The Nature Conservancy

Protecting nature. Preserving life.™

Harnessing Nature to Reduce Storm Runoff, Nutrient Inputs, and Sediment to Honeoye Lake

Stevie Adams, Freshwater Conservation Practitioner

The Nature Conservancy

Protecting nature. Preserving life.™

To conserve the lands and waters on which all life depends.

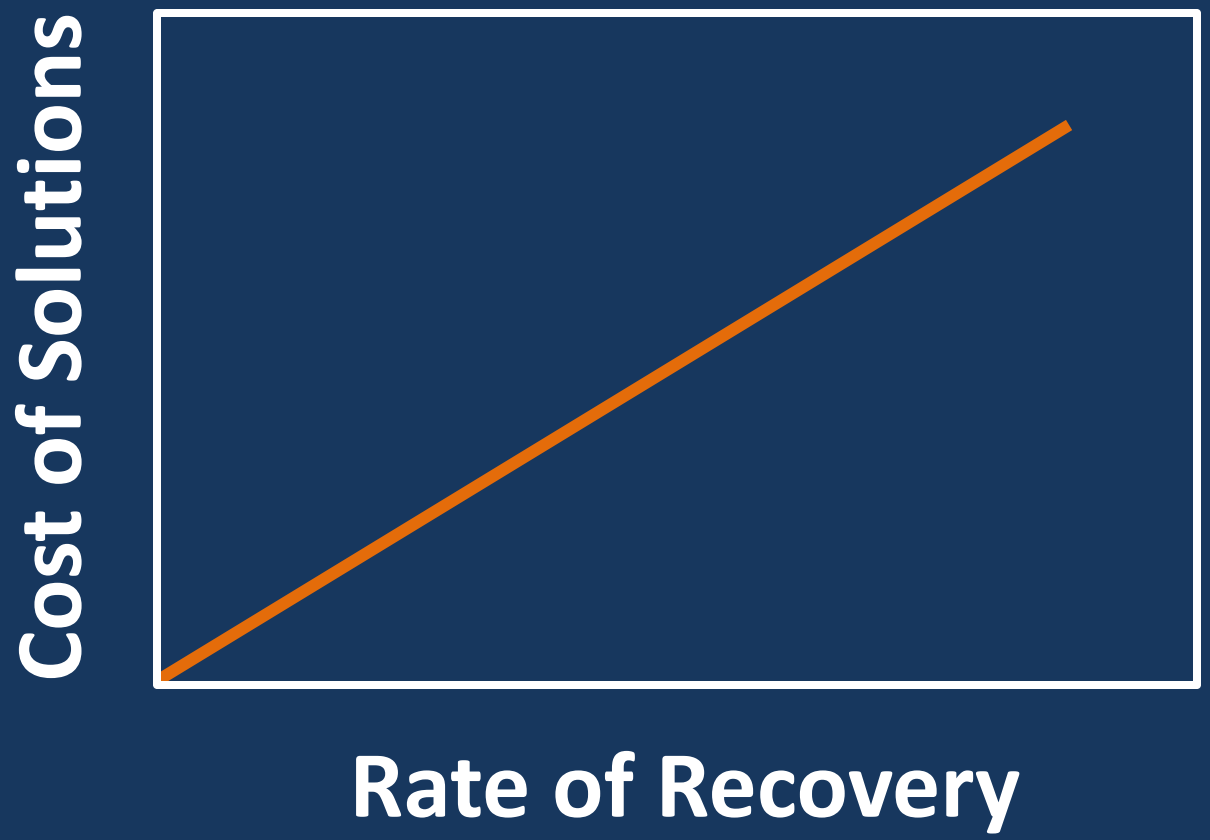
The Nature Conservancy
Protecting nature. Preserving life.™

