SUNY Adirondack

NPS Pollution Monitoring on Small Lakes

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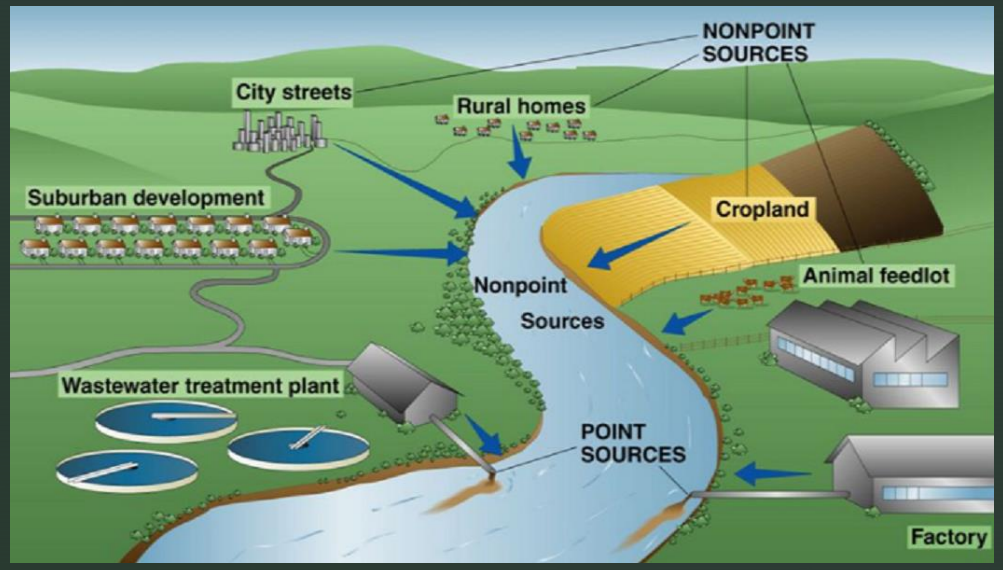
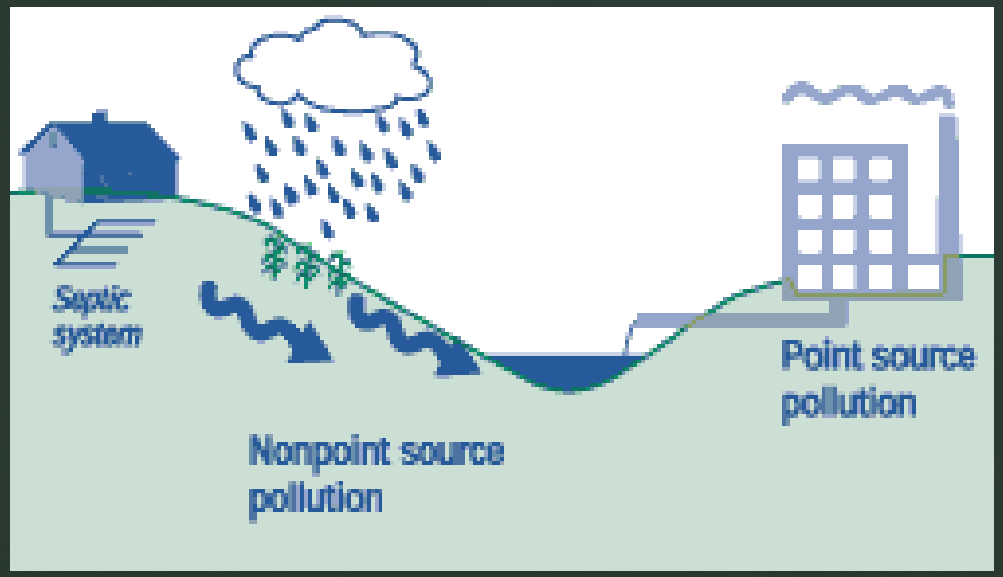
Point vs. Nonpoint Source Pollution

Point Source: "…any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture."

