of this type of HSTS.

## 2. Project Budget

The project's budget takes advantage of state match dollars awarded to FSWCD. Dublin will contract with FSWCD, who will subcontract with FCPH for services. Table 1 is a summary of project personnel, material, and supply costs by Phase. Table 2 summarizes the personnel, material, and supply costs by agency. Table 3 summarizes the estimated additional costs in Phase II factoring per HSTS unit costs (see \*\* below Table 1) and the total project cost.

September 17, 2014

City of Dublin  
Engineering  
Attn: Barb Cox, PE  
5800 Shier-Rings Road  
Dublin, Ohio 43016-1236

**Re: Summary Findings for the 'Dublin Health Risk Assessment of HSTS and Sanitary Sewer Extension Priority Evaluation' performed by Franklin Soil and Water Conservation District and Franklin County Public Health**

The 'Dublin Health Risk Assessment of HSTS and Sanitary Sewer Extension Priority Evaluation' was a combined effort by Franklin Soil and Water Conservation District and Franklin County Public Health. The goal of the project was to field verify, inspect, and record the locations of HSTS sites within the defined utility extension areas provided by the City of Dublin. This data was compiled and delivered to Dublin for incorporation into their GIS.

Upon completion of the inventory and assessment of the HSTS, a Health Risk Assessment was conducted to prioritize/rank the parcels according to their relative health risk. The following variables were included in the relative Health Risk Assessment and summarized by parcel:

The age of the system: (estimated by the build date of the parcel)

The failure rate of the system: (determined by type of system verified in the field)

Ground Water Pollution Potential: (values obtained from study by ODNR)

Soil Suitability: (values obtained from Soil Survey Data published by NRCS)

During the course of this project, 378 HSTSs in the defined areas were catalogued and their function evaluated. By far, the majority of the failing HSTS's were aeration treatment units (ATU) that discharge their effluent to storm drains, drainage tiles or directly to watercourses. The remaining failures were septic to leach and a mound type system. Aeration treatment units are prone to failure because of the mechanical design used to treat the sewage, and homeowners need to be attentive to the system and implement routine maintenance. In many cases, we were able to work with the homeowners to have the systems repaired and make them functional. Most of the ATUs in these areas are older units, and their functionality and life span may now be limited.

As the data reflects, there are areas along the Scioto River corridor that have a high concentration of ATUs, poor soils, shallow depth to bedrock, coupled with advanced age of the ATUs. These units also discharge directly to watercourses, storm sewers, and drainage tiles which increase the risk of pollution, and human exposure to untreated sewage and pathogens. This scenario is of greatest concern from a public health perspective. There are also several areas that utilize soil based systems that raise concern as well. These areas are on and around Grandee Cliffs Drive, and the areas of Summit View Road, Glenree Place and Trails End Drive. Many of these systems were installed when the houses were built and may be toward the end of their lifespan. In some instances, a soil based replacement system may be an option, but for many, due to poor soils, shallow depth to bedrock and other limiting factors, ATUs may be the only option remaining. In the past several years, FCPH has already been involved with homeowners in these areas as they now are beginning to replace systems as they fail.

## Dublin City Council

### For your information:

- An estimated 25% of the US population relies on onsite wastewater system to treat and dispose of their household water (USPEA).
- Pollution concentrations from failing HSTS discharges could exceed public health nuisance standards.
- A number of factors can cause HSTS to fail:
  - Unsuitable soil conditions
  - Improper design and installation
  - Inadequate maintenance practices
  - The age of the system
- When an HSTS fails, untreated sewage is discharged into the environment. Any contact with untreated human waste can pose health risks. Untreated wastewater from a failing HSTS can contaminate your drinking water supply, your neighbor's drinking water supply, and contaminate streams, drainage ditches, rivers and lakes. There is a potential that untreated sewage from failing systems could carry disease-causing organisms.
- These health risks are directly tied to your exposure to and ingestion of untreated sewage. The young, the old, and persons with ongoing chronic health conditions or immune system problems are at higher risk for getting sick if exposed. If you are in an area where failing HSTS may be located, do not ingest the surface water from ditches or streams, wash your hands thoroughly with soap and water and do not allow kids or pets to play in the water looks and smells like it is contaminated with sewage. This common sense approach will protect you and your loved ones.
- City of Dublin Codified Ordinances provides regulations regarding Private Wastewater Disposal in Chapter 51: Sewer Regulations.