Our Work in the Honeoye Valley

The Nature Conservancy
Protecting nature. Preserving life.™

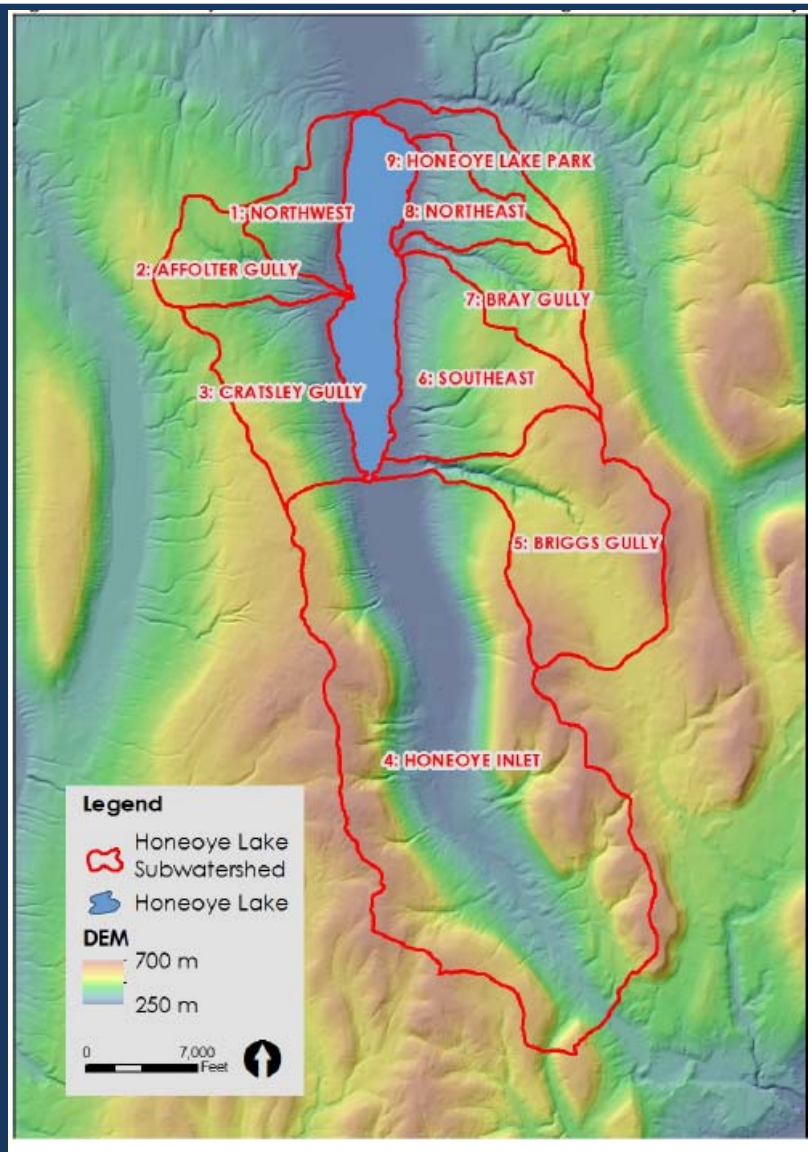
Lake Conditions

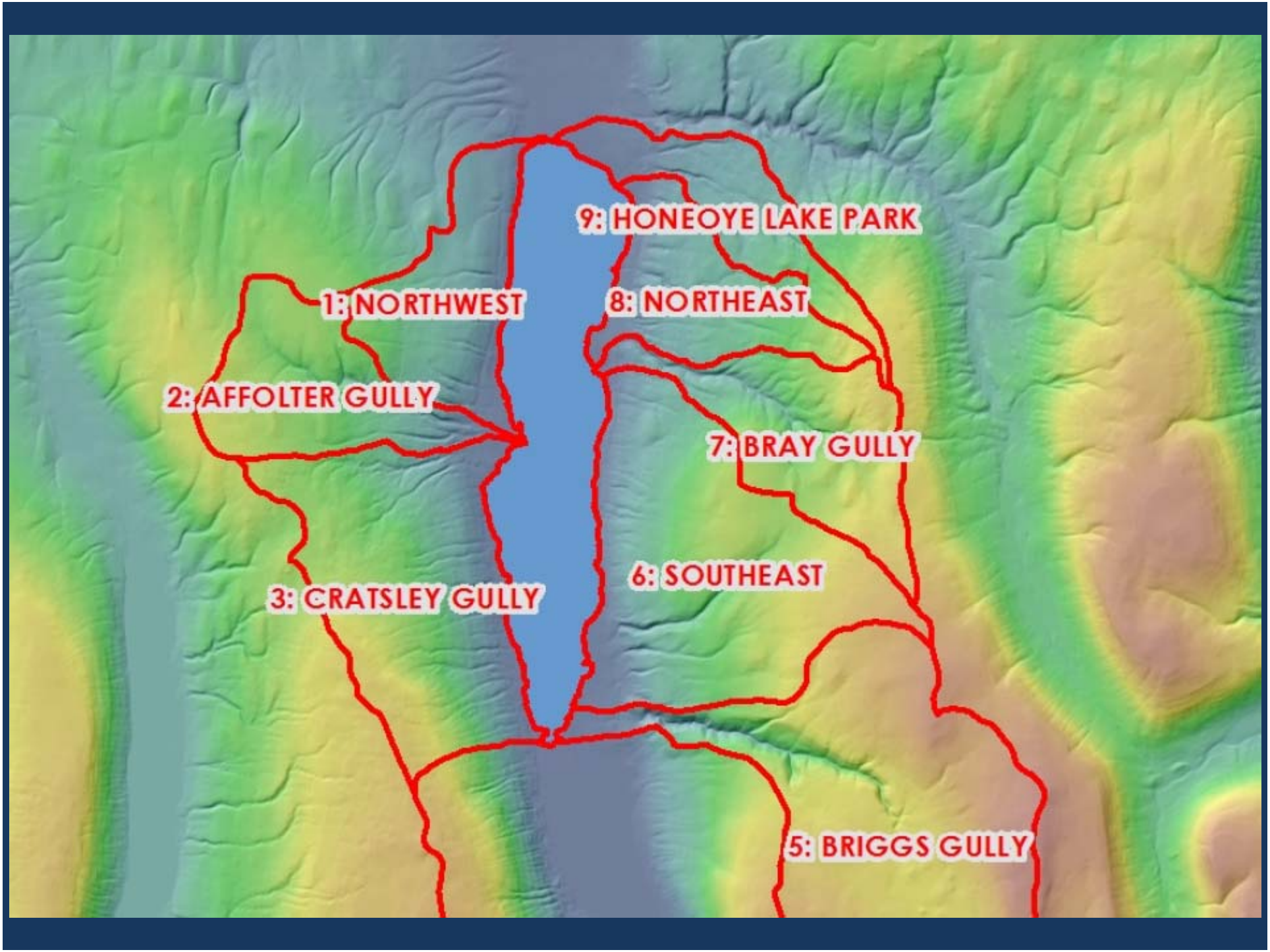
Recovery



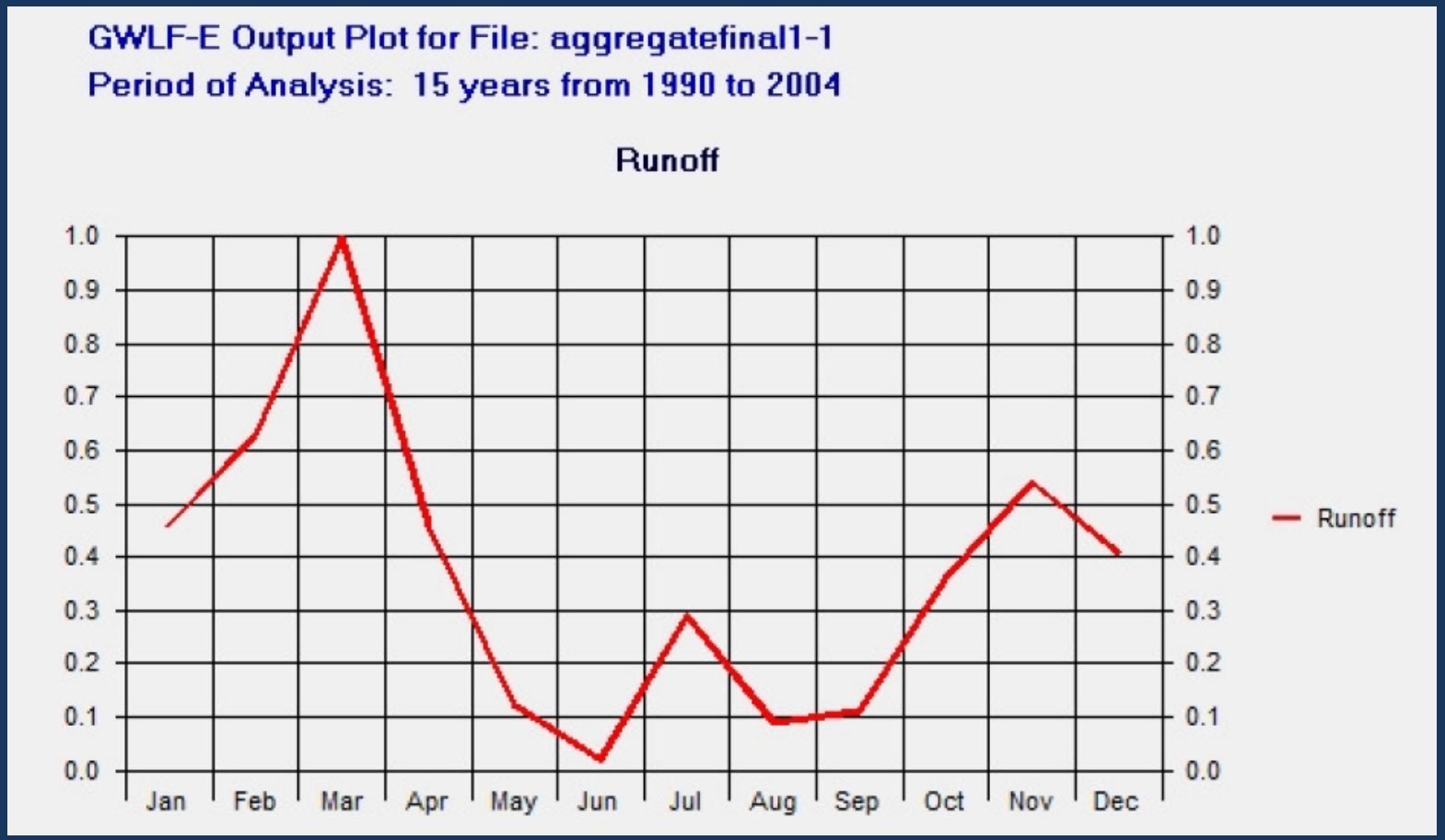
Update of the Hydrologic and Nutrient Budgets of Honeoye Inlet and Honeoye Lake

- Update the modeling for the Lake's watershed and each subwatershed
- Identify subwatersheds on which to focus
- Make recommendations for solutions that will reduce sediment and nutrient loading to the lake




9: HONEOYE LAKE PARK
1: NORTHWEST
8: NORTHEAST
2: AFFOLTER GULLY
7: BRAY GULLY
6: SOUTHEAST
3: CRATSLEY GULLY
5: BRIGGS GULLY

Modeling


GWLF-E Output Plot for File: aggregatefinal1-1
Period of Analysis: 15 years from 1990 to 2004
Runoff
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Runoff

