


**MEMORANDUM**

TO: Supervisor Peter Parsons and  
Members of the Lewisboro Town Board

FROM: Joseph M. Cermele, P.E., CFM   
Kellard Sessions Consulting, P.C.  
Consulting Town Engineers

DATE: April 22, 2016

RE: South Shore Association  
Community On-Site Wastewater Treatment System

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At the request of the Lewisboro Town Board, Kellard Sessions Consulting, PC has conducted a preliminary review of the South Shore Association (SSA) property and the feasibility of a community on-site wastewater treatment system (OWTS) or septic system to serve the SSA property. It is our understanding that Supervisor Parsons, in his capacity as member of the Northern Westchester Watershed Committee (NWWC), is prepared to present this project as a potential water quality enhancement project for the Town of Lewisboro and the New York City Watershed. As you are aware, the NWWC is composed of the chief elected official (or their appointed designee) of each of the twelve municipalities that have land area located within the New York City Watershed. This project is proposed to be consistent with the criteria set forth in the Memorandum of Agreement (MOA) between Westchester County and New York City in order to protect drinking water quality for New York City's residents.

Site Background and History

The South Shore Association is a community of thirty homes located on ±24 acres along South Shore Drive. The property is bound to the north by Lake Waccabuc and to the east by Oscaleta Road. The land is owned communally by the members of SSA which was organized in the 1950's and is governed by an elected Board consisting of a President, Vice President, Secretary, Treasurer and two at-large members. SSA was formed to pay the communal property taxes, as well as to create and enforce the regulations that are necessary for communal living and to maintain the land, roads, lake access, etc.

This community was developed in the early twentieth century as a group of camps in the Lake Waccabuc area. At its inception, it was a seasonal community with each home having an

Supervisor Peter Parsons

April 22, 2016

Page 2 of 5

outhouse, but no indoor plumbing. Gradually, some residents upgraded their houses and installed indoor plumbing complete with showers, kitchen sinks and some toilet facilities. In order to make these improvements, minimal sanitary facilities were improved, including individual holding tanks for black water and septic fields or dry wells for gray water. At present, it is reported that approximately 50% of the homes have holding tanks for black water, while the remaining homes have outhouses with no indoor toilet facilities. With regard to domestic water supply, many of the seasonal homes pump their water from the lake, while the others get their water supply from hand-dug wells. Presently, about half of the residents in this community live here year-round, while the other half are seasonal visitors.

On March 29, 2016, this office along with Mr. Paul Lewis, Lewisboro Stormwater Committee Chair, met at the site with Mr. George Peterkin, Association President and Mr. Alan Mason (SSA resident) to discuss the potential for a communal OWTS. As noted above, the total site area is approximately 24 acres. At the time of the organization of SSA, the members acquired or set aside approximately 4.5 acres of land in the south east portion of the property for a communal OWTS with the intention that at some time in the future a septic system could be installed so that all houses could have indoor bathroom facilities without the need for individual septic systems or holding tanks.

#### Site Description

With the exception of the developed cottages and minimal roads/drives, the property is largely wooded. The terrain generally slopes south to north toward the lake. A review of soils maps from the USDA Natural Resources Conservation Service indicates that the predominant soil type in the area of the proposed OWTS is of the Paxton soil complex (PnB). Soils of this class are typically well-drained, fine sandy loams with slopes of 3% - 8% and are in the Hydrologic Soil Group C – low to moderate permeability. These soils have a rating of “somewhat limited” for use as septic absorption fields according to the survey.

The property is located within the Waccabuc River Basin, which is tributary to the Cross River Reservoir and New York City drinking water supply watershed. Lake Waccabuc is designated as a New York State Department of Environmental Conservation (NYSDEC) Class A waterbody. In addition, NYSDEC Freshwater Wetland, L-13, is located directly opposite Oscaleta Road and the property is partially located within the check-zone associated with this wetland. Upon review of available GIS maps, it appears that additional locally regulated wetlands and/or watercourses also exist on or adjacent to the property. See the attached Figure – South Shore Community OWTS for an illustration of the site and environmental features, as well as the proposed septic field location.

