NEW YORK STATE | Lake George Park Commission

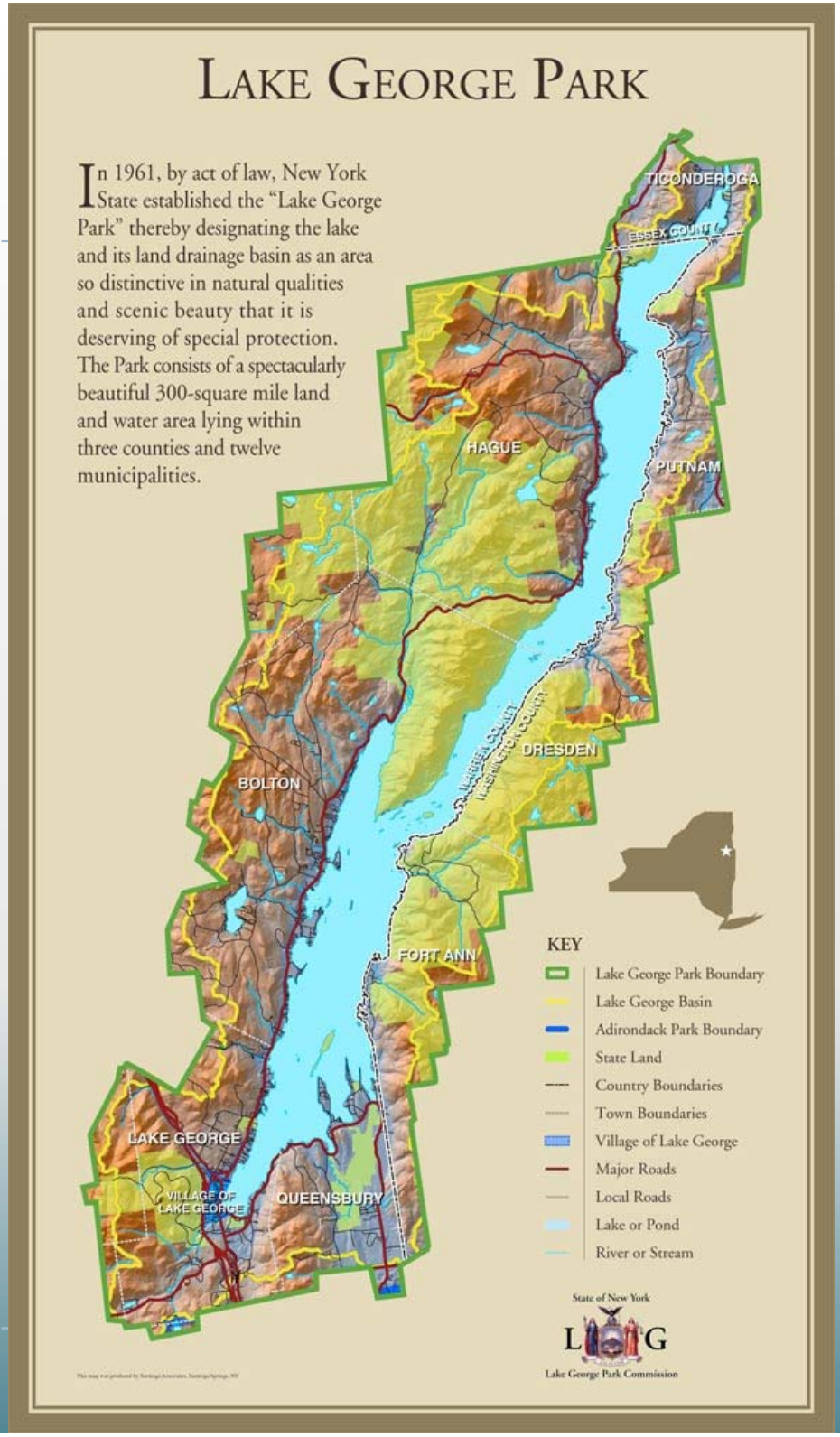
Septic Systems and Lake George

Inspections and New Standards

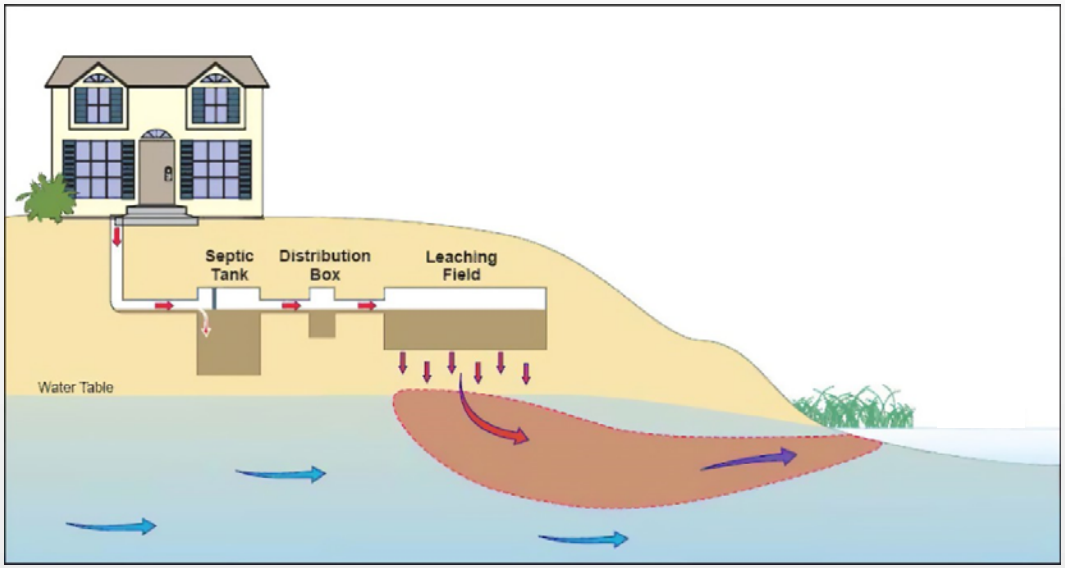
Photo courtesy of Carl Heilman

What is the Lake George Park Commission?

The Lake George Park Commission is a NYS agency established to oversee and manage the unique resources of the "Lake George Park" especially the lake's superior water quality.



