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Final Report

2023 LGPC Septic System Inspection Program and New Wastewater Regulations



INTRODUCTION AND BACKGROUND



The Lake George Park Commission was created by the State of New York to protect and enhance the resources of the Lake George Park and the natural beauty of the Lake and its surrounding environment. To this end, the Commission is granted powers and authorities by the NYS Legislature to enact and carry out projects, programs and regulations that advance these causes. Article 43 of the NYS Environmental Conservation Law is where the Commission's authorities and responsibilities lie, and one of those responsibilities is to help ensure that

wastewater discharges within the Lake George Park meet or exceed NYS standards. This report details the development of these regulations and the results of the first year of wastewater system inspections in the Lake George Park.

In 2021, the Commission began a concerted review of private wastewater systems in the Lake George Park, in an effort to determine if the current regulations and standards would be protective enough for Lake George. The agency also took a look at the geologic and geographic conditions within the watershed to help assess the potential for issues with existing septic systems in the watershed.

To begin the process, the Commission's late Chairman, Bruce Young, established a committee comprising five Board members to assess the need for additional wastewater regulation in the Lake George Park, and the need for a rigorous septic system inspection program. This ad-hoc committee was led by then Vice Chairman Ken Parker and included commissioners Joe Stanek, Cathy LaBombard, Dave Floyd, and Bill Mason. To assist them, the committee coalesced a diverse array of regional professionals, including DEC and DOH staff, engineers, planners, elected officials, and business representatives. A list of advisory members to the Commission's ad-hoc committee can be found in Table 1 below.

The Committee focused their efforts and ideas on similar existing successful programs in NYS and the Northeast, peer reviewed literature related to water quality impacts from poorly maintained septic systems, and specific data related to geologic and geomorphic conditions within the Lake George watershed.

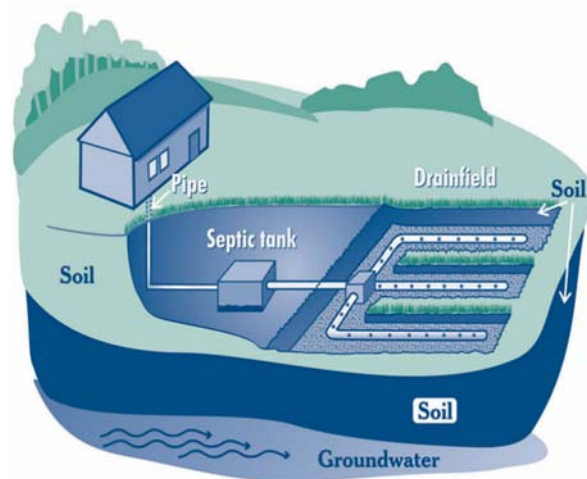


Table 1: Advisory Members to the LGPC Committee for Septic Initiative

| Name | Title, Affiliation |
|---------------------|---|
| Tom Snow | NYC Watershed Coordinator, NYS DEC |
| Kevin Kenyon | Professional Engineer, NYS DOH |
| John Graham | Code Enforcement Administrator, Washington County |
| Hannah Neilly | Project Coordinator, Essex County |
| Ethan Gaddy | Planner, Warren County |
| Samuel Hall | Chairman, Supervisor, Washington County |
| Claudia Braymer | Supervisor, Warren County |
| Dan Barusch | Director of Planning/Zoning, Lake George |
| Susan Wilson | Deputy Supervisor, Bolton |
| Tom Cunningham | Council Member, Town of Ticonderoga |
| Kathy Flacke Muncil | CEO, Fort William Henry Resort |
| Sean Doty | Professional Engineer, Chazen Companies, retained by LGPC |
| Tom Jarrett | Professional Engineer, Jarrett Engineers |
| Kathy Suozzo | Professional Engineer, KPSE Engineering |
| Chris Navitsky | Professional Engineer, LG Waterkeeper |
| Walt Lender | Executive Director, Lake George Association |

Research was completed on wastewater management/regulatory programs in waterfront communities across the region and nation. Programs reviewed ranged as far as Ontario, Canada to as near as the Towns of Bolton and Queensbury, NY. Interviews were conducted with more than a dozen lake managers from the Finger Lakes and Western NY to discuss the details of their local septic inspection programs. Specifics of these inspection programs varied among communities, reflecting distinct resources, needs, and priorities in each case. However, all lake communities that implemented recurrent septic inspection programs did so on a five-year rotating basis.