### Permitting

There are several local and outside agency approvals that are anticipated for this project. Disturbances associated with this project are expected to exceed one (1) acre and may partially be located within regulated wetland buffers and adjacent areas. Sanitary sewerage discharges will exceed 1,000 gpd as described further below. As such, the following minimum approvals will be required and others may become necessary as the project develops:

- Town of Lewisboro Wetland Activity Permit
- Town of Lewisboro Stormwater Permit
- NYSDEC Article 24 Freshwater Wetland Permit
- Westchester County Department of Health (WCHD)/New York City Department of Environmental Protection (NYCDEP) Joint Approval of Public OWTS
- SPDES General Permit GP-0-15-001 for Groundwater Discharge of Treated Sanitary Sewerage
- SPDES General Permit GP-0-15-002 for Stormwater Discharge from Construction Activity

### Preliminary Design and Budgeting

As noted above, there are 30 dwellings in SSA. For the purpose of this preliminary report, it is assumed that each dwelling includes two (2) bedrooms. The OWTS will require design in conformance with all applicable rules and regulations of the WCHD, NYCDEP and the NYSDEC. The 2014 NYSDEC Design Standards for Intermediate Sized Wastewater Treatment Systems requires a hydraulic design loading rate of 150 GPD per bedroom. Lower flow rates are permitted for newer fixtures and/or water saving fixtures, however, for the purpose of this report the higher flow rate will be used. This results in a total design load of 9,000 GPD (30 dwellings x 2 bedrooms per dwelling x 150 GPD/bedroom).

Wastewater collection is proposed to consist of individual low-pressure sewer ejector pump systems sized to accommodate each dwelling. The units would be equipped with emergency alarms and overflow protection. The individual ejector pump units would discharge to a common low-pressure force main. Wastewater flow from all proposed units would discharge at the common septic field. The required size of the septic field is directly related to the permeability of the soils and the available separation to underlying bedrock and/or groundwater. For example, poor soil percolation rates will require larger septic field areas and shallow depth to rock and/or groundwater will require run-of-bank (ROB) fill. Soil testing, deep and percolation, will need to be performed throughout the proposed field to verify existing soil conditions. Assuming soil percolation rates on the order of 3 - 10 min/inch, an application rate of 0.9 - 1.2 GPD/SF can be

Supervisor Peter Parsons  
April 22, 2016  
Page 4 of 5

used. Adsorption trench widths are 2 ft.  
As a result, the total length of adsorption trench required (L) is as follows:

$$L = 9,000 \text{ gpd} \div 0.9 \text{ gpd/sf} \div 2 \text{ sf/lf} = 5,000 \text{ lineal feet of primary adsorption trenches.}$$

Therefore, a total of 10,000 lf of trench is required (5,000 lf of primary adsorption trenches and 5,000 lf of 100% expansion adsorption trenches).

The budgetary expenses for this project include preliminary design and testing, final design, surveying, permitting and agency approvals, construction and construction management / inspection oversight costs. For the purpose of this budget it is assumed that each of the 30 homes will be equipped with a low-pressure sewer ejector system connected to a common low-pressure force main that will discharge to the septic field.

Construction:

Adsorption Fields:	\$100,000
Individual Ejector Pump System:	\$360,000
Collection System and Force Main:	\$125,000
Dosing Pump Station:	\$20,000
ROB Fill Contingency:	\$80,000
Subtotal Construction:	\$685,000
Construction Contingency (15%):	<u>\$102,750</u>
Total Construction:	\$787,750
Design ( $\pm 8\%$ of Construction):	\$63,000
Construction Management / Inspection ( $\pm 5\%$ of Construction):	\$40,000
Surveying:	\$20,000
Permitting:	<u>\$20,000</u>
<b>Total Estimated Project Cost:</b>	<b>\$930,750</b>

The time required for design and construction is estimated to be 1 year, 6 months for design, permitting and approvals and an additional 6 months for construction.

Supervisor Peter Parsons  
April 22, 2016  
Page 5 of 5

The above numbers can be refined after preliminary testing is performed and a conceptual layout developed. Alternative methods of collection can be reviewed as well, such as the use of a gravity sewer main(s) and pump station(s). The above estimate does not include any legal fees that may be required to establish ownership and long-term maintenance responsibilities.