Septic Systems and Lake Water Quality



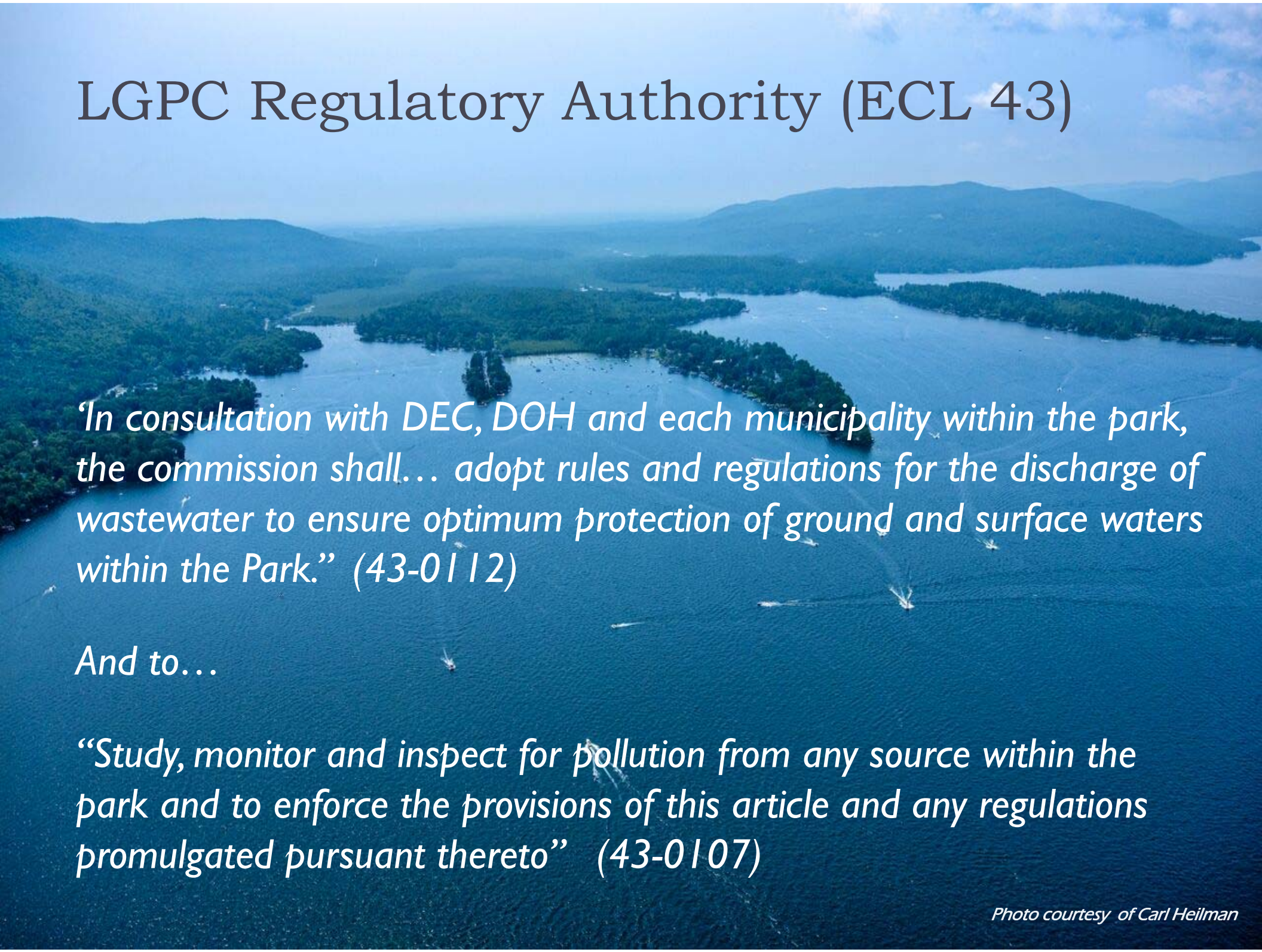
Discharge from improperly maintained septic systems can impact lake water quality

System age, maintenance, soil type, depth to bedrock or water table can affect the functioning of a system

Septic Systems and Public Health

Improperly designed, constructed or maintained septic systems can be a threat to public health (e-coli, fecal coliform bacteria, nitrogen impacts, etc)

LGPC Regulatory Authority (ECL 43)



'In consultation with DEC, DOH and each municipality within the park, the commission shall… adopt rules and regulations for the discharge of wastewater to ensure optimum protection of ground and surface waters within the Park." (43-0112)

And to…

"Study, monitor and inspect for pollution from any source within the park and to enforce the provisions of this article and any regulations promulgated pursuant thereto" (43-0107)

Photo courtesy of Carl Heilman

First Steps – Partners and Expertise

To begin a review of septic systems and potential impacts to Lake George, in June of 2021 the Commission formed an ad-hoc committee of five LGPC Commissioners plus regional experts, including:

1. Tom Snow, Professional Engineer, NYS DEC, Director of NYC Watershed Program
2. Kevin Kenyon, Professional Engineer, NYS Department of Health Glens Falls Office
3. Tom Jarrett, Professional Engineer, Jarrett Engineering
4. Kathy Flacke Muncil, Proprietor of Fort William Henry Resort, business leader
5. Samuel Hall, Chairman, Washington County Board of Supervisors
6. Susan Wilson, Deputy Supervisor, Town of Bolton
7. Walt Lender, Executive Director, Lake George Association
8. Chris Navitsky, Professional Engineer, Lake George Waterkeeper
9. Dan Barusch, Director of Planning and Zoning, Town of Lake George
10. Claudia Braymer, Warren County Supervisor from Glens Falls Ward 3
11. Ethan Gaddy, Planner, Warren County Planning
12. John Graham, Code Enforcement Administrator, Washington County
13. Tom Cunningham, Ticonderoga Town Board
14. Hannah Neilly, Project Coordinator, Essex County Office of Community Resources