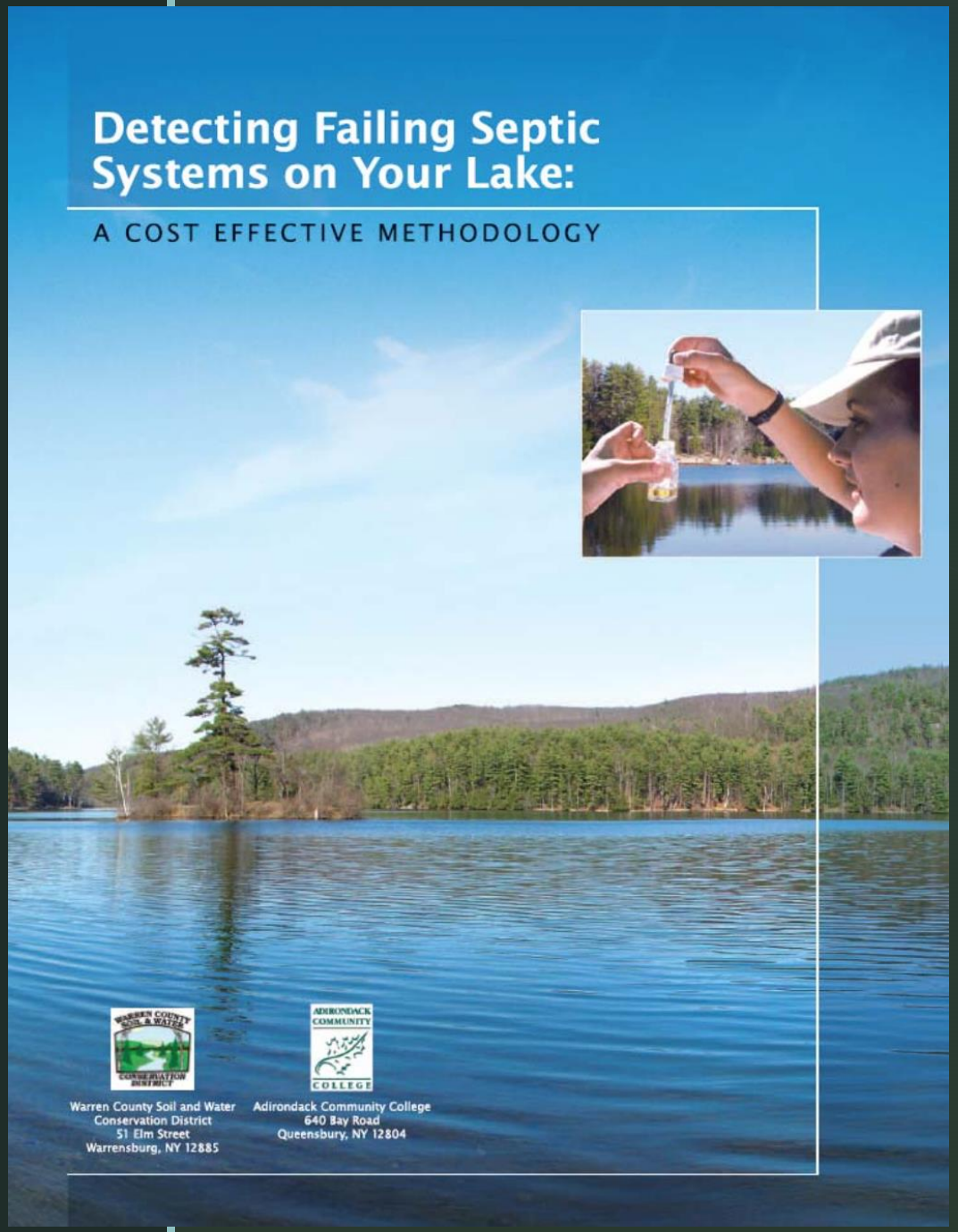
Nonpoint Source: "Any source of water pollution that does not meet the legal definition of "point source."

