LOWER BOLTON LAKE

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PHOSPHORUS TRACKING

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  - *AJ Reyes*
  - *George Knoecklein*