Committee met monthly, 1st Thursday of each month at 2pm, via Zoom

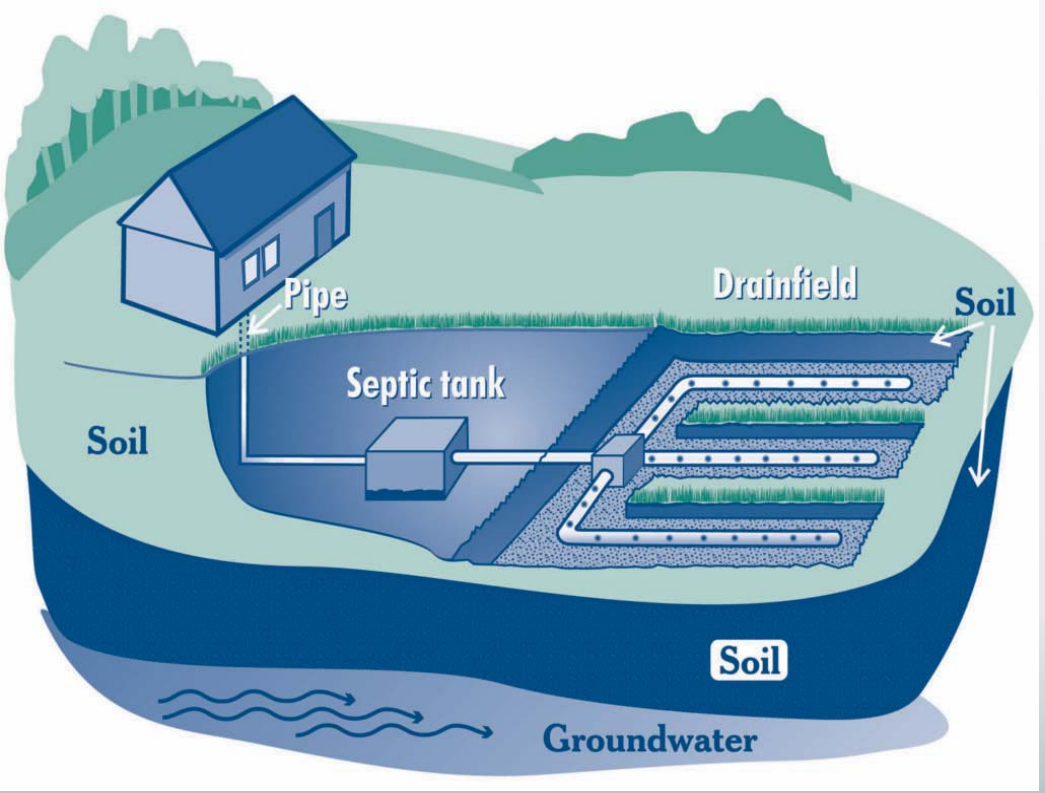
ALWAYS OPEN TO THE PUBLIC

To Begin, Three Key Items

1. Literature Review – What do we know about septic system impacts to lakes

2. Other Programs – Research other lakes who have implemented septic system inspection programs, and why

3. Data Analyses – Status of septic systems around Lake George



1. Literature Review: Chazen Companies

(Sean Doty, P.E. and Chris Round, V.P. Planning)

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Literature Review: Impacts of Onsite Wastewater Treatment Systems on Water Quality

75 Fort George Road
Lake George
Warren County, New York

Issued: 10/1/2021

Prepared for:

Lake George Park Commission
PO BOX 749, 75 Fort George Road
Lake George, NY 12845

Prepared by:

Chazen Engineering, Land Surveying,
Landscape Architecture & Geology Co., D.P.C.
20 Elm Street, Suite 110
Glens Falls, NY 12801
518.812.0513
www.chazencompanies.com

Chazen Project No. 92122.00

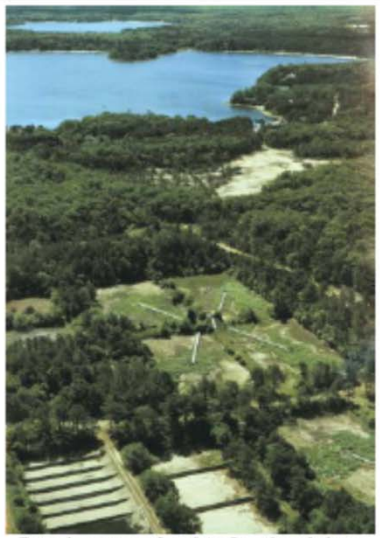
USGS science for a changing world

Environmental Health - Toxic Substances

Science Features

Phosphorus Doesn't Migrate in Ground Water? Better Think Again!

U.S. Geological Survey (USGS) scientists have been studying the long-term migration of phosphorus in a subsurface plume of treated sewage at the Toxic Substances Hydrology Program's research site located in Cape Cod, Massachusetts. The ground-water contamination resulted from 60 years of disposal of treated sewage to infiltration ponds at the Massachusetts Military Reservation. Phosphorus is a common constituent of agricultural fertilizers, manure, and organic wastes in sewage and industrial effluent. Excess phosphorus in lakes is a common cause of eutrophication. The observed extent of the phosphorus plume and the interaction of the plume with Ashumet Pond, a glacial kettle pond, has challenged scientists to re-evaluate their understanding of the mobility of phosphorus in ground water and of interactions between ground water and surface water.



Treated wastewater from Joint Base Cape Cod was discharged to rapid-infiltration disposal beds from 1936 to 1995. The disposal formed a groundwater contamination plume that extends more than 10 kilometers in the Cape Cod sand and gravel glacial outwash aquifer. Photo credit: Denis R. LeBlanc, USGS

- **Phosphorus Mobility** - In the past, ground-water scientists thought that phosphorus in ground water migrated little and hence was of minimal ecological concern. Years of monitoring data on phosphorus concentrations in the plume of treated sewage on Cape Cod has shown that phosphorus does migrate in ground water, raising concerns that phosphorus-containing ground water discharging into Ashumet Pond may accelerate the eutrophication of the pond. USGS scientists are using their new understanding of the migration of phosphorus in ground water to predict the phosphorus load to Ashumet Pond from the sewage plume.

Science of the Total Environment 692 (2019) 640–652

Contents lists available at ScienceDirect

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journal homepage: www.elsevier.com/locate/scitotenv

Review of phosphorus attenuation in groundwater plumes from 24 septic systems

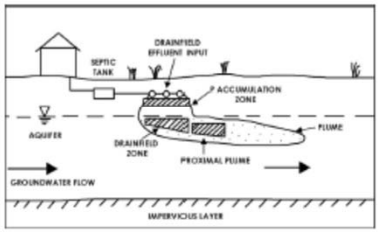
William D. Robertson [a,*], Dale R. Van Stempvoort [b], Sherry L. Schiff [a]

[a] University of Waterloo, Waterloo, Ontario N2L 3G1, Canada
[b] Environment and Climate Change Canada, Burlington, ON, Canada

HIGHLIGHTS

- Phosphorus retention averaged 97% at sites located on non calcareous sediments and 69% at sites where the sediments were calcareous.
- Secondary mineral coatings containing P were present in most of the drainfield sediments, indicating that mineral precipitation was the likely cause of the P attenuation.