Supplementing this information, a detailed review of existing scientific studies was compiled by the Commission's retained engineer Chazen Company to inform the committee regarding wastewater systems and how they may impact Lake George. The review explored various factors affecting wastewater system effectiveness including maintenance practices, design intricacies, soil composition, and proximity to groundwater. Noteworthy concerns included the impact of nitrates, phosphorus, and organics on groundwater and surface water quality. Several studies emphasized the potential risks associated with system failures. In summary, the available data underscored the importance of proper design, regular maintenance, and routine inspections to mitigate pollution risks.

Lastly, the Commission conducted a geospatial analysis of the Lake George Park to explore the presence of existing wastewater systems around Lake George and their potential for environmental impact. Publicly available Real Property data was used to estimate the number and location of on-site wastewater systems. The Committee determined that there are approximately

6,000 private on-site wastewater systems in the Lake George Park, approximately 2,500 of which are within 500 feet of the Lake or 100 feet of its tributary streams.

It was determined that 84% of septic systems in the Lake George Park have challenging site characteristics such as steep slopes, shallow bedrock or shallow groundwater (figure 1 at right). It was also found that the average age of a residence in the Lake George Park is 50 years, suggesting that systems may pre-date modern design and permitting standards and be aging out of their useful lifespan. This analysis demonstrated the magnitude of potential pollution risk in the Park, and particularly within close proximity to Lake George and its tributary streams.

Ultimately, following more than 18 months of concerted work by the Commission's Ad-Hoc Committee, on January 25, 2022, the Commission initiated a formal regulatory effort to establish a wastewater system inspection program and implement design standards aimed at preserving the esteemed water quality of Lake George. This effort was finalized locally on December 20, 2022, when the Commission Board unanimously passed Resolution #2022-42 to adopt regulations at 6NYCRR 646-3 entitled "Wastewater Management" and became effective April 2023. The regulations are broadly split into two categories: 1) septic system inspection and 2) septic system design standards in the Lake George Park.



INSPECTION PROGRAM DETAILS

The Lake George Park Commission Wastewater Treatment Inspection Program is established in regulations at 646-3.6, available for review on the LGPC website. The program includes a mandatory, five-year recurrent septic system inspection for all systems located within 500-feet of Lake George or within 100 feet of AA-S streams designated or mapped by the Department of Environmental Conservation (NYS ECL 17-0301).

LGPC staff identified a total of roughly 2,500 septic systems slated for inspection in the new program. This population was split over a schedule of 5 years: 2023-2027, which requires the

inspection of approximately 500 systems per year. Inspection years were split geographically evenly throughout the Park by selecting 20% of the systems in each Town to be inspected per year. This would help ensure that any given municipality would not be overburdened with subsequent reviews and approvals for any new required systems. To assist local communities and homeowner's associations, such properties were grouped together by tax map block and lot numbers so neighborhoods would be inspected on a similar year.

Tables 2 & 3 show a breakdown of the types of systems is shown below:

Table 2

| Property Type | Total # Septic Systems | % |
|----------------------|-------------------------------|-------------|
| Residential | 2,396 | 97.5% |
| Commercial | 62 | 2.5% |
| Total | 2,458 | 100% |

Table 3

| Septic System Type | Total # Systems in Program | % |
|---------------------------|-----------------------------------|-------------|
| Single Septic System | 2,269 | 92.3% |
| Multiple Septic Systems | 16 | 0.7% |
| Holding Tanks | 100 | 4.1% |
| ETUs | 61 | 2.4% |
| Community | 12 | 0.5% |
| Total | 2,458 | 100% |

As per the new regulations, this program is funded through user fees for landowners with systems located inside the inspection program area. Annual fees charged to wastewater system owners are:

- Residential Wastewater Treatment System: \$50
- Commercial Wastewater Treatment System: \$100
- Residential Holding Tank System: \$25
- Commercial Holding Tank System: \$50

The LGPC acknowledges the significant value of Enhanced Treatment Units (ETUs) for maintaining water quality and enhancing wastewater management on Lake George. Due to the complexity, cost and regular maintenance required of these systems, these systems are exempt from the annual \$50 fee, provided the LGPC receives proof of inspection and required maintenance by a qualified inspector or manufacturer representative. Such inspection must be consistent with the Commission's standards for a wastewater inspection.