### Council Members

Mayor Tim Lecklider  
Vice Mayor Amy Salay  
Cathy A. Boring  
Marilee Chinnici-Zuercher  
Richard S. Gerber  
Michael H. Keenan  
John G. Reiner

### City Manager

Marsha Grigsby

# Utility Extension Program Site Visits

**The City of Dublin is planning for the future and we need your help. We have partnered with two Franklin County agencies, the Soil and Water Conservation District (FSWCD) and Public Health (FCPH), to create an inventory of existing household sewage treatment systems in the city.**



**City of Dublin**

Office of the City Manager  
5200 Emerald Parkway  
Dublin, Ohio 43017

phone 614.410.4400

[www.dublinohiousa.gov](http://www.dublinohiousa.gov)



City of Dublin

## What is a household sewage treatment system?

A household sewage treatment system, or HSTS, treats household wastes in areas without access to public sewers. Septic tanks, leach fields, aerators and evapo-transpiration systems are forms of onsite treatment systems.

## Why is a site visit needed?

Properties in your area are currently served by HSTS. The type, location and condition of these systems need to be inventoried and mapped using GPS coordinates.

## What will happen during the site visit?

You do not need to be at home for the site visit. The site visit will include:

- Representatives (2 or 3 staff members) of FSWCD and FCPH will visit your property. They will have identification with them.
- They will knock on the front door to notify you that they are on your property.
- They will ask you to secure your pets and unlock any gates.
- They will need access to all sides of your property (front, side and rear).
- They will be taking notes regarding your HSTS and water well location (if applicable).
- They will also be walking near any streams and waterways adjacent to your property.
- They will not need to enter your home.

## What will happen if the representatives cannot access your property?

If access to your property is not possible at the time of the initial site visit, the representatives will leave a notice at your front door requesting that you contact FCPH directly to arrange at time to have the site visit performed.

## When will the site visit be performed?

The site visit will occur during normal daytime working hours. The site visits need to occur on a clear day and are being done on an area by area basis. The representatives will be in your area within the next two to three weeks.

## What happens with the information gathered during the site visit?

The purpose of this inventory is for FSWCD and FCPH to provide their expertise to the City of Dublin in characterizing the existing functionality and mapping of these HSTS. This will aid the City in determining priority areas for public sanitary sewers extensions. The City anticipates that this effort will be on-going until all areas of the City are provided with public sanitary sewer service.

This inventory is also a requirement of the City's National Pollutant Discharge Elimination System (NPDES) permit. The inventory will be used to map the locations of the HSTS.

If the site visit reveals any concerns with the operation of your HSTS, FCPH will contact you directly to discuss the findings.

## Who to contact with questions?

Please contact the City of Dublin with any questions regarding the City's Utility Extension Program:

Sara Ott, Senior Project Manager  
Phone: 614.410.4448  
Email: [sott@dublin.oh.us](mailto:sott@dublin.oh.us)