GRAPHICAL ABSTRACT



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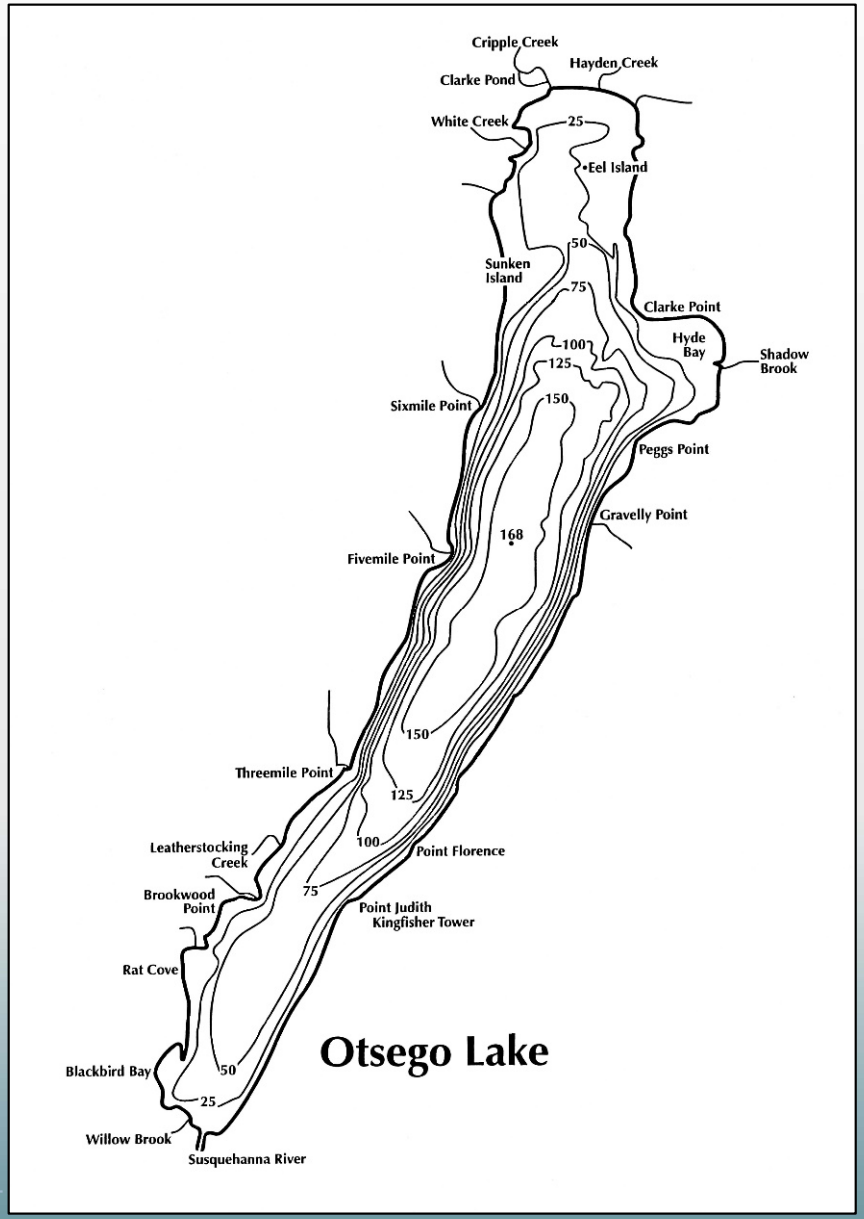
ABSTRACT

This study reviews phosphorus (P) concentrations in groundwater plumes from 24 on-site wastewater treatment systems (septic systems) in Ontario, Canada. Site investigations were undertaken over a 30-year period from 1988 to 2018 at locations throughout the province that encompass a variety of domestic wastewater types and geologic terrain. The review focuses on P behaviour in the drainfield sediments and in the proximal plume zones, within 10 m of the drainfields, where plume conditions were generally at steady state. At these sites, mean soluble reactive phosphorus (SRP) values in the septic tank effluent ranged from 1.8 to 13.8 mg/L and averaged 8.4 mg/L. Phosphorus removal in the drainfields averaged 90% at sites where sediments were non calcareous (13 sites) and 65% at sites where sediments were calcareous (11 sites). Removal considering both the drainfields and proximal plume zones, averaged 97% at the non-calcareous sites and 69% at the calcareous sites, independent of the site age or loading rate. At 17 of the 24 sites, mean SRP concentrations in the proximal groundwater plumes (within 10 m) declined to ≤1 mg/L, which is a common treatment level for P at sewage treatment plants. Zones of P accumulation were present in almost all of the drainfields, where sand grains exhibited distinct secondary coatings containing P, demonstrating that mineral precipitation was likely the dominant cause of the P retention observed at these sites.

This review confirms the often robust capacity for phosphorus removal in properly functioning septic systems. At the majority of these sites (17/24), P retention meets or exceeds removal that would normally be achieved during conventional sewage treatment. This challenges the necessity of avoiding septic system use in favor of communal sewer systems, when limiting phosphorus loading to nearby water courses is a principal or major concern.

2. Other Septic Inspection Programs

- Several other lakes in NYS have been inspecting septic systems for upwards of 20 years
- Programs vary in funding, cost and logistics, but the intent and outcomes are the same: protecting public health and the lake



Existing NY Septic Inspections Programs Survey

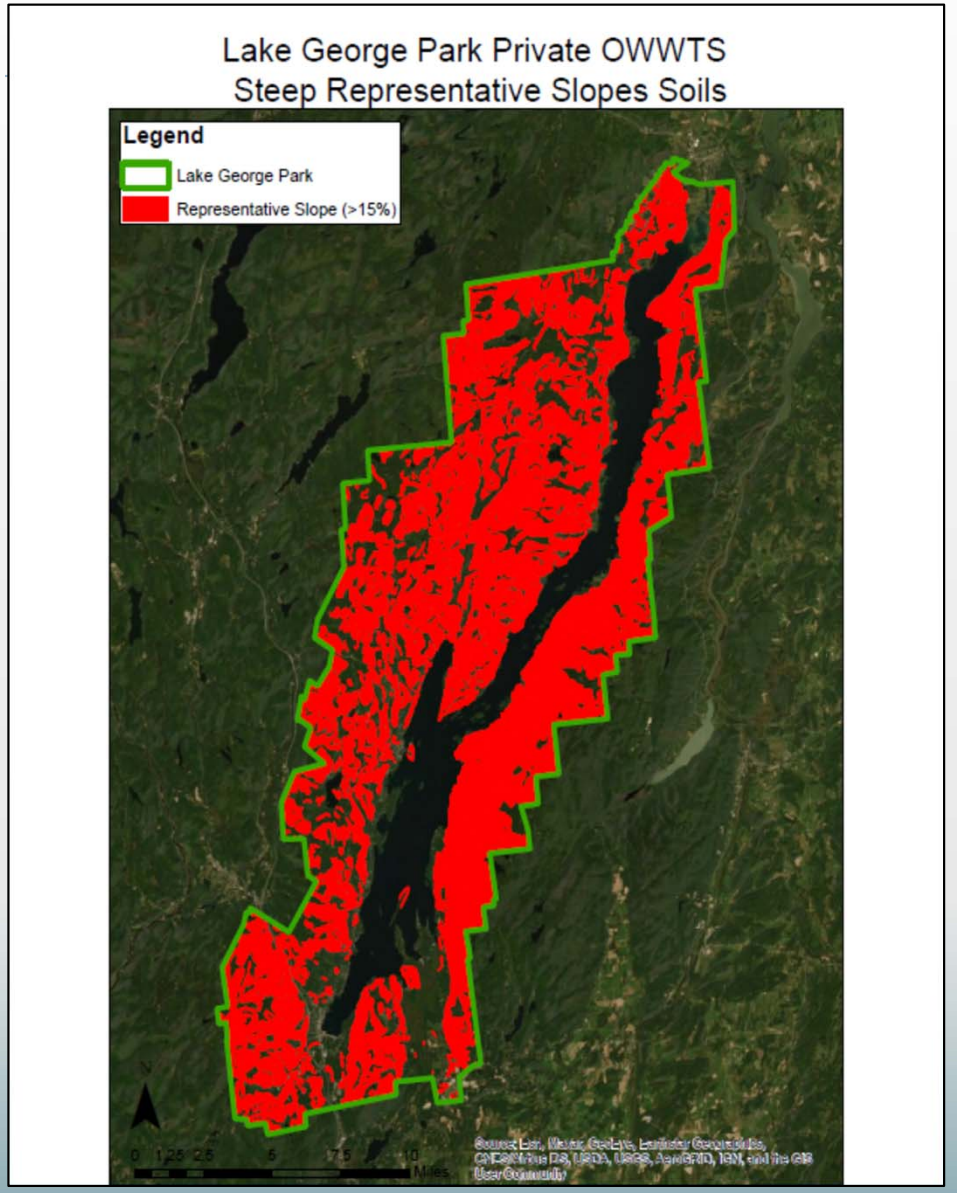
13 Septic Inspection Systems Programs Researched

