APRIL 2020

CANDLEWOOD LAKE DRAINAGE AREA
WASTEWATER MANAGEMENT STUDY

NEWSLETTER – STATUS SUMMARY

Project Documents/Reports can be viewed online at
BrookfieldWPCA.org/Candlewood

Dear Brookfield Residents:

In spring 2019, the Brookfield Water Pollution Control Authority (WPCA) was awarded a Clean Water Grant and selected environmental engineers, Lombardo Associates, Inc., to study the need for a Wastewater Management Facilities Plan for the Brookfield Candlewood Lake drainage area. See page 4 for an illustration of the Study Area. The plan documents can be viewed at https://BrookfieldWPCA.org/Candlewood.

PROPERTY AREAS INCLUDED IN THE STUDY:

801 Peninsula Properties
- Candlewood Shores
- Arrowhead Point
- Hickory Hills
- Candlewood Orchards

220 Non-Peninsula High-Density Area Properties
- Properties along Candlewood Lake Road

488 Non-Peninsula Low-Density Area Properties
- Properties east of Candlewood Lake Road

The detailed Plan found that current wastewater practices are compromising Candlewood Lake water quality, causing detrimental water supply quality, and public health concerns in the area.

» **Water quality concerns** – frequent algae bloom occurrences in Candlewood Lake, as illustrated on page 3
» **Water supply problems** – impacting 700+ properties on the Peninsula with high nitrogen and PFAS levels in the water supply
» **Public health concerns:**
- 28% of properties are too small for code-compliant septic systems
- More than half of the septic systems are over 50 years old
- One in four properties experienced malfunctioning septic systems in the last 10 years

The environmental engineers recommend the properties in the Peninsula area be connected to the Brookfield sewer system which discharges to the Danbury Wastewater Treatment Plant. This sewer plan will improve both the Candlewood Lake water quality and the local drinking water supplies. See page 4 for a preliminary layout of the recommended sewer system. The septic influence of the non-peninsula properties is of less immediate concern and can be considered later.

The least expensive option is to install a sewer collection system on the Peninsula with a combination gravity and low pressure septic tank effluent collection arrangement. This plan will require 5 small neighborhood pump stations. This proposed sewer strategy includes keeping the existing septic tanks and transporting wastewater to the Brookfield collection system. See illustration on page 2.

Approximately 45% of the properties on the Peninsula will require pumps. Wastewater from other properties will flow by gravity. Pump maintenance and septic tank pumping will be the responsibility of the Brookfield WPCA. Connecting the properties on the Peninsula to the Brookfield sewer system will require no changes to existing plumbing system within a home. For properties where a pump must be installed, a 20-amp 115V circuit is required, at WPCA's expense.

COSTS

The estimated cost for the sewer system and for the Danbury Wastewater Treatment Plant connection is approximately $18.25 million in 2020 dollars for a Peninsula only system.

- If grants are not available to help fund the sewer project, property sewer assessments will be about 8.1%of the Grand List Value (GLV) for each property, payable over 20 years
- Without grants, for an average property GLV value of approximately $276,000, the sewer assessment would be $22,400 in 2020 dollars and, assuming 3% inflation per year, approximately $26,000 in 2025.

Upon sewer connection, sewer assessments would be paid by property owners financed with a long term bond or loan provided by the Town of Brookfield.

The Brookfield WPCA will aggressively pursue federal and state grant funding for the project. The Brookfield WPCA also has programs to assist qualified property owners who are unable to pay for their assessments.

