

An aerial photograph showing a residential village on the left side of a large, dark blue lake. The village consists of numerous houses and buildings, some with dark roofs and others with lighter colors. A road runs through the village. The lake occupies the right and bottom-right portions of the image. The surrounding area is a mix of bare trees and green grass. The text "Philmont Beautification, Inc." is overlaid in white on the left side of the image.

**Philmont  
Beautification, Inc.**

**Summit Lake  
and its Watershed:  
Philmont's Natural Legacy**

**Village of Philmont Meeting April 29, 2017**

Grant funding provided by New York State Department of State Brownfield Opportunity Area (BOA) program.

Summit Lake and Its Watershed:

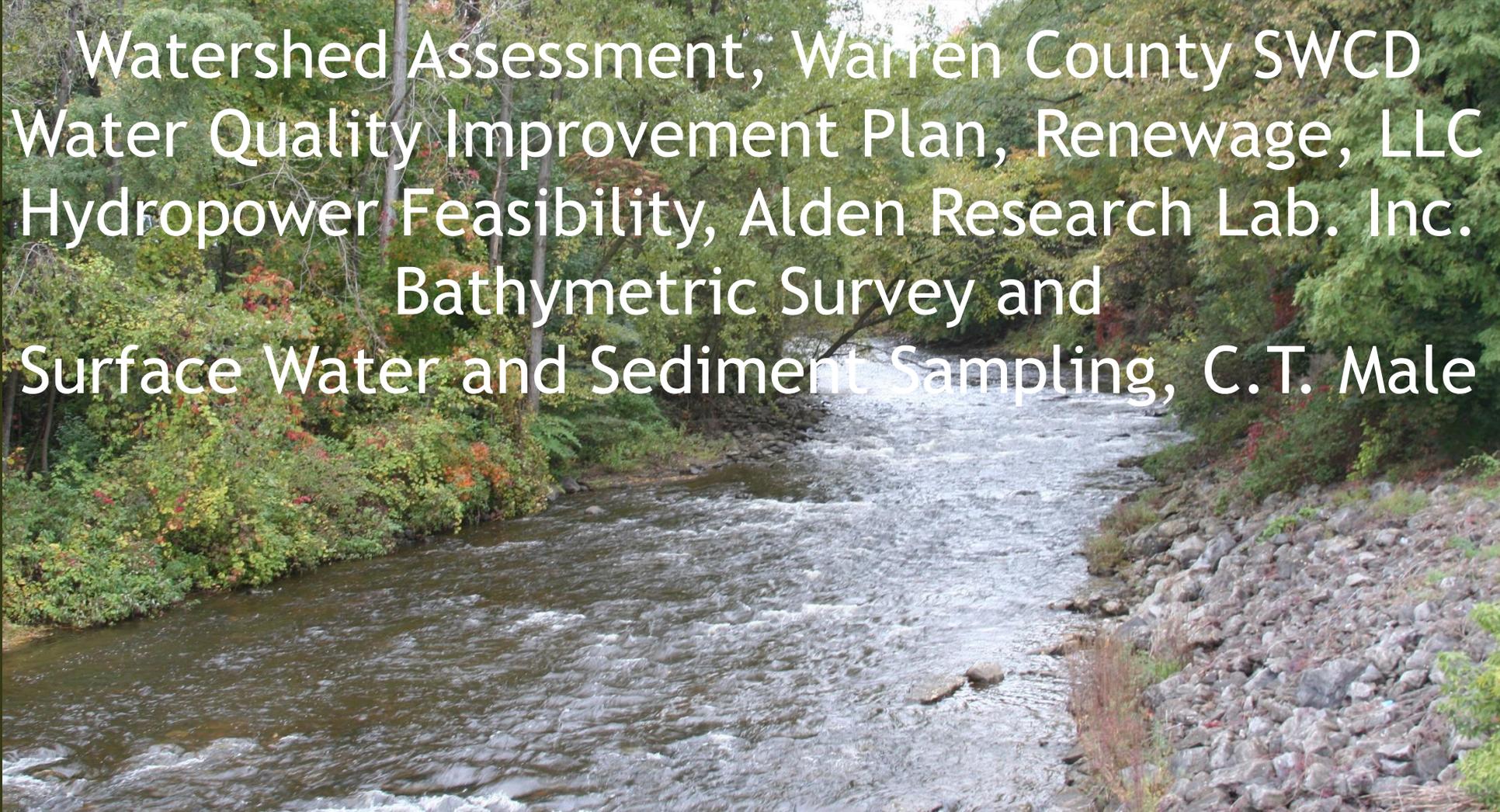
*Philmont's Natural Legacy*



Overview of 6 studies.