- Canandaigua Lake
- Western Finger Lakes
- Keuka Lake
- Cayuga County
- Otsego Lake
- Skaneateles Lake
- Chautauqua Lake
- NYC/Croton River Watershed
- Town of Queensbury
- Town of Bolton
- Erie County
- Maricopa County, AZ
- Algonquin Highlands, ON

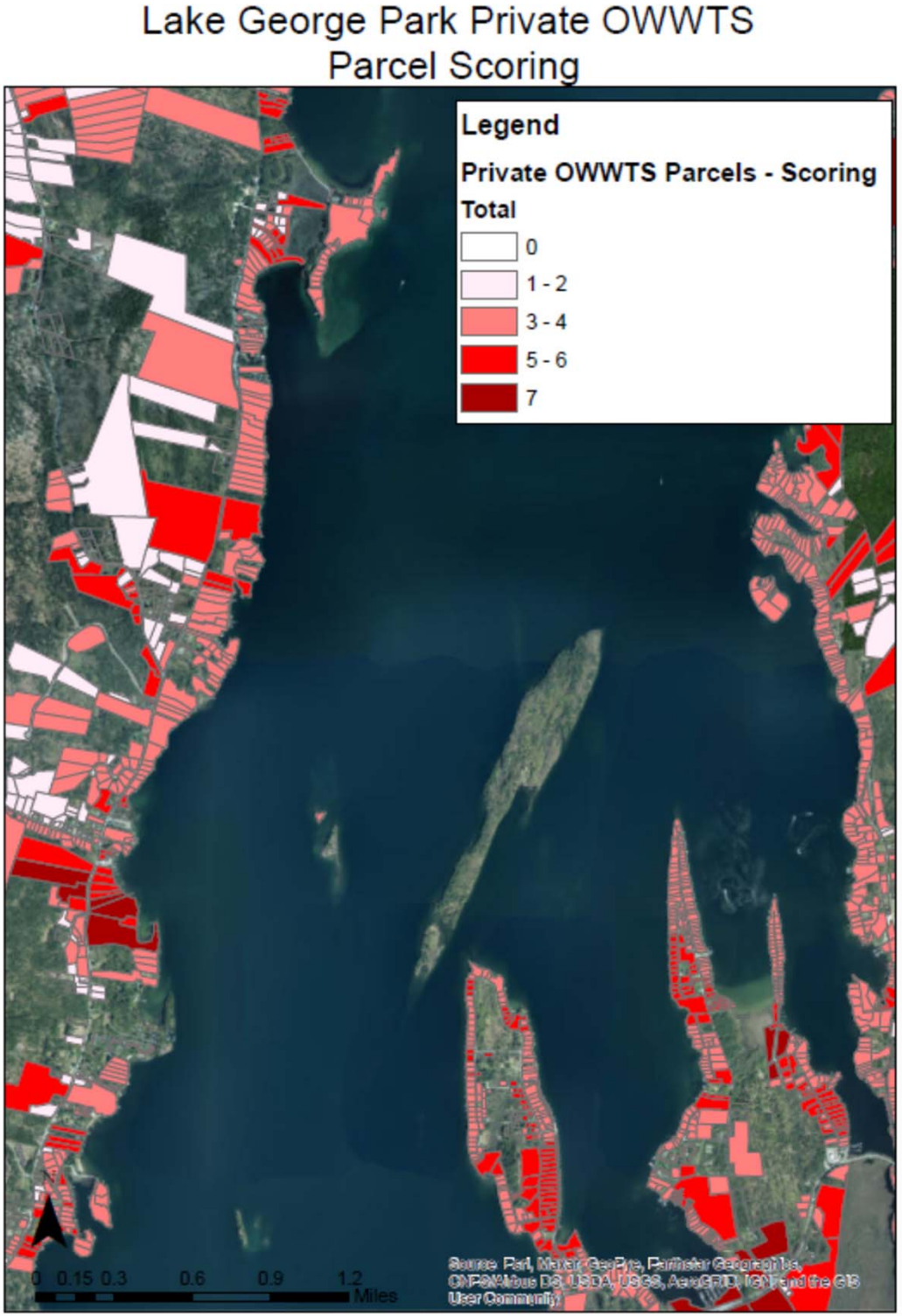
Program	Program Manager/Contact Information	Program Description	How Funded?	Why Created?	Inspection Fee?
Keuka, NY	Colby Petersen, Manager (315) 536-5188 colby@ycsoilwater.com	The law provides local authority for both new and replacement construction of septic systems, as well as the Zone 1 (200 feet of lake or waterbody) and Real Property Transfer Inspection Program. Watershed Manager oversee the program and provide technical expertise on the designs \approvals of systems. Expert knowledge in engineering, soils, regulatory procedures, program management and municipal affairs.	Fees and Dedicated Funds from Each Town	Tourism and tax base. The municipalities also recognized that there was no uniformity in regulations and enforcement.	$50
Canandaigua, NY	Tyler Ohle, Title: Canandaigua Lake Watershed Inspector (585) 396-9716 Tyler.Ohle@ontswcd.com	Canandaigua Lake Watershed Inspection Program - Administered though Ontario SWCD. Built on a model law that has been passed by all towns. Paid by water purveyors beginning in 1950s. Inspector reviews and appeoves systems. Assists with soil and erosion inspection. Esnures no failfure based on DOH definition Within 200 ft of lake, inspection every 5 years.	Fees and Water Purveyors	2014 Canandaigua Lake Watershed Management Plan recognized untreated wastewater as a source of nutrient. Regulatory boards created in response to outbreaks of waterborne diseases.	$175
Cayuga, NY	Cayuga SWCD (315) 252-4171 x4 cayugaswcd@cayugaswcd.org	Cayuga County Code - Inspection at Property Transfer and Regular Intervals Based on Distance from Lake and Town	Fees	To eliminate potential health hazards and protect surface and ground water by ensuring that septic systems located within Cayuga County operate satisfactorily.	$150
Otsego, NY	Amy Wyant, OCCA Executive Director: (607)-547-4488 director@occainfo.org	Village of Cooperstown Law Begining in 2005 - Require 5 Year Inspections in proximity to aquatic resources.	Initial Funding by OCCA and the Clark Foundation Fees	SUNY Oneonta began monitoring nutrient levels near septic systems in the lake and noticed it could be substaital in 2004.	$50
Honeyoye (Ontario County), NY	Tad Gerace (585) 396-1450 tad.gerace@ontswcd.com	All Ontario outside of Canadaigua Watershed. Non regulatory - towns adopt if they choose. Most ins[pections done for deed transfer, sometimes from change of use or capacity. SWCD or OTN inspector on-site. Some towns have continued regulations as needed (e.g. Rental Properties inspected every 3 Years in Geneva). SWCD Inspectionprovides the homeowner with an unbiased, neutral assessment of their septic system	Fees, Other SWCD OH	To protect the water quality of Honeoye Lake and surrouinding ecological resources.	$175