(https://www.epa.gov/nps)





Impact of Nonpoint Source Pollution



Monitoring Method for NPS

TWO indicators of septic system-derived NPS were measured; detection of BOTH indicates NPS:

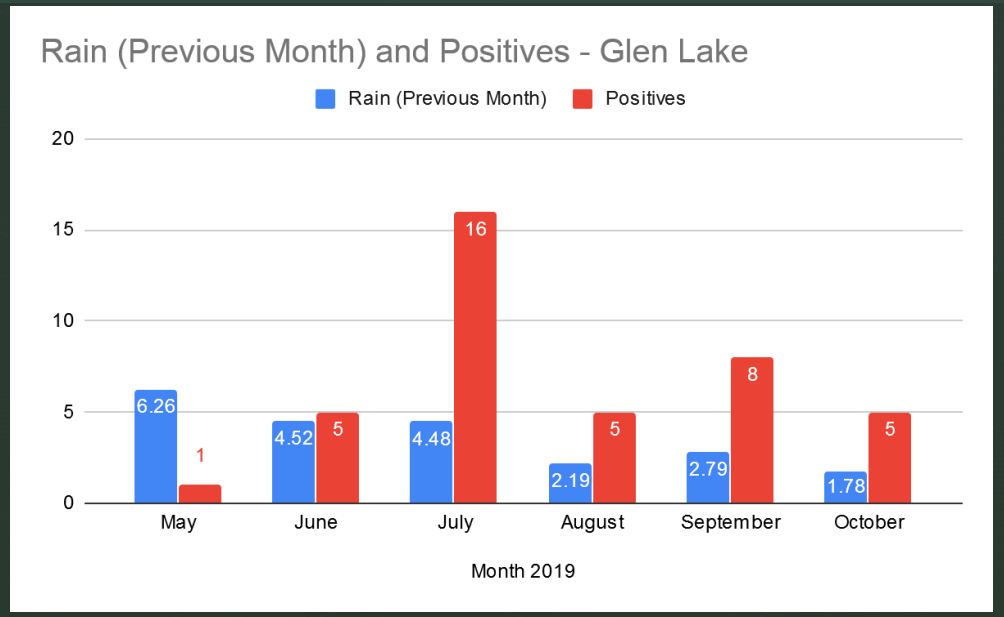
1. E*scherichia coli (E. coli)*
   - Fecal bacteria
   - Point AND Nonpoint Sources
   - *E. coli* can reproduce in surface water

2. Free chlorine (hypochlorous acid or hypochlorite ion)
   - Form of chlorine found in bleach and household cleaners; municipal water
   - No natural sources

Lake Sites	May 16	June 10	July 8	Aug 12	Sept 10	Oct 8	Total Site Pos (6)
1			+		(-/+)		1
2	+				(-/+)		1
3							0
4			+		+		2
5			+		+		2
6							0
7			+		+	+	3
8			+	+			2
9			+		+		2
10		+		+	(-/+)		2
11		+	(+/-)		+		3
12							0
13			(+/-)		+	+	3
14			+			+	2
15		+			+		2
16			+		+		2
17			+	+		+	3
18			+	+			2
19	(-/+)			+		(-/+)	1
20		+	(+/-)				2
21						(-/+)	0
22			+				1
23		+	+			(-/+)	2
24			+				1
28*						+	1
Total NPS Pos	1	5	16	5	8	5	
% Positive	4%	20%	64%	20%	32%	20%	
Rain (prev. month)	6.26	4.52	4.48	2.19	2.79	1.78	

Glen Lake 2020

- Possible correlation between total NPS positive sites and lake usage patterns
- Correlation between total NPS positive sites and snowmelt/rain was not significant



Lake Sunnyside 2020

Lake Sites	June 3	July 3	Aug. 5	Sept. 18	Oct. 9	Total Site Pos (5)
1	+		+	+	+	4
2						0
3	+		+	+	+	4
4	+	+				2
5	+		+			2
6	+		(+/-)			2
7				+		1
8	+		+			2
9	+		+		+	3
10	+					1
11	+				+	2
12	+				+	2
13						0
14		+	+		+	3
Total NPS Pos	10	2	6	3	6	
% Positive	71%	14%	43%	21%	43%	
Rain (prev. month)	4.52	4.48	2.19	2.79	1.78	

- Possible correlation between total NPS positive sites and lake usage patterns.
- Correlation between total NPS positive sites and snowmelt/rain totals was not significant.
- No NPS indicators detected at one site AFTER septic system update occurred in July

Take Aways:

- Results further validate method as an indicator of septic system-derived NPS pollution

- Glen Lake
  - Correlation between total NPS positive sites and snowmelt/rain was not significant
  - Possible correlation between total NPS positive sites and lake usage patterns

- Lake Sunnyside
  - Correlation noted between total NPS positive sites and lake usage patterns