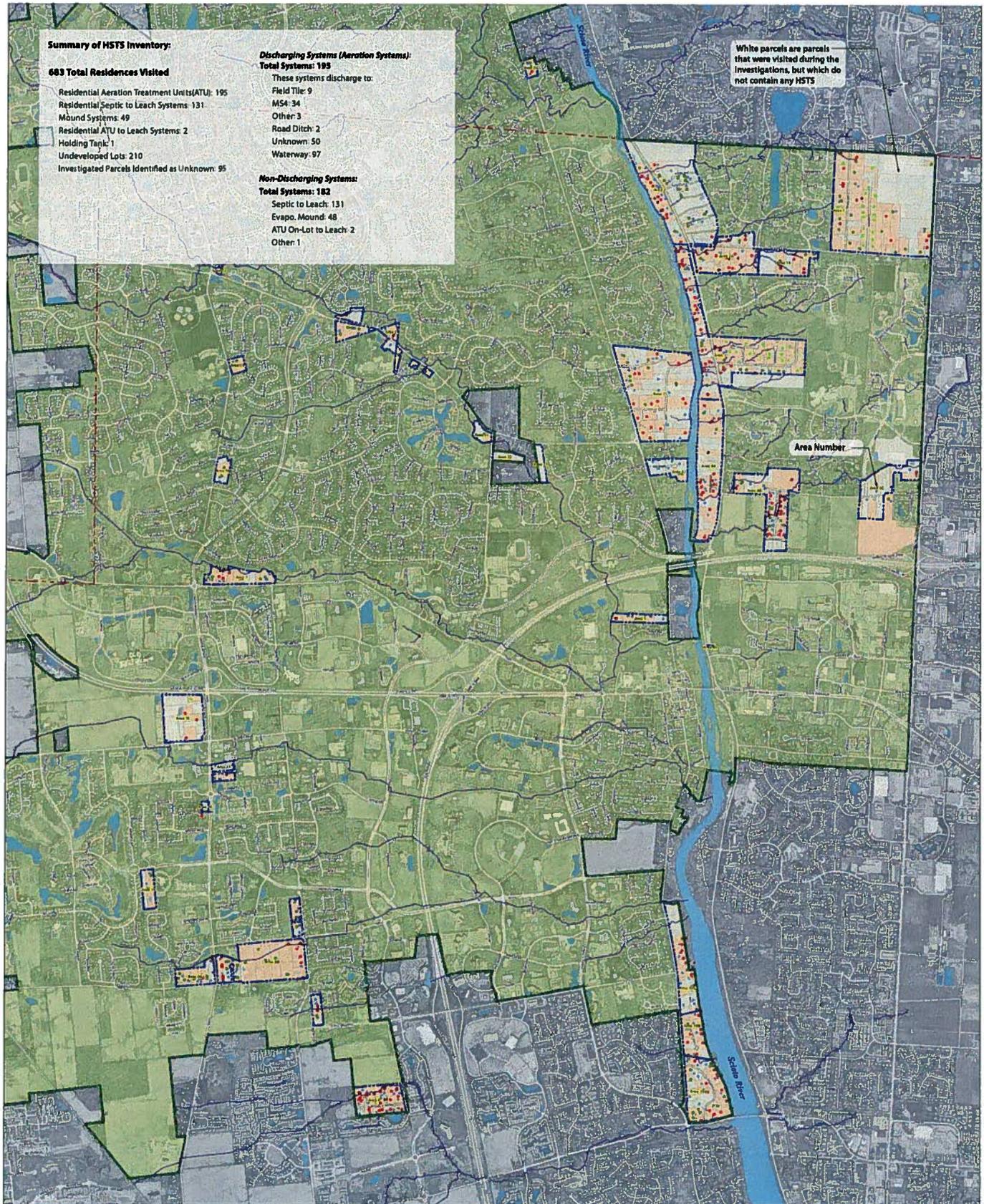
Please contact FCPH regarding your HSTS and specifics of the site visits:

Gary Young, Supervisor  
Water Quality Program  
Phone: 614.525.3909

## Definitions and websites:

- FSWCD : Franklin Soil and Water Conservation District  
[www.franklinswcd.org](http://www.franklinswcd.org)
- FCPH: Franklin County Public Health  
[www.myfcpb.org](http://www.myfcpb.org)
- HSTS: household sewage treatment system  
Franklin County Public Health website:  
[www.myfcpb.org/wqqs.php](http://www.myfcpb.org/wqqs.php)
- Ohio Department of Health website:  
[www.odh.ohio.gov/odhprograms/eh/sewage/sewage1.aspx](http://www.odh.ohio.gov/odhprograms/eh/sewage/sewage1.aspx)
- NPDES: National Pollutant Discharge Elimination System  
[epa.ohio.gov/dsw/permits/GP\\_MS4StormWater.a](http://epa.ohio.gov/dsw/permits/GP_MS4StormWater.a)  
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# Household Sewage Treatment Systems (HSTS) Inventory - Entire Study Area



**Summary of HSTS Inventory:**

**683 Total Residences Visited**

- Residential Aeration Treatment Units(ATU): 195
- Residential Septic to Leach Systems: 131
- Mound Systems: 49
- Residential ATU to Leach Systems: 2
- Holding Tank: 1
- Undeveloped Lots: 210
- Investigated Parcels Identified as Unknown: 95

**Discharging Systems (Aeration Systems):**

**Total Systems: 193**

These systems discharge to:

- Field Tilt: 9
- MS4: 34
- Other: 3
- Road Ditch: 2
- Unknown: 50
- Waterway: 97