3. Data Analyses

Researching	Analyzing
Using all available data to help determine the age, location and number of septic systems surrounding Lake George and throughout the watershed.	Analyzing geologic limitations on septic system effectiveness (soils, bedrock, etc)



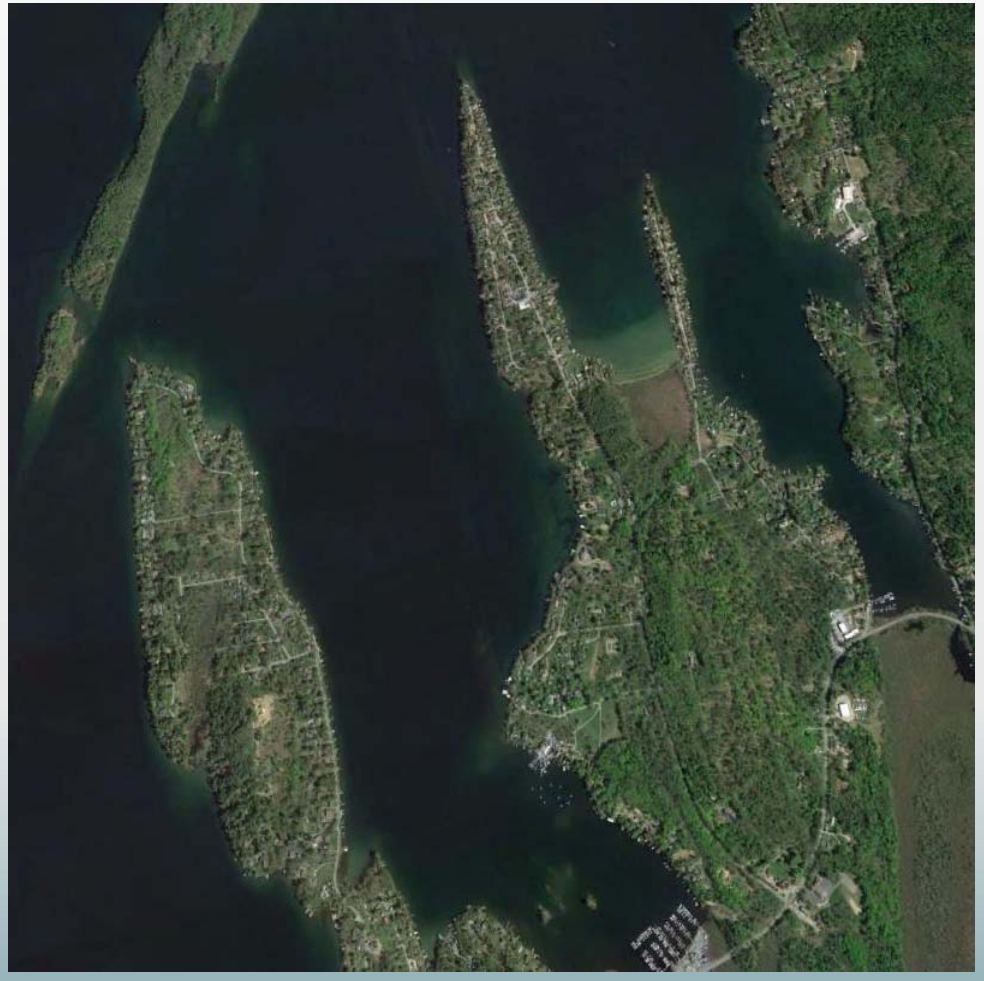
Where are the challenging areas for septic system effectiveness?



Analysis and Key Findings

- 5,950 (69%) of occupied parcels in the LG Park use septic systems (31% on public sewer)
- 2,700 (45%) of these septic systems are located within 500' of the Lake and 100' of streams
- 84% of septic systems are located on parcels that have one or more 'limiting factors', i.e. shallow to bedrock or water, steep slope, bad soils, etc
- The average age of homes in the LG Park is 50 years old

Town of Queensbury Septic Inspections



- Inspections on property transfer since 2019, more than 200 to date
- 65% of inspected properties had some level of correction required
- 17% required more significant repair or replacement

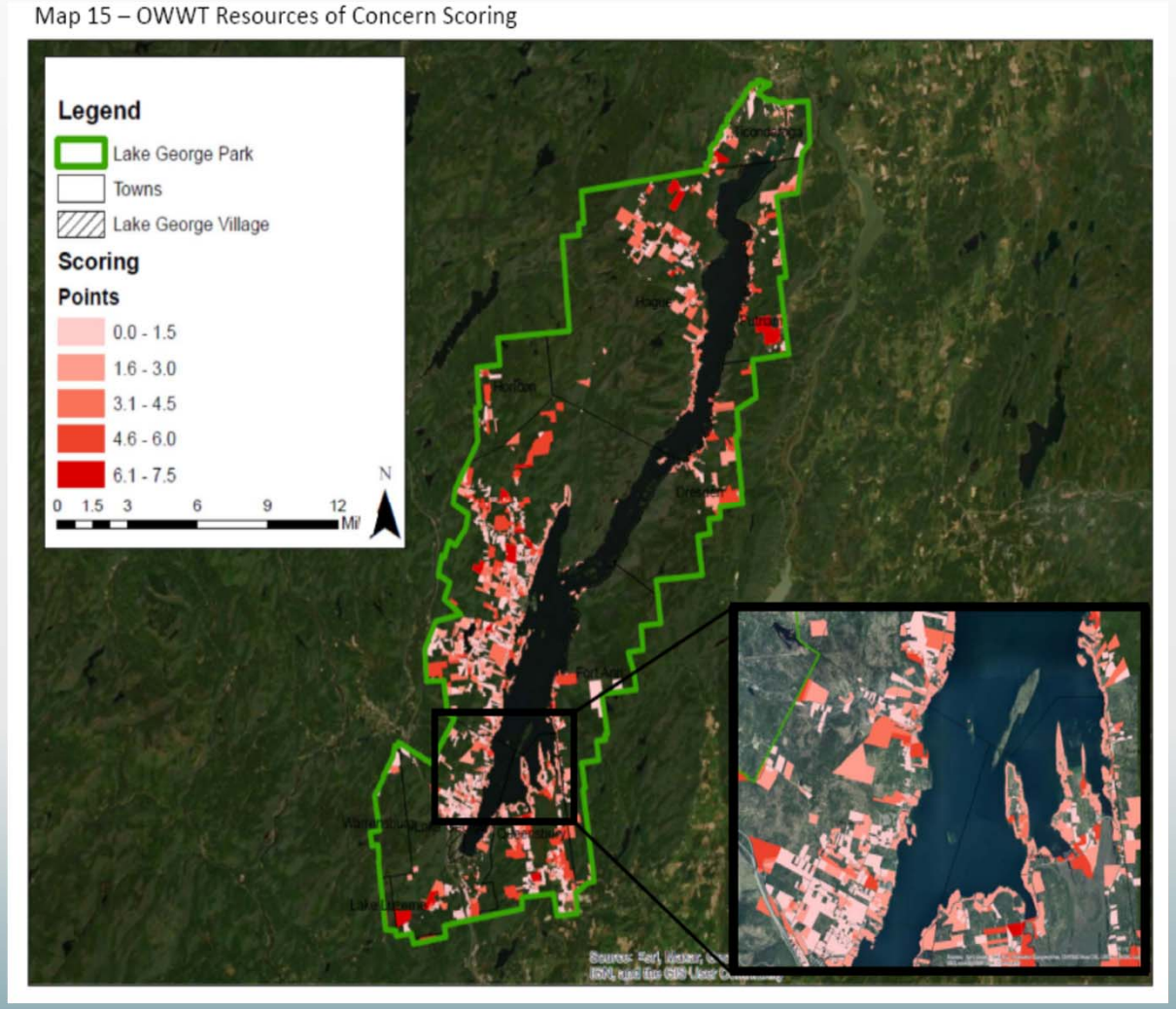
Analyze Information and Making a Decision