All septic system inspections under the Commission's regulations are performed by trained Park Commission Staff, or a Qualified Wastewater Inspector expressly authorized by the Commission related to specific proprietary systems.

Property transfer septic inspections conducted under the Towns of Queensbury and Bolton programs are recognized by the Commission as equal to an inspection under the Commission's program. Such municipal inspections allow those properties to be exempt from the Commission program for a five year cycle.

A septic system inspection under this initiative is an assessment of the system's design, location, and function, to make sure it meets NYS standards. An inspection includes a septic tank pumpout by a licensed NYS hauler, a review of the septic tank integrity, the distribution box and leaching components, confirmation of household water fixtures discharging to the system, and proper system sizing.



Commission septic inspectors on one of the first inspections of the program

To lessen the burden on the homeowner related to scheduling, the property owner selects the time and date of inspection with the Commission after they secure a time with a septic hauler of their choosing. The LGPC is accommodating to inspections at any time during business hours five days a week May through November. Prior to the wastewater system inspection, the landowner or septic hauler uncovers all components of the system including the tank inlet, outlet, distribution box, pump chamber and any other access ports.

Categories of Outcomes

The outcome of a septic inspection is divided into four distinct categories under this program:

- Pass
- Fail
- Substandard
- Repairs Needed

Each of these categories relates to how the system is both designed and functioning. Failures and systems that are substandard are defined in Commission regulation.

A 'Failing' Wastewater System is defined by the LGPC Regulation Subpart 646-3.3 as follows:

- The release of untreated or partially treated wastewater directly or indirectly to the ground surface or to surface waters.
- A metal septic tank.
- Lack of a pre-treatment vessel (like a septic tank) before discharging wastewater into the ground, as seen in cesspools.
- Lack of an underground treatment area when not using a holding tank.
- Sewage backup into the home, building, septic tank, or distribution box, including effluent

flowing back during pump-out.

- The need for a septic tank pump-out more than four times a year.
- A septic tank with less than 50% of the required capacity per DOH and DEC design standards.

A 'Substandard' Wastewater System is defined by the LGPC Regulation Subpart 646-3.3 (h). A Substandard wastewater treatment system means it doesn't meet the required standards, including DOH 75-A and DEC Design Standards. It includes a system with:

- A septic tank with less than 100% of the needed capacity according to DOH 75-A and DEC Design Standards.
- An absorption area with less than 75% of the required capacity, such as a smaller absorption trench or seepage pit.
- An absorption area located closer than 50 feet to Lake George or a designated AA-S stream
- General structural or functional non-conformance with applicable design standards such as septic tank baffles, risers, and level d-box components



Cesspool for wastewater treatment found in the Town of Hage. Such systems are not allowed by NYS health code

Systems that pass inspection are considered compliant for five years from the inspection date. Systems that do not pass are required to be brought into compliance.

Several inspections showed minor repairs needed, such as baffles, speed levelers in the distribution boxes, risers for the tanks, etc. Such repairs are generally done the same day or in a few days by the septic hauler or homeowner. Once repairs are made and confirmed, that property is compliant and their next inspection is scheduled for five years into the future.

For a system found to be Substandard, a compliance period is set depending on the type of repair required, ranging from 60 days to five years, depending on the scope of non-compliance.

If a system fails inspection, the Commission allows six months for compliance, or immediate action in cases of imminent hazards. System replacement and major repairs require engineering support and ultimately the securing of a qualified contractor to conduct the work. Realizing the challenges with obtaining and scheduling engineers and contractors, the Commission can offer extensions to property owners on a case-by-case basis for good cause.

The LGPC administers the inspection of wastewater systems; however, review and permitting of all new systems remains the purview of the local review authority (e.g. town, county, DOH). Upon notice of a Failed or Substandard system, owners are required to bring the system into compliance following existing procedures of the local review authority. The Commission has developed strong

partnerships with these review authorities as they process permits for replacement systems and implement LGPC system design standards.

NEW SEPTIC SYSTEM DESIGN STANDARDS FOR THE LG PARK

The regulations introduce new design standards for constructing wastewater systems within Lake George Park. All new and replacement systems built in the Lake George Park must adhere to these standards. The design standards provided by the regulations are:

- Soil absorption areas must be situated at least 36 inches above seasonal high groundwater and bedrock.
- Soil absorption areas must be located at least 100 feet from any stream, lake, and APA wetland.
- Redevelopment projects cannot use existing non-compliant Wastewater Treatment Systems; upon redevelopment, the system must be brought into compliance with the current design standards.
- Wastewater Treatment Systems in the Lake George basin are not eligible for the reduction in soil absorption area and trench length afforded to Enhanced Treatment Units and Open-Bottom Gravelless Chambers in DOH 75-A or DEC Design Standards.