The Nature Conservancy
Protecting nature. Preserving life.™

Modeling

Aggregate Watershed - Daily Loads								
Storm Event	Season	Flow	TSS		TN		TP	
		(m3)	(kg)	(mg/L)	(kg)	(mg/L)	(kg/)	(mg/L)
1-yr	Winter	673,514	28,188	43.51	245.15	0.40	13.66	0.02
	Spring	1,844,748	276,729	160.65	813.81	0.54	65.66	0.04
	Summer	411,317	174,782	373.55	326.80	0.85	30.84	0.08
	Fall	929,845	614,840	715.66	1,054.67	1.40	116.22	0.15
2-yr	Winter	802,187	33,381	43.42	286.67	0.40	15.88	0.02
	Spring	2,288,420	349,671	164.15	1,003.10	0.52	81.77	0.04
	Summer	606,093	256,394	397.05	464.36	0.82	44.78	0.08
	Fall	1,216,701	794,771	755.05	1,367.34	1.39	151.76	0.15
5-yr	Winter	1,197,484	49,614	43.27	417.46	0.39	22.99	0.02
	Spring	3,458,892	539,273	165.75	1,536.02	0.50	127.07	0.04
	Summer	1,088,318	460,033	405.02	852.63	0.81	84.53	0.08
	Fall	1,938,405	1,245,997	782.61	2,221.35	1.41	248.72	0.16
10-yr	Winter	1,365,771	56,991	45.48	473.19	0.39	25.93	0.02
	Spring	4,317,569	651,442	157.46	1,923.28	0.49	158.17	0.04
	Summer	1,722,880	646,954	378.32	1,252.82	0.77	124.03	0.08
	Fall	2,668,972	1,668,756	743.15	3,024.43	1.35	340.11	0.15

The Nature Conservancy
Protecting nature. Preserving life.™

Results

Honeoye Lake - Normalized Pollutant Loads (kg/ha)						
Subwatershed	Erosion	Sediment	Dis. N	TN	Dis. P	TP
1: Northwest	3564	808	1.95	3.60	0.07	0.31
2: Affolter Gully	2624	553	2.39	3.46	0.07	0.23

Honeoye Lake - Pollutant Loading							
Subwatershed	Area (Ha)	Erosion kgx1000/yr	Sediment kgx1000/yr	Dis. N kg/yr	TN kg/yr	Dis. P kg/yr	TP kg/yr
1: Northwest	384	1369	310	748	1382	26	118
2: Affolter Gully	403	1057	223	961	1393	29	92
3: Cratsley Gully	781	1170	310	1668	2217	53	131
4: Honeoye Inlet	4572	6966	1248	7138	9339	212	535
5: Briggs Gully	1307	202	52	2302	2397	68	80
6: Southeast	926	241	85	1545	1710	49	68
7: Bray Gully	439	70	27	844	888	25	31
8: Northeast	356	250	71	693	854	23	42
9: Honeoye Lake Park	285	165	59	546	663	18	33
Sum	9453	11490	2386	16445	20844	502	1130
Aggregate	9461	11173	2877	16391	20196	500	1005

Results

- 1-year storm events are responsible for up to 70% of the loading

The Nature Conservancy
Protecting nature. Preserving life.™

Recommendations


Credit: Bill Hecht

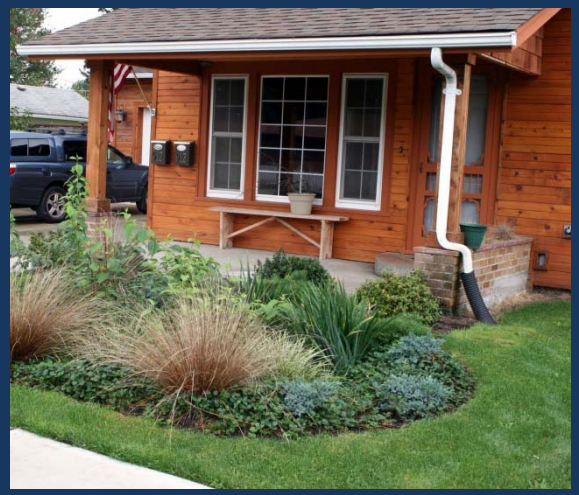
The Nature Conservancy
Protecting nature. Preserving life.™