Analyzing all of the factors relating to septic systems around Lake George, the Ad-Hoc Committee unanimously recommended to the full Commission to advance a robust septic system inspection program for properties in proximity to Lake George and tributaries

Decision supported by municipal elected boards around Lake George

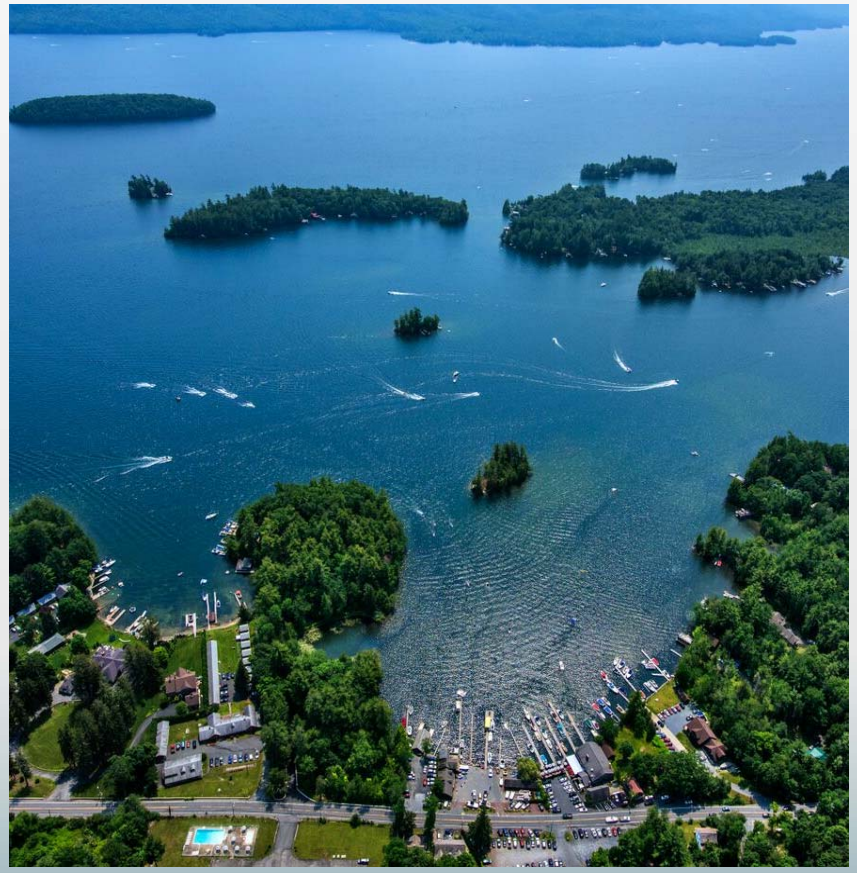
How Will It Work?

- 1/5th of the 2,700 properties will be inspected each year for five years (~540 per year)
- Each year, letter to those 540 landowners to arrange septic pumpout and inform the Commission
- Septic hauler to have septic tank and distribution box uncovered
- LGPC Inspector on-site for pumpout to conduct inspection
- Follow-up report identifying any issues and needs for repair



Cost to Property Owners

- Residential Property Annual Fee $50
- Commercial Property Annual Fee $100
- Properties with Holding Tanks Annual Fee $25
- Septic Tank Pumpout Fee – Variable Cost ($200-400) every five years (should be doing anyways)



What if Issues are Found?

- Failed Systems/Components <u>corrected within six months</u>
- Substandard Systems (<100% Tank Size, <50 feet from lake or stream) <u>upgraded within 5 years</u>
- Permit Review conducted by current review authority (e.g. Town, County)

New Design Standards: Basin-Wide

1. Absorption area located 3' from seasonal high groundwater and bedrock

2. Variances from waterfront horizontal setbacks and vertical separation distance (depth) require improved water quality performance (e.g. increased soil depth or ETU's)