When DOH or DEC design standards for sizing an absorption area or septic tank cannot be met, or when any of the standards above cannot be met, a variance or waiver is required from the Review Authority. Administrative processing follows existing standards of the Review Authority. Systems needing a variance, waiver, or deviation are required to employ practical and effective methods, such as enhanced treatment units, absorption area dosing, phosphorus filters, or other measures to reduce phosphorus introduction (i.e. “do-better” policy). These measures must align with accepted engineering practices and be supported by certified third-party testing or published research in professional journals.

2023 INSPECTION RESULTS AND OUTCOMES

In 2023, the Commission collected information on more than 500 systems within the Wastewater Inspection Program Area (one-fifth of the total 2,500 properties in the 5-year recurrent program). The Commission staff physically visited 332 properties to conduct septic system inspections.

Of these 332 inspection visits, staff were able to fully complete 313 inspections (18 properties were not fully completed due to site issues and will be revisited in 2024). A total of 93 systems scheduled for inspection in 2023 were recognized as having a recent inspection by a Review Authority through a local ‘inspection-upon-transfer’ law, or completed recent construction of a new septic system. These properties were rescheduled for inspection five years following their past inspection or from the date of construction of the new system.

Of the 313 septic system inspections completed by the Commission in 2023, 46% passed, 15% needed repairs, 16% were substandard (primarily undersized septic tanks), and 23% failed.

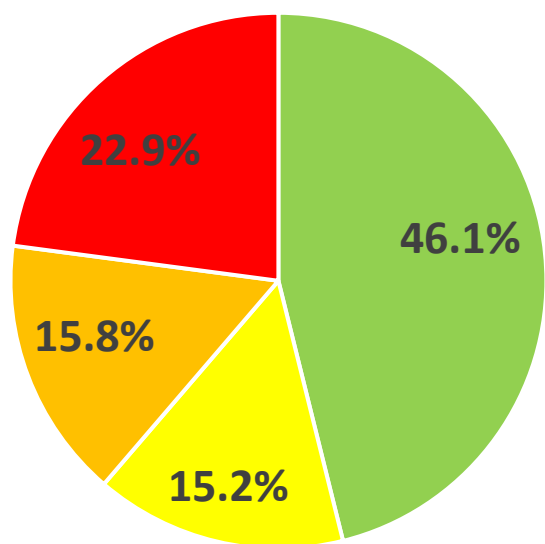
Among the 23% of septic systems that were inspected that failed, the most common reason was the existence of cesspools (36%) and failed absorption areas (22%). A cesspool is simply a covered hole in the ground with no septic tank or infiltration area. Cesspools are not allowed by NYS health code, as they do not provide proper wastewater treatment and disposal, and are heavily prone to backup and failure.

Failed absorption areas result when wastewater does not infiltrate into the ground due to clogged infiltration pipes. These failures are evidenced by wastewater backing up into the septic tank and sometimes even the main residence.

The remaining causes for failure were lack of absorption area (14%), metal tanks (13%), grossly undersized tanks (11%), and direct surface discharges (4%).

Among the ‘substandard’ systems, the majority were found to be non-compliant with NYS standards for system sizing such as insufficient septic tank sizing or absorption area sizing. Commission regulations require that all septic tanks meet the NYS sizing requirements to pass inspection. Absorption areas must be sized within 75% of the design standards set by DOH and DEC to be compliant with the inspection program.

Figure 2: 2023 Inspection Results



■ Passed ■ Substandard
■ Repairs Needed ■ Failed

The 16% of inspected systems that required repairs were primarily due to faulty inlet/outlet tees, pump alarms, and distribution box integrity and leveling. Most of those repairs were either conducted at the time of the inspection (speed levelers in the distribution box), or within a few days (septic tank risers, new distribution box, cracked pipes, alarm wiring, etc.).

An additional 35 properties in the 2023 program were documented as pending construction of a new wastewater system. These properties were moved to 2024 for either re-inspection or confirmation of new construction, which would eliminate the need for inspection for the subsequent five years.