Recommendations for “next steps”.

# Studies considered:

A scenic view of a river flowing through a forested area. The river is in the foreground, with white water rapids. The banks are rocky and covered with green and autumn-colored vegetation. The background is a dense forest of trees.

Watershed Assessment, Warren County SWCD  
Water Quality Improvement Plan, Renewage, LLC  
Hydropower Feasibility, Alden Research Lab. Inc.  
Bathymetric Survey and  
Surface Water and Sediment Sampling, C.T. Male

# Findings:



**Heavier cobble stones, sand and gravel particles get deposited near the mouth of the lake/reservoir.**

**The finer clay and silts continue to be carried across the whole lake and settle, filling in the lake.**

**The soil particles bring nutrients like phosphorus and nitrogen.**

**Excessive nutrients act like fertilizer contributing to algae and other plant growth.**

**As these plants decompose, they consume the oxygen in the water.**

**This process of accelerated sedimentation, increased plant growth and depletion of oxygen leads to accelerated aging of the lake, and eventually—the lake will disappear and eventually become filled in.**

# Sediment



# Upstream sediment loading

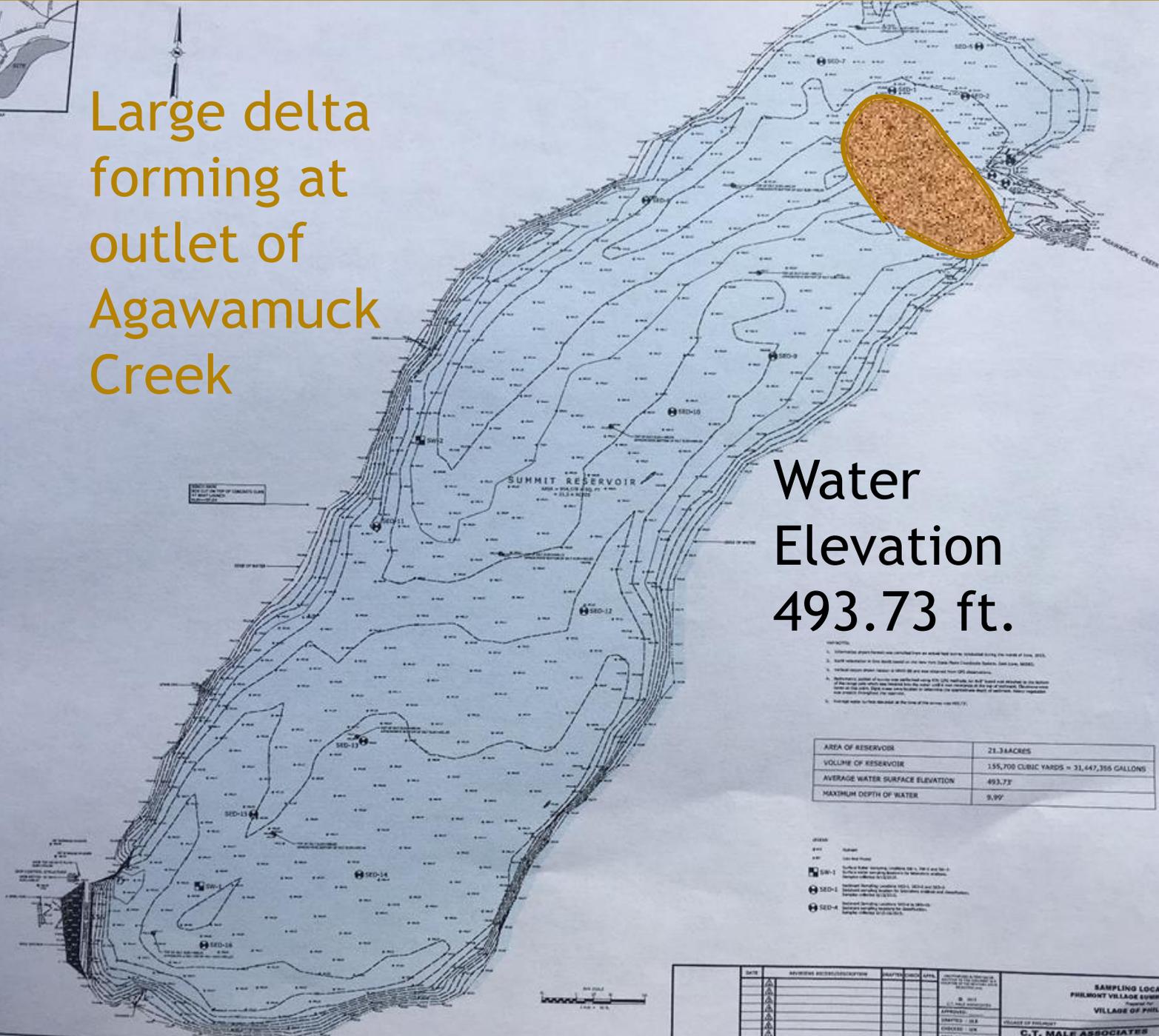


**C.T. Male Associates' study (September 2015) suggested potential contamination sources in the vicinity of the reservoir or upstream.**



Large delta forming at outlet of Agawamuck Creek

Water Elevation 493.73 ft.



AREA OF RESERVOIR	21.38 ACRES
VOLUME OF RESERVOIR	155,700 CUBIC YARDS = 31,447,356 GALLONS
AVERAGE WATER SURFACE ELEVATION	493.73'
MAXIMUM DEPTH OF WATER	9.99'

- NOTES:
1. Contour lines shown are calculated from an actual field survey, conducted during the month of June, 2015.
  2. SURF elevation is true (based on the New York State Plane Coordinate System, East Zone, NAD83).
  3. Vertical datum shown herein is based on the National Mean Sea Level datum.
  4. Supplemental contour lines are provided every 0.25' (25' contour interval) and are shown in light gray. Contour lines are shown from the water outlet to the top of the watershed. Contour lines are not shown in the delta area.
  5. Sample water surface elevation at the time of the survey was 493.73'.

- LEGEND:
- SW-1 1/2" x 1/2" water sampling location (see p. 100 of plan set)
  - SED-1 Sediment sampling location (see p. 100 of plan set)
  - SED-4 Sediment sampling location (see p. 100 of plan set)