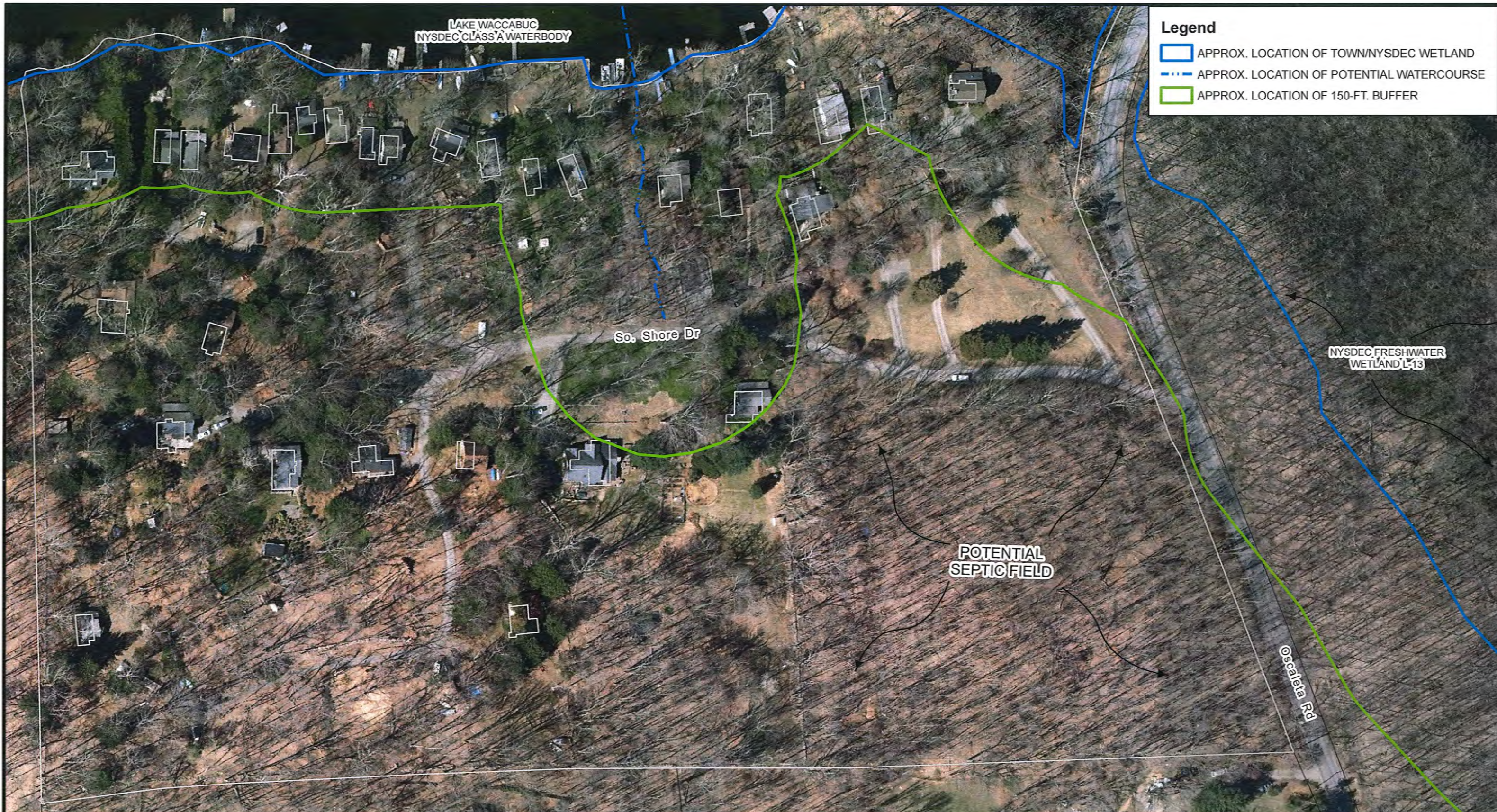
### Conclusion

In conclusion, it is believed that this project meets the criteria set forth in the New York City Watershed MOA, specifically Article V - NYC Watershed Protection and Partnership Programs, Section 140 - East of Hudson Water Quality Investment Program, Item (b) (iv) "Community septic systems and related infrastructure, in areas of existing development, to address existing or anticipated water quality problems". Although the residents of SSA represent a small part of the population of the Town of Lewisboro, the water quality benefits of this project could prove far-reaching, not only for the health of Lake Waccabuc and the Waccabuc River to which this lake is the headwater to, but for the immediately adjacent Lake Oscaleta and Lake Rippawam that share the same ±2,200 watershed, which are all tributary to the Cross River Reservoir and the New York City drinking water supply.

JMC/dc

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**Legend**

- APPROX. LOCATION OF TOWN/NYSDEC WETLAND
- APPROX. LOCATION OF POTENTIAL WATERCOURSE
- APPROX. LOCATION OF 150-FT. BUFFER

LAKE WACCABUC  
NYSDEC CLASS A WATERBODY

So. Shore Dr

NYSDEC FRESHWATER  
WETLAND L-13

POTENTIAL  
SEPTIC FIELD

Oscalata Rd

N



1 in = 100 ft

PROPERTY OWNER: SOUTH SHORE ASSOCIATION  
 PARCEL ID: SHEET 33D-CAMP-48  
 SITE AREA: +/- 24 ACRES  
 WATERSHED: WACCABUC RIVER BASIN

**SOUTH SHORE COMMUNITY**  
**ON-SITE WASTEWATER TREATMENT SYSTEM**  
 TOWN OF LEWISBORO, WESTCHESTER COUNTY, NY  
 KELLARD SESSIONS CONSULTING, P.C.

APRIL 21, 2016