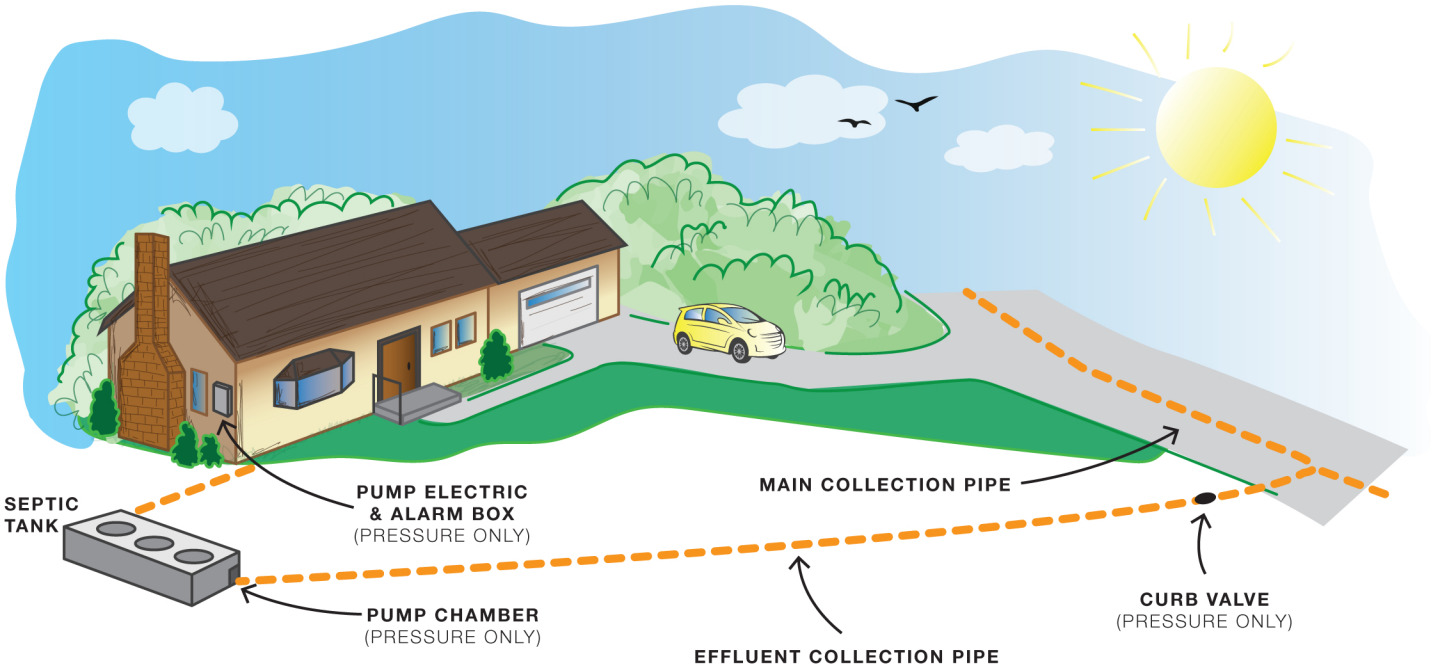
If you have any questions, please contact the Brookfield WPCA at (203) 775 – 7319 x 1000.

Nelson Malwitz, Chairman
Brookfield Water Pollution Control Authority (WPCA)
53A Commerce Road, Unit 1, Brookfield, CT 06804