**Non-Discharging Systems:**

**Total Systems: 182**

- Septic to Leach: 131
- Evapo. Mound: 48
- ATU On-Lot to Leach: 2
- Other: 1

White parcels are parcels that were visited during the investigations, but which do not contain any HSTS

Area Number



**Legend**

- Dublin Corporation Limit
- Utility Extension Areas
- Parcels with HSTS
- Surface Drainage

**Discharging Systems**

- Discharging Systems
- HSTS Outlet

**Non-Discharging Systems**

- <all other values>
- Evapo. Mound
- Septic to Leach

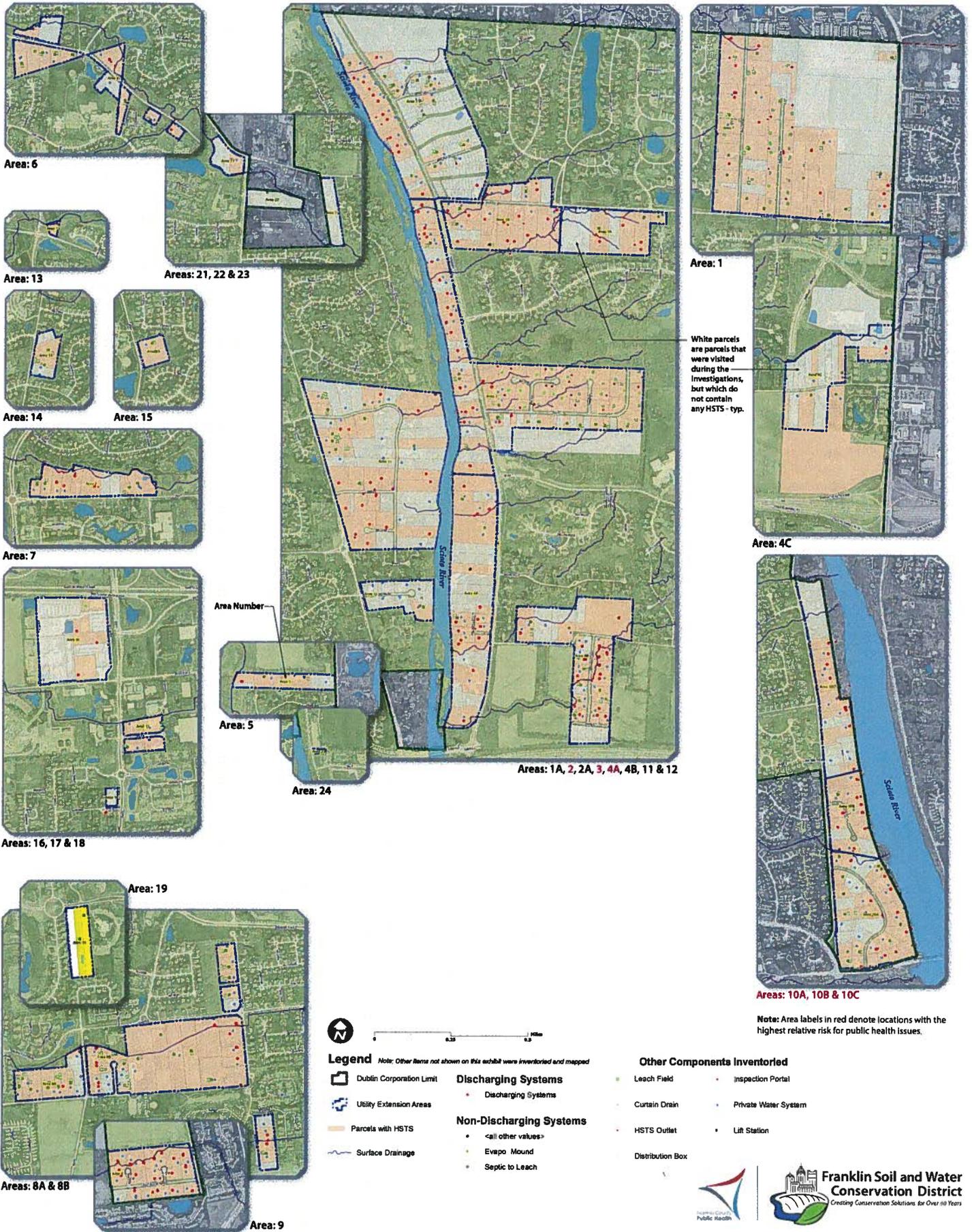
**Private Water System**

- Private Water System

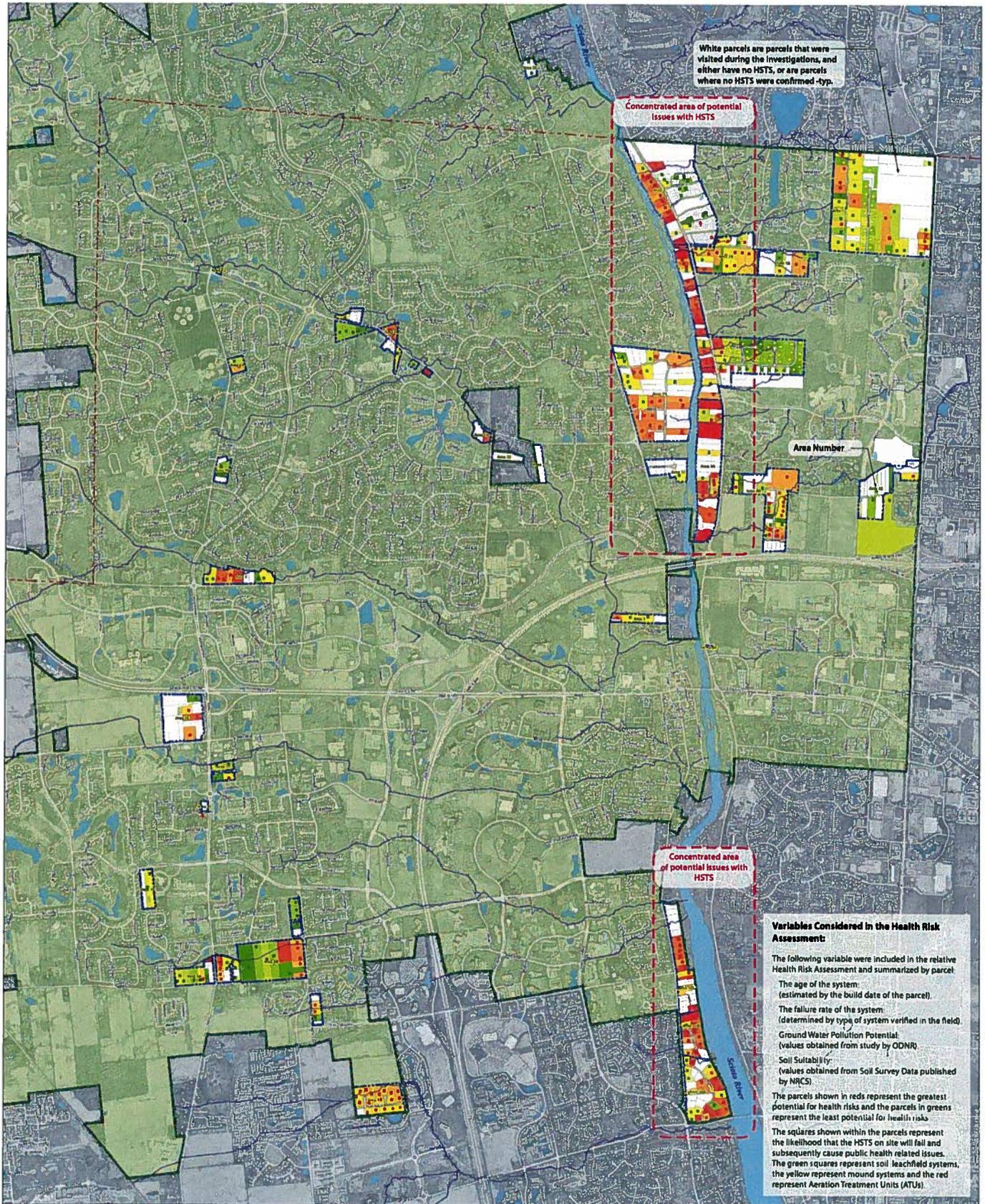


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# Household Sewage Treatment Systems (HSTS) Inventory - Utility Extension Areas