Commission inspectors noted that most of the property owners who proactively advanced new septic systems did so as a result of the Commission’s new inspection program. Those property owners were aware that their existing systems would not pass inspection, and got ahead of the curve by obtaining a new septic system. These numbers aren’t currently captured in the data, but it is important to note that the vast majority of these replacement systems would not have occurred without the Commission’s new program.

Lastly, 50 properties had septic systems that had been recently pumped-out. Aiming to be accommodating in year 1 of the program, the systems that were recently pumped-out were rescheduled to a later time within the first 5-year inspection schedule.



Septic Inspection Numbers and Results

The greatest number of systems inspected was in Queensbury (100) and the fewest was in Ticonderoga (8). The towns with the highest inspection pass rate were Queensbury (61%), Fort Ann (50%), and Lake George (48%) and the Towns with the greatest inspection failure rate were Putnam (44%), Bolton (30%), and Hague (29%). Table 4 lists the number of inspections and status completed per town, and Figure 3 depicts their relative Pass, Substandard, and Failure rates per town.

Table 4: Number of Completed Inspections and Status per Town

| 2023 Insp Results - # | | | | | |
|-----------------------|--------|-----------------|-------------|--------|-------|
| Town | Passed | Sub. - Size/Loc | Sub - Other | Failed | Total |
| Bolton | 27 | 12 | 5 | 19 | 63 |
| Dresden | 12 | 8 | 3 | 4 | 27 |
| Fort Ann | 17 | 3 | 9 | 5 | 34 |
| Hague | 16 | 6 | 5 | 11 | 38 |
| Lake George | 11 | 3 | 6 | 3 | 23 |

| | | | | | |
|--------------------|------------|-----------|-----------|-----------|------------|
| Putnam | 8 | 4 | 3 | 12 | 27 |
| Queensbury | 56 | 10 | 11 | 15 | 92 |
| Ticonderoga | 3 | 1 | 2 | 2 | 8 |
| Total | 150 | 47 | 44 | 71 | 312 |

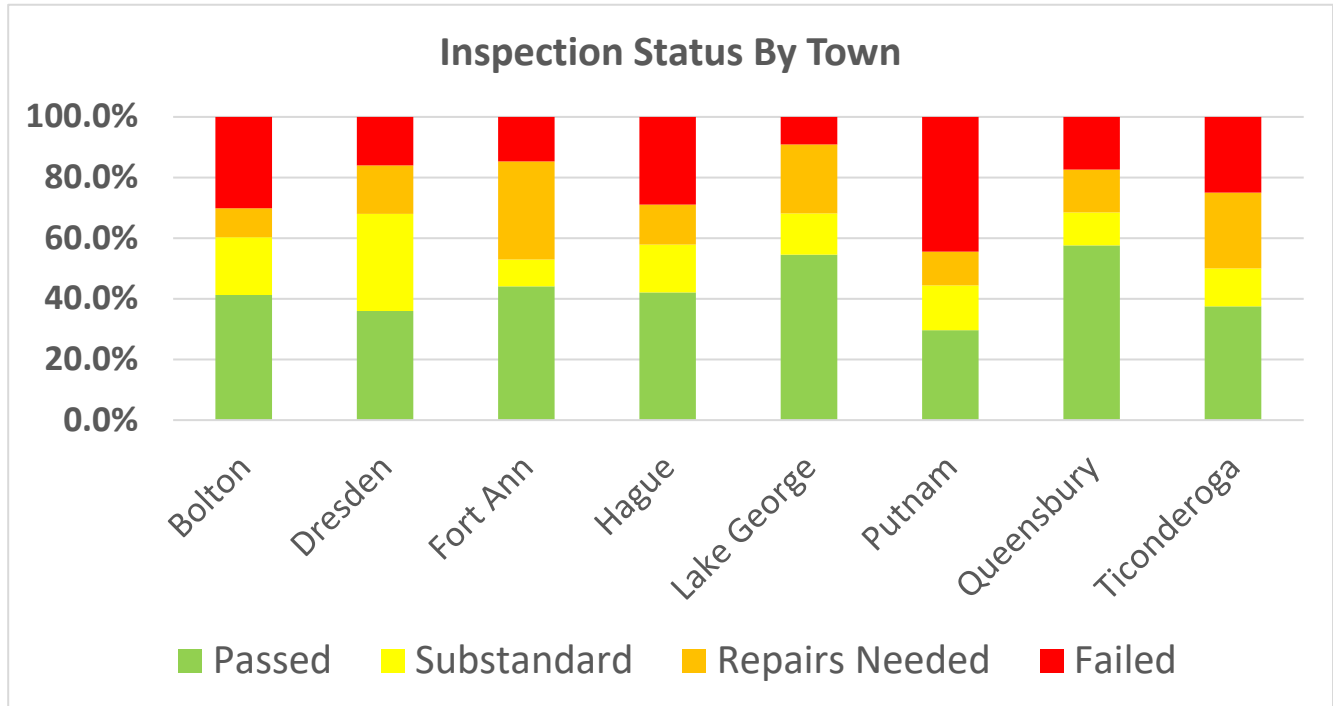
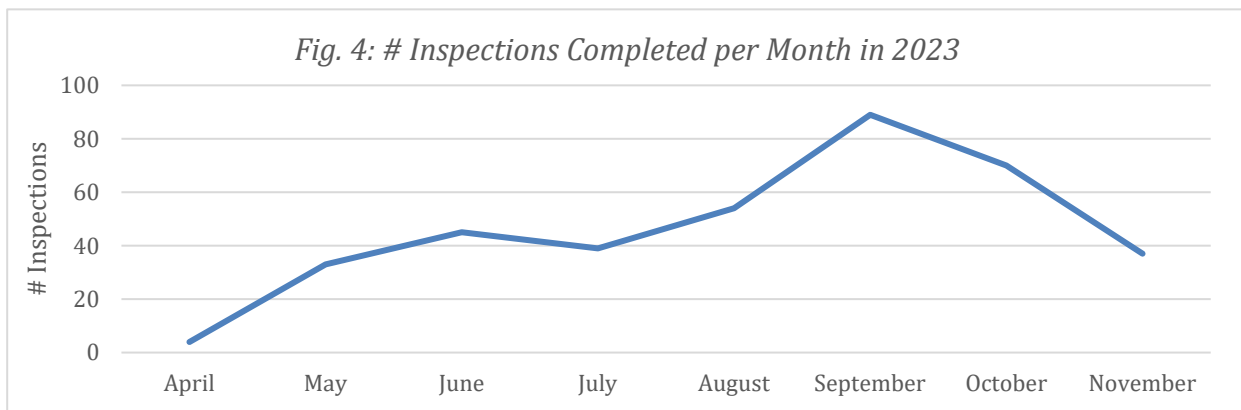