DATE	REVISIONS/DESCRIPTIONS	DRAWN/SCALE	CHECKED/SCALE

PROJECT NO. 15-0015  
 DATE: 10/15/15

**SAMPLING LOCATIONS**  
**PHILMONT VILLAGE SUMMIT RESERVOIR**  
 Prepared for:  
**VILLAGE OF PHILMONT**

**C.T. MALE ASSOCIATES**  
 Engineering, Planning, Construction & Contract Administration, P.A.





# Sediment brings phosphorous and excessive nutrients . . .



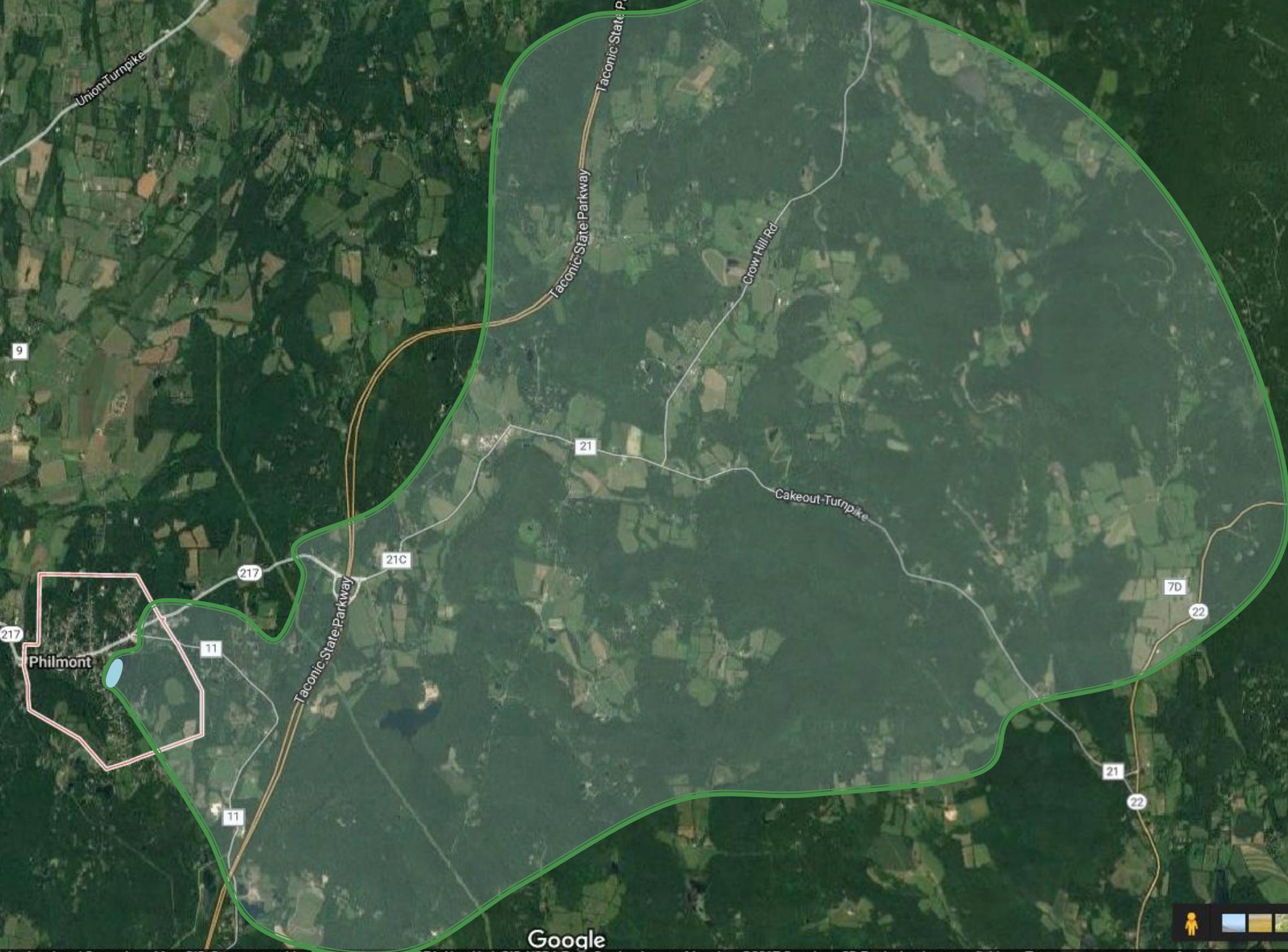
Algal Blooms

Invasive Species

Eutrophication (accelerated lake aging)

# Urban storm runoff





Union Turnpike

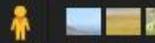
Taconic State Parkway

Crow Hill Rd

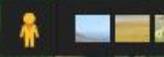
Cakeout Turnpike

Philmont

Google



The Watershed:  
13,770 Acres  
Forestland  
Farmland  
Residential  
Roads and highways  
Commercial