3. Redevelopment of any property requires upgrade to current standards

NYS Lake George Park Commission

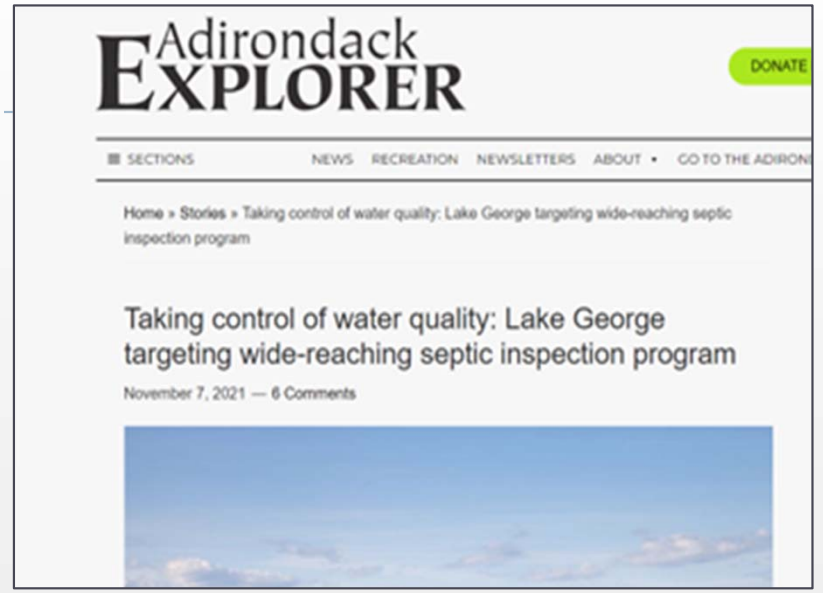
Public Informational Meeting

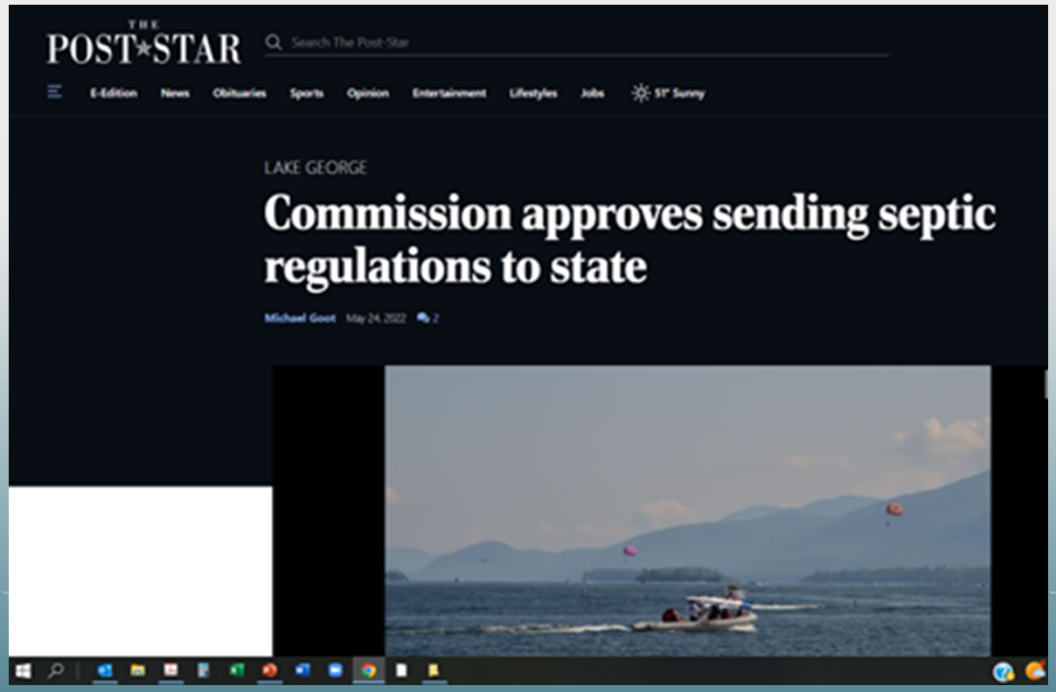
Proposed Septic Inspection Program

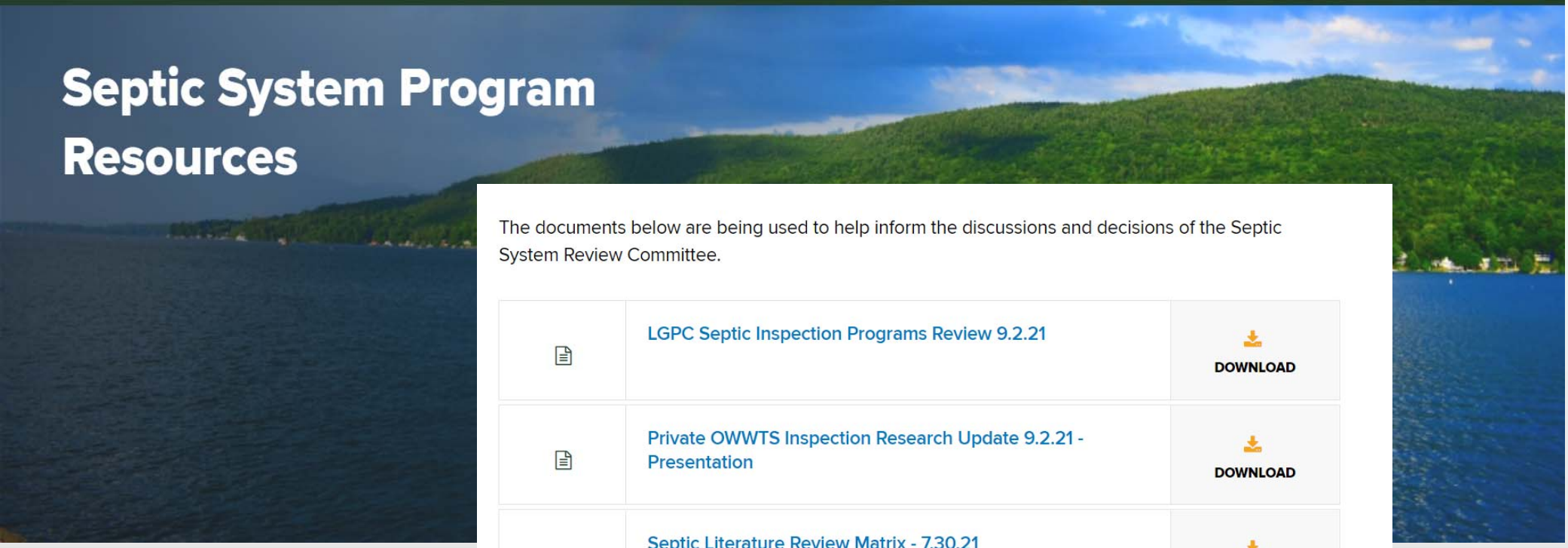
Thursday, August 4, 2022, 5:00 p.m.

The meeting will be held via teleconference on Zoom, visit lgpc.ny.gov for meeting link.

Please join our online informational session regarding the Commission's proposed septic inspection program for property owners within 500 feet of Lake George and 100 feet of streams around the lake. There will be a presentation and Q&A about this effort to help protect Lake George.







Septic System Program Resources

The documents below are being used to help inform the discussions and decisions of the Septic System Review Committee.

	LGPC Septic Inspection Programs Review 9.2.21	DOWNLOAD
	Private OWWTS Inspection Research Update 9.2.21 - Presentation	DOWNLOAD
	Septic Literature Review Matrix - 7.30.21	DOWNLOAD
	Town of Lake George Septic Initiative Program	DOWNLOAD
	Report: Contaminants of Emerging Concern & Public Perception of the Issues - 2018	DOWNLOAD

Next Steps in the Process

- Continue outreach to property owners
- Public hearing Tuesday, November 22nd 4pm, Fort William Henry
- Public comment period open until November 30th
- If approved, implementation in Spring of 2023

Thank you Lake Champlain Folks!

Dave Wick, Executive Director
Lake George Park Commission
PO Box 749, 75 Fort George Road
Lake George, NY 12845
518-668-9347
dave@lgpc.state.ny.us

Photo courtesy of Carl Heilman