Recommendations – Community-Based Initiatives

Fertilizer and pesticide management

Restoration of lake and stream planted buffers

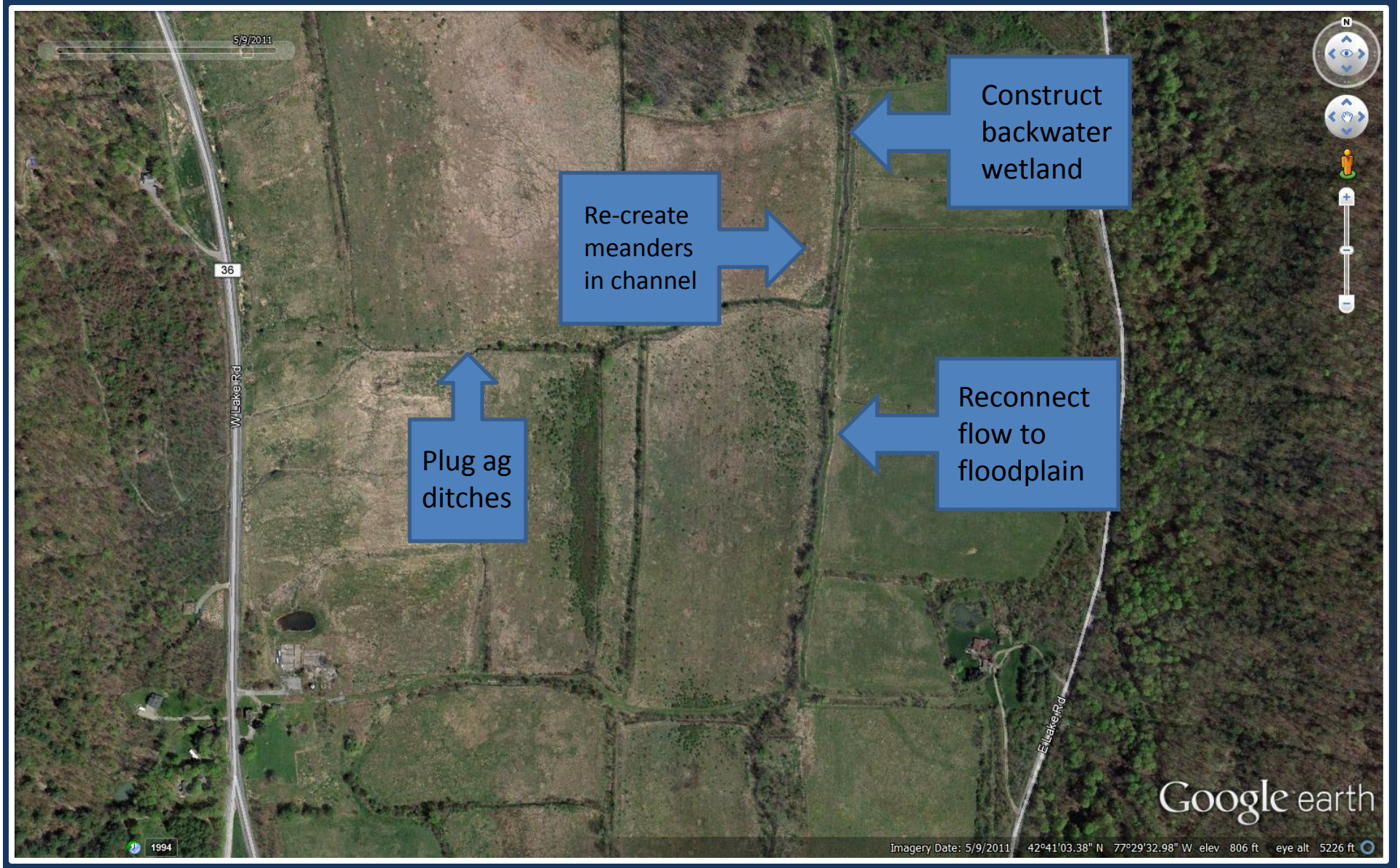
Inclusion of vegetated swales



Landscaping with rain gardens

Recommendations – Honeoye Inlet

- Allow water to slow down and spread out
- Use nature to filter out sediment and nutrients
- Increase opportunities for recreation
- Improve habitat for fish and other wildlife