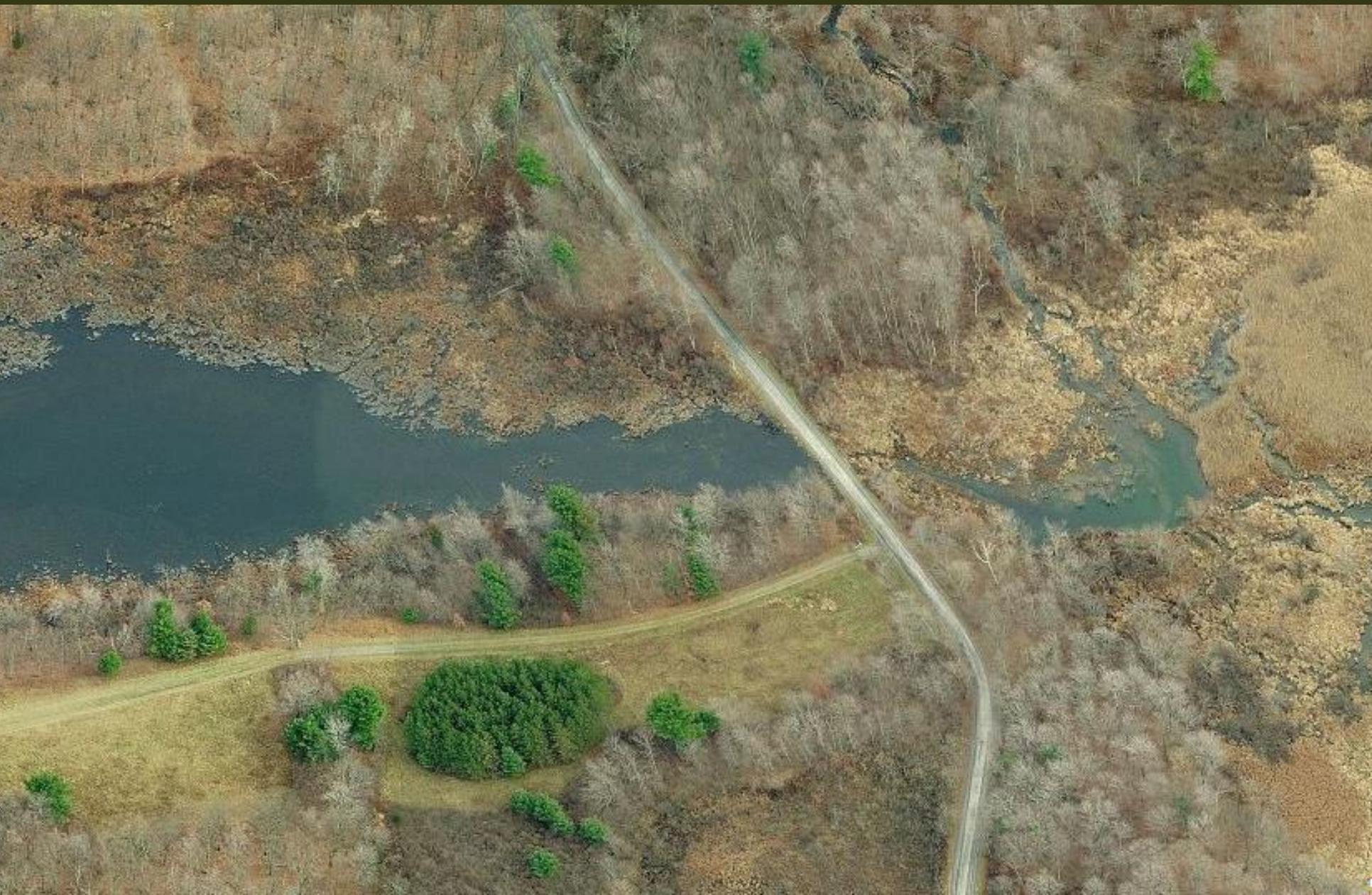
- **Potential sources if not best management:**
  - Logging activity**
  - Agricultural activity**
  - Lawn care**
  - Roadway drainage systems**
  - Urban storm runoff**
  - Improper material disposal, etc.)**