Figure 3: Inspection Status by Town

Septic inspections are scheduled by the property owner, at a date and time of their choice, during the year that they are required to be inspected by the Commission. The highest number of inspections were conducted in September (89) and the fewest were done on the opposite ends of the inspection season, May and November. There was a decrease in requests for inspections during the middle months of the summer, July and August. Figure 4 depicts the change in number of inspections done per month during the 2023. We are hopeful that landowner requests for inspections will be more evenly distributed in future years.



The vast majority of septic inspections were conducted early in the day. The scheduling data indicate that 66% of inspections were scheduled for 11am or earlier, and 85% were scheduled for noon or earlier (Figure 5).

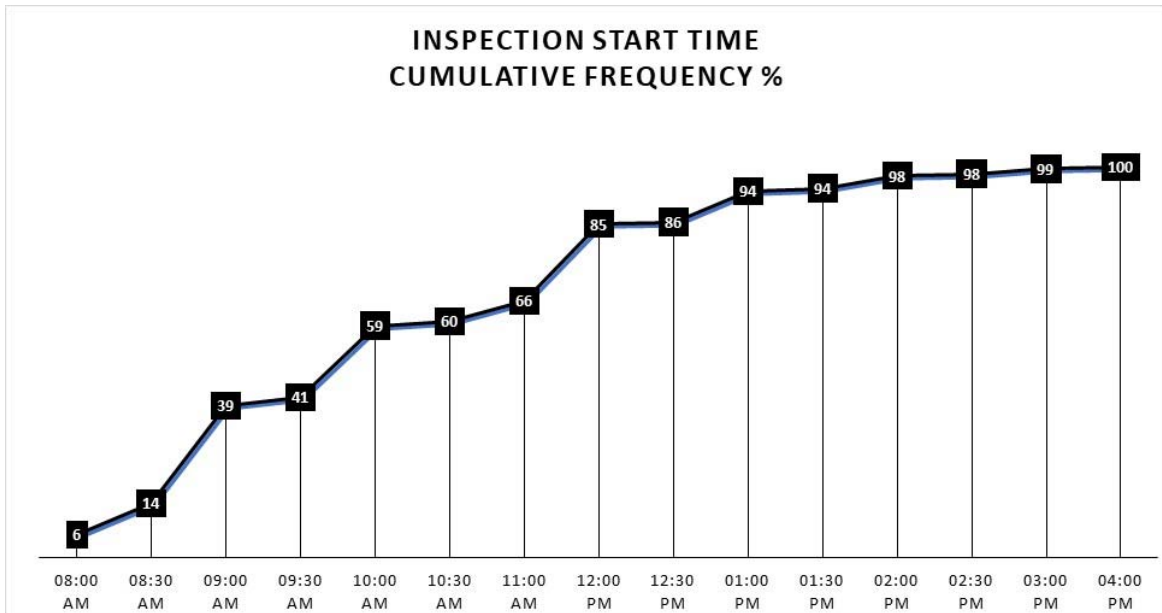


Figure 5: Scheduled daily start times for septic inspections

The Commission was active in encouraging property owners to contact the agency to schedule their inspections throughout the year. Letters first went out in April to property owners in the 2023 inspection year with details about the program and asking them to reach out to a hauler to schedule the pumpout and inspection. Property owners who had not reached out by summer received another letter in the summer, and the same to those in the fall season.

In all, the Commission sent four separate letters through the 2023 season to those who had not contacted the Commission to set their inspection. At the end of the inspection season in November, there remained only 18 properties that never contacted the Commission to schedule their inspection. This equates to approximately 96% of property owners complying with the Commission’s program in year 2023. The remaining 18 property owners have been referred to the agency’s enforcement division for follow-up in 2024.

SUMMARY AND CONCLUSIONS

In 2023, the Lake George Park Commission successfully implemented its new Wastewater Management regulations, an effort spanning two years of research and collaboration between government agencies, wastewater experts, and the community. These regulations included a mandatory wastewater system inspection program and enhanced septic system design standards.

After one year of implementation, results are a testament to the program's immediate need and impact. Data reveal that approximately half of the septic systems inspected in year 2023 were failing, needed repairs or are substandard (e.g. undersized). Repairs and replacements for these systems are already underway, promising a cleaner, healthier environment for Lake George in the future.



Approximately 19% of the 2,458 properties in the program were assessed in year one by either inspection or administrative review, which is just short of the 20% goal for a five-year recurrent program. The Commission anticipates between 400-500 individual septic system inspections each year forward.

One trend observed in the data was that the municipalities with the highest pass rate were in the south basin (Lake George, Queensbury, Fort Ann) while those with the highest failure rate were toward the north end of the basin (Ticonderoga, Putnam, Hague). This may be partially explained by relatively higher turnover of home ownership and new construction in the south compared with the northern towns, which tend to see less property transfer activity and development pressure.

It was observed that the timing of inspections, which are scheduled by the system owners, peaked in the early fall. Anecdotally, many participants of the program mentioned they were waiting for after the summer season to dig up the yard for inspection. This could lead to a bottleneck in inspector or hauler availability, and in future years the public will be encouraged to schedule an inspection earlier in the season.

The Commission's education and outreach about the program has led many system owners to be proactive and seek replacement systems before an inspection is conducted. In conversations with local engineers, several noted that they were working on new systems for clients in the Lake George inspection program area in advance of their inspection. These numbers are difficult to capture, but these improvements align with the intent of the Commission's wastewater improvement goals in the watershed.

In the future, challenges with this program may include the limited capacity at local wastewater treatment plants for accepting septage, and the finite capacity of the local design and construction communities, which are already seeing greatly increased requests for their services. The Commission is looking to conduct an analysis of regional wastewater treatment plant capacity to accept septage, ultimately with recommendations to Albany for potential funding related to upgrading such facilities for the future.

The Park Commission is pleased with the first year's implementation of the new septic system inspection program and design standards. The general public has shown itself to be highly supportive of this initiative. Property owners in the program see first-hand their systems and any issues, and ultimately all systems in the program should be fully functional and protective of public health and Lake George's water quality.

This lake protection effort is one of many that the Commission administers for Lake George. The structural wastewater improvements currently underway will make a positive impact on the lake's ecology and public health, as will similar improvements over the next several years following inspection. The program's success is greatly assisted by the combined efforts by property owners, local municipalities, septic hauling companies, local engineers and contractors. The Commission looks forward to future years of partnership and progress in wastewater management around Lake George.

End