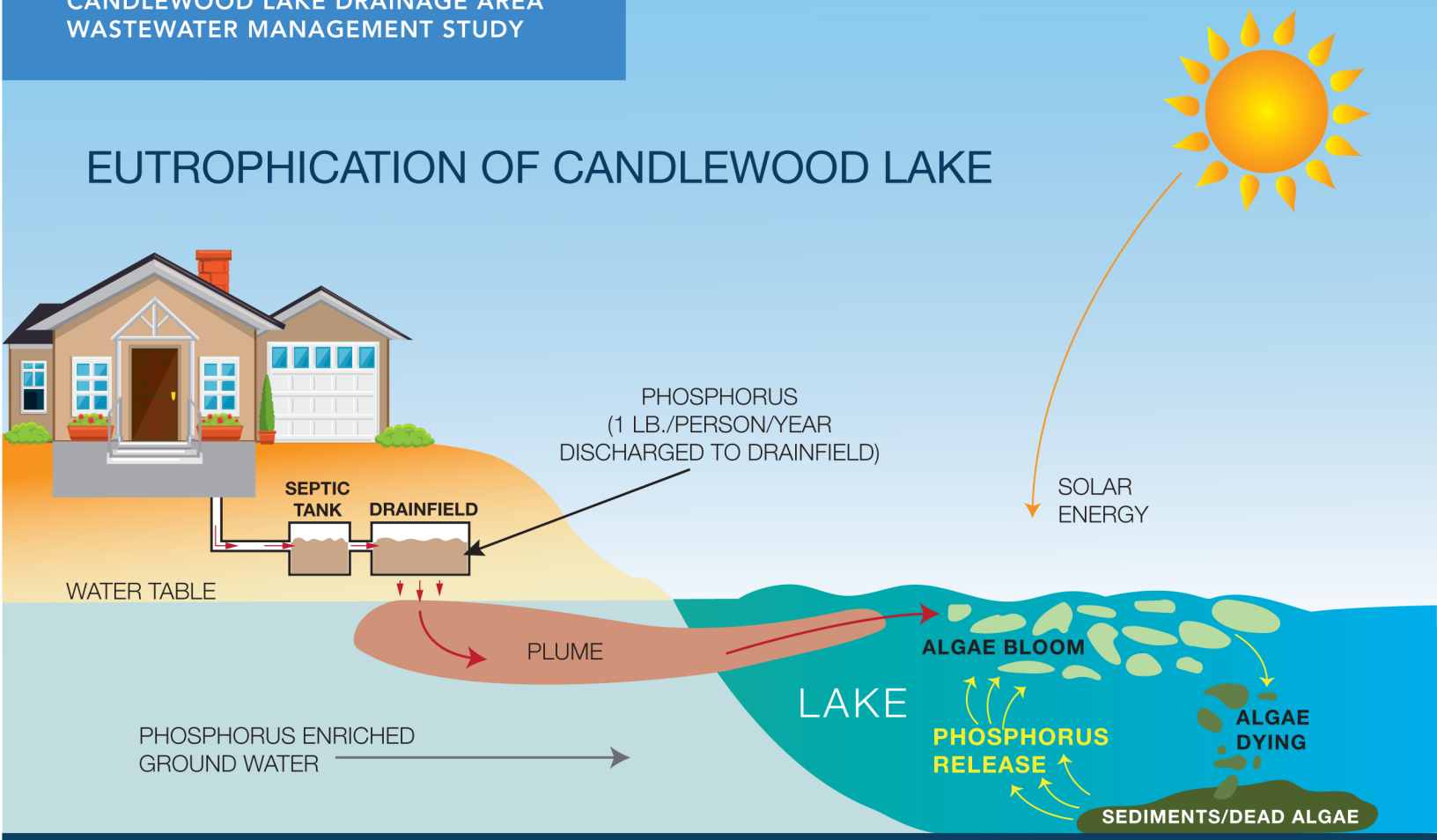
WPCA Brookfield, CT

Septic Tank Effluent Sewer System

Each property will include an on-site septic tank for solids removal. Effluent flows by gravity or is pumped to a collection system and conveyed to the treatment plant.