**Beaver ponds, wetlands are natural water quality treatment areas—remove sediments and pollutants.)**



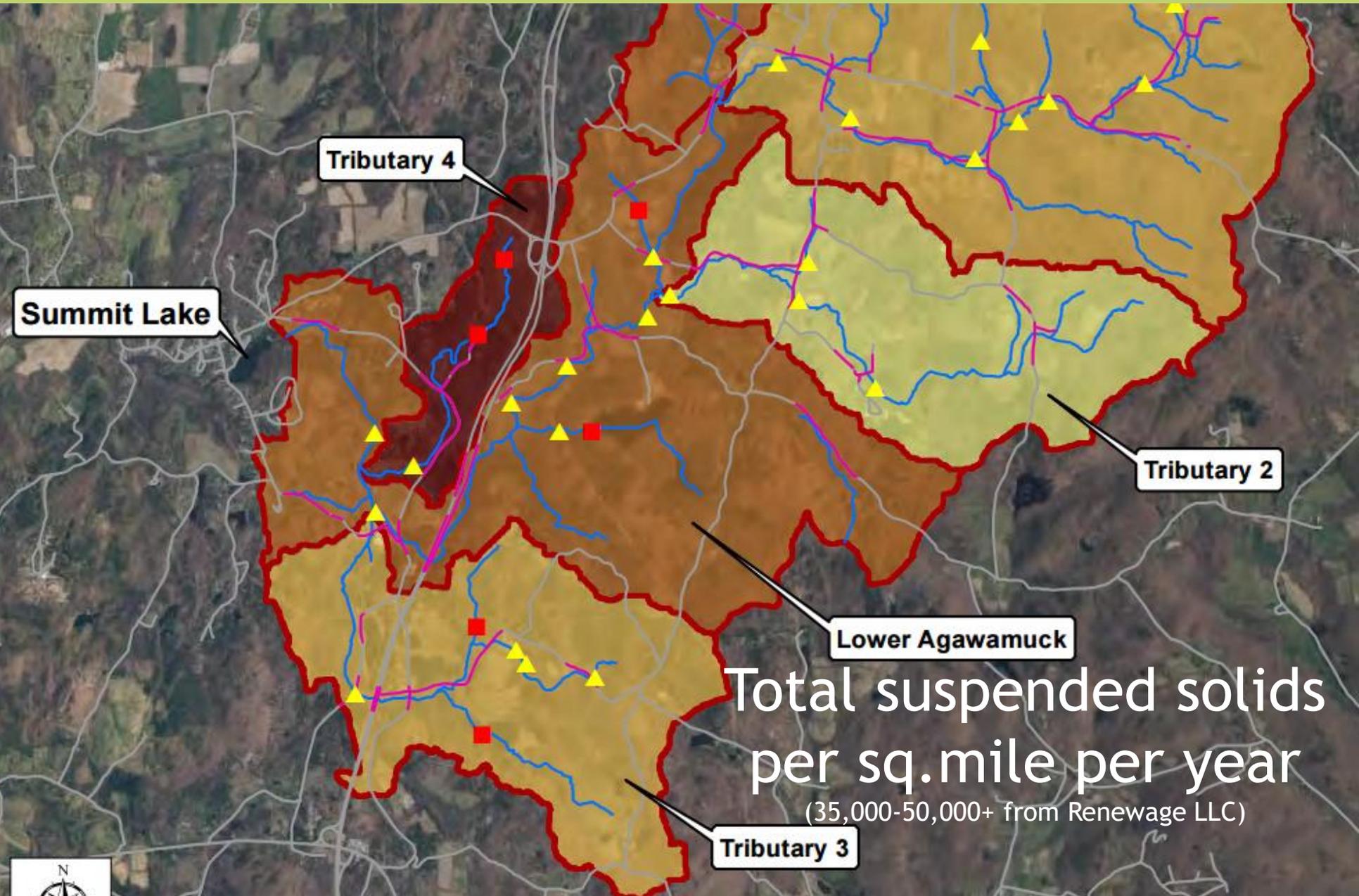
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# Eroding parkway ditch and unprotected field drainage ditch





Tributary 4

Summit Lake

Tributary 2

Lower Agawamuck

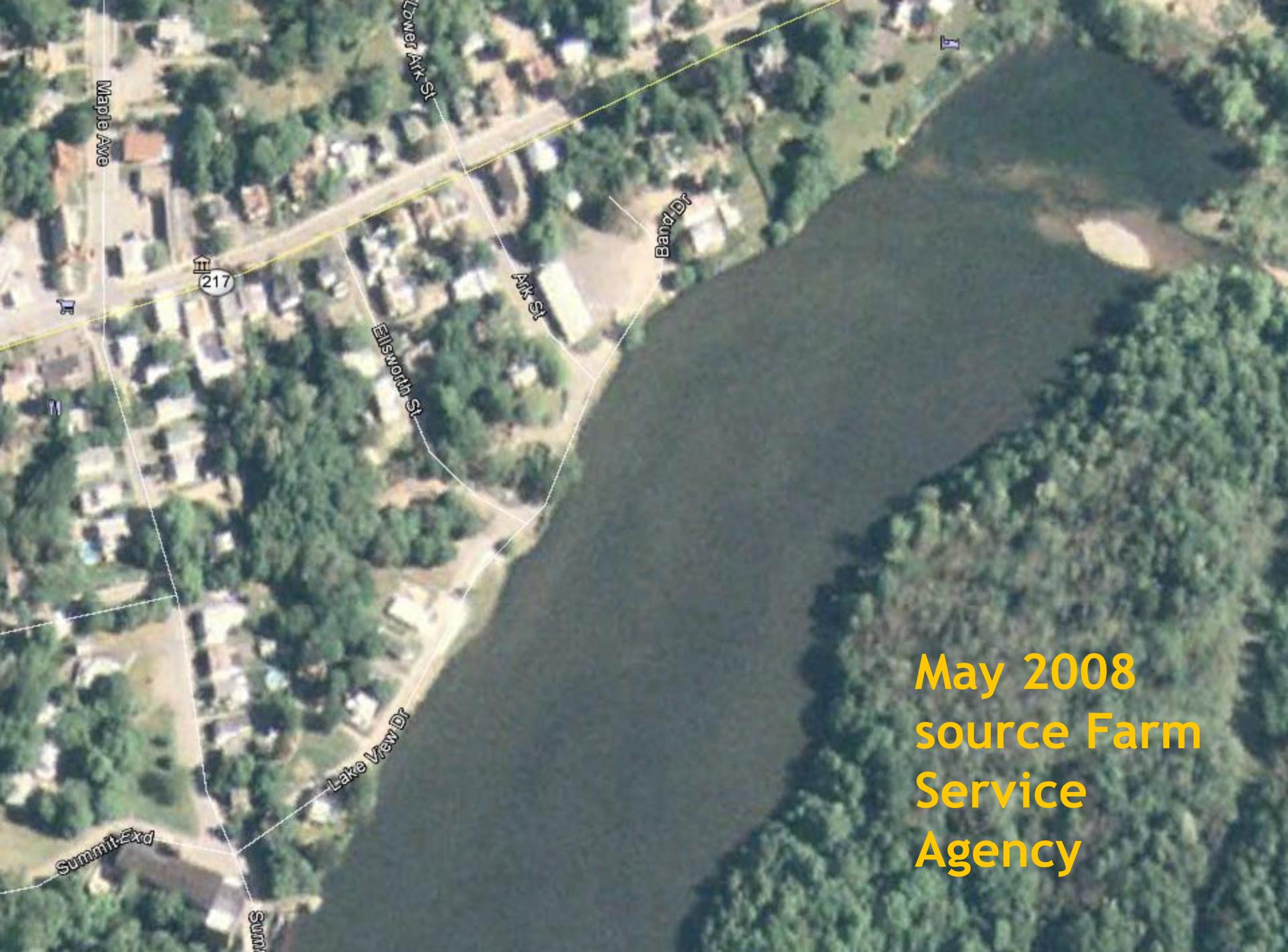
Tributary 3

Total suspended solids  
per sq.mile per year  
(35,000-50,000+ from Renewage LLC)