# Household Sewage Treatment Systems (HSTS) Health-Based Risk Assessment - Entire Study Area



## Legend

- Utility Extension Areas
- Dublin Corporation Limit
- Surface Drainage

## HSTS System Type

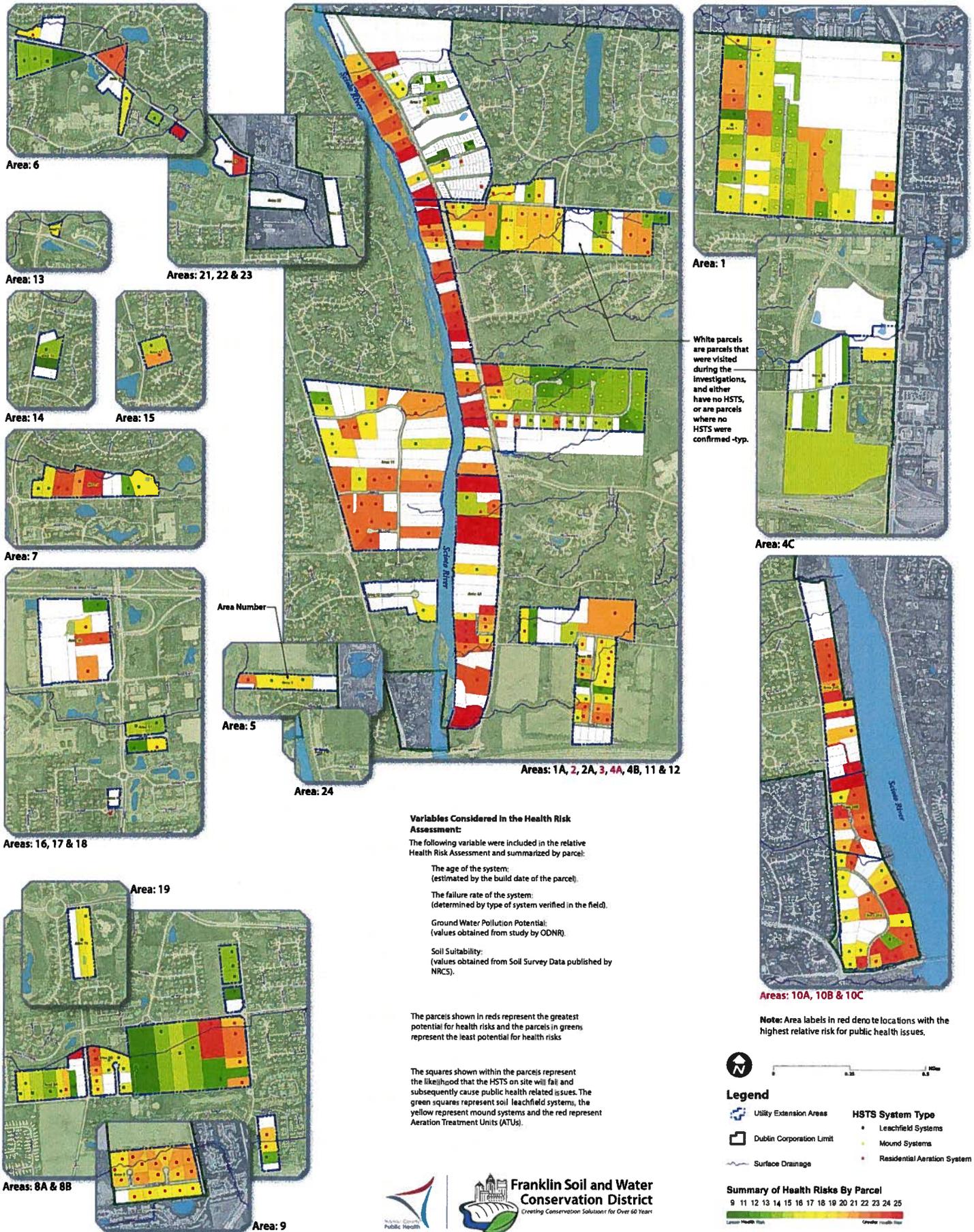
- Leachfield systems
- Mound systems
- Residential Aeration System

## Summary of Health Risks By Parcel



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# Household Sewage Treatment Systems (HSTS) Health-Based Risk Assessment - Utility Extension Areas



White parcels are parcels that were visited during the investigations, and either have no HSTS, or are parcels where no HSTS were confirmed -typ.

**Areas: 10A, 10B & 10C**

**Note:** Area labels in red denote locations with the highest relative risk for public health issues.