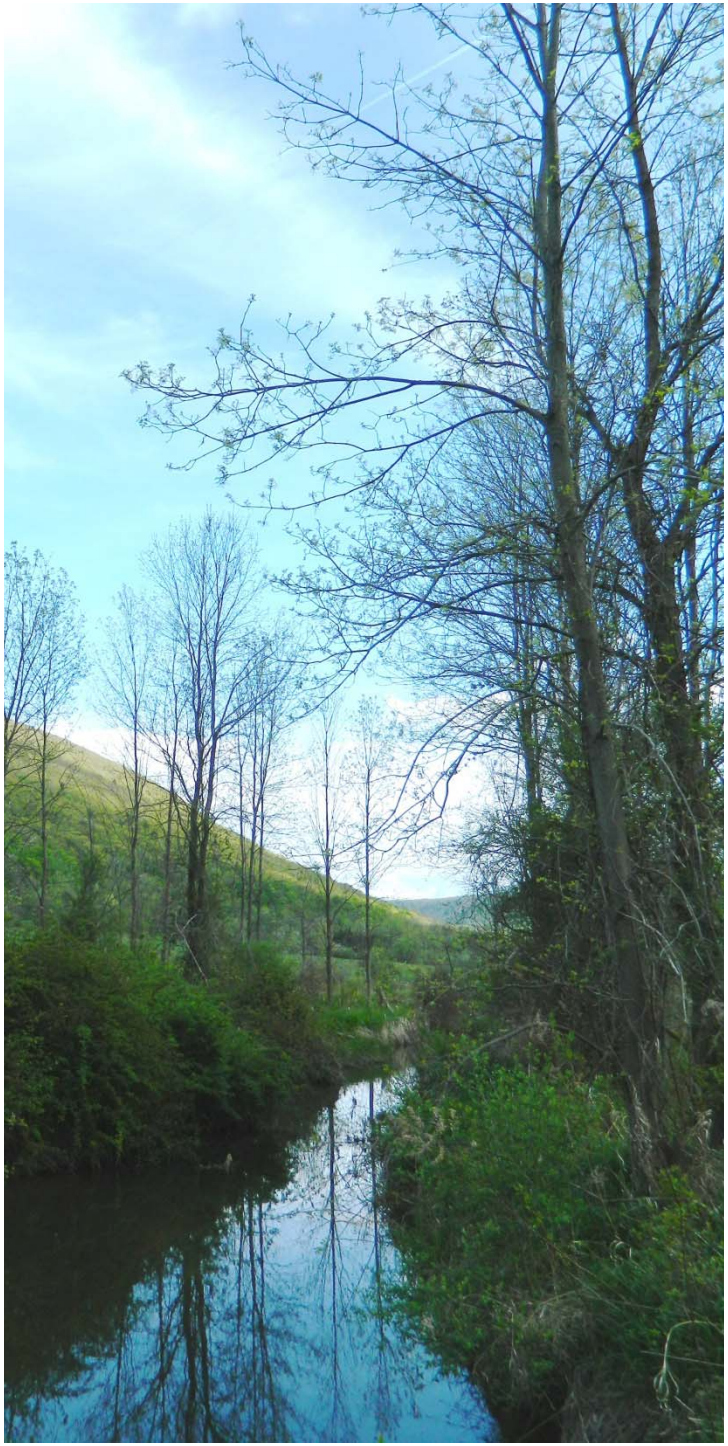


Removal of 24-37% of the total amount of phosphorus entering Honeoye Lake

The Nature Conservancy
Protecting nature. Preserving life.™

Next Steps

1. Obtain match and grant funding for 2-phased project
2. Complete design and permitting phase
3. Implement construction phase



Questions

Thanks to:

- Honeoye Lake Watershed Task Force
- Ontario County Soil and Water Conservation District
- Princeton Hydro
- NYS Dept of Environmental Conservation
- FLCC and the Muller Field Station
- Honeoye Valley Association