**June 2006  
source:  
Farm  
Service  
Agency**



Maple Ave

Tower Ark St

217

Bangor Dr

Ark St

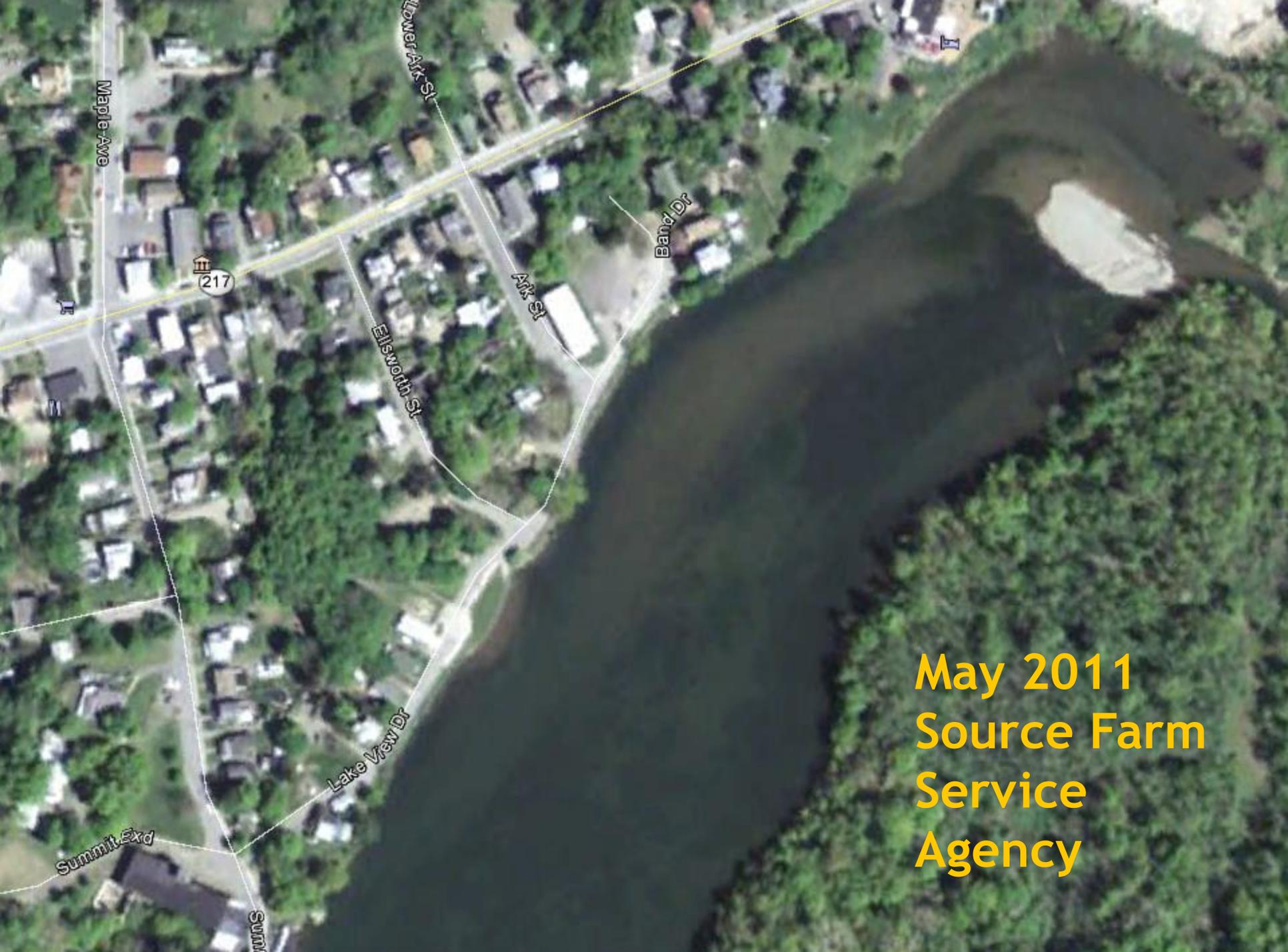
Elsworth St

Lake View Dr

Summit Exd

Sum

May 2008  
source Farm  
Service  
Agency



May 2011  
Source Farm  
Service  
Agency



July 2015  
source Google  
Earth

# Enhanced watershed management . . .

**A community-supported,  
“whole watershed”  
approach will work.**

**Work with land owners and partners like Columbia County Soil and Water Conservation District in support of best management practices . . .**

**Set a goal for water quality  
in Summit Lake . . . why not  
safe for swimming as a goal**

**. . .**

**. . . and lake focused water  
quality and vegetation  
improvement plan.**



# The hydropower connection.

**The story of  
Philmont is the  
story of  
hydropower,  
entrepreneurial  
spirit, and  
making history.**



**Hydropower is like concentrated solar power—and its right here!**



**The village-owned Summit Street Dam is renewable energy opportunity for the community—181,000 kilowatt hours every year in electric power.**

**We have a study that  
considers 3 options . . .**

**Option 1. Build a generating facility entirely on municipally-owned property . . . . Produces less energy (- 50kWh) but costs less.**

**Options 2 and 3. Involves building an extended penstock (large pipe) downstream to get more power-- but involves property acquisition and costs more.**

# Hydropower Financial Analysis from Alden Research Laboratory Inc..

**“Net metering” -- where value (price) based on village meter rates. At these actual rates, the hydropower project would generate revenues that exceeded the costs however . . .**

**Additional value could be achieved by selling 'renewable energy credits—(RECs)**

# Summit Lake Dam: A Renewable Energy Opportunity

- Renewable energy credits
- Qualify for net metering
- Additional design development with municipal leaders

# Funding Support

The water quality and renewable energy aspects fit well with state and federal funding sources. Continued strong community commitment will be important..



**Make no little plans . . .  
they have no magic . . .  
Make big plans,  
aim high in hope and work.**

Daniel Burnham

Thank you.

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