EUTROPHICATION OF CANDLEWOOD LAKE



Candlewood Lake Water Quality

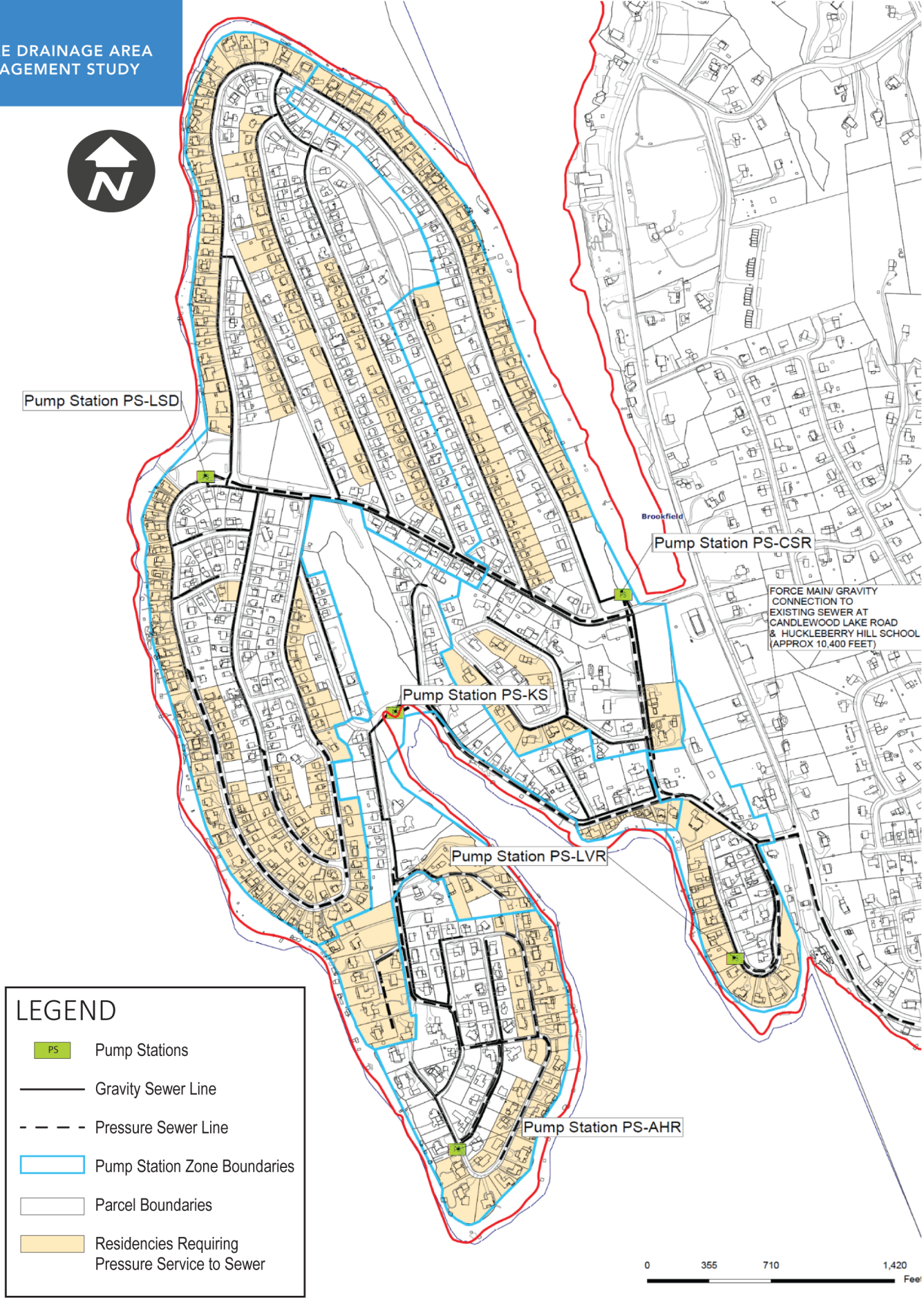
- Detailed 2019 testing found approximately 1+% of septic system phosphorus is not removed by soil and that certain site soil conditions can cause approximately 10+% of septic phosphorus to discharge to Candlewood Lake.
- This nutrient phosphorus has been discharging into and accumulating in Candlewood Lake for over 70 years.
- The aging process of lakes, eutrophication, is accelerated by phosphorus from human activity – wastewater discharges being a large contributor.

Project Conclusions

1. Over 70 years of septic discharges have resulted in:
   - Accumulation of phosphorus in lake sediments with associated phosphorus release
   - Discharge of nitrogen in the lake contributing to algae blooms
2. Focus should be on significantly reducing septic phosphorus contributions and sediment phosphorus release

Recommendations

1. Connect Peninsula area to Brookfield sewer system that discharges to Danbury Wastewater Treatment Plant (WWTP)
2. As sewering alone is insufficient to protect/restore lake water quality, participate in developing and implementing multi-town watershed program to reduce sediments phosphorus release


Pump Station PS-LSD
Pump Station PS-CSR
FORCE MAIN/ GRAVITY CONNECTION TO EXISTING SEWER AT CANDLEWOOD LAKE ROAD & HUCKLEBERRY HILL SCHOOL (APPROX 10,400 FEET)
Pump Station PS-KS
Pump Station PS-LVR
Pump Station PS-AHR
Brookfield
LEGEND
PS
Pump Stations
Gravity Sewer Line
Pressure Sewer Line
Pump Station Zone Boundaries
Parcel Boundaries
Residencies Requiring Pressure Service to Sewer
0
355
710
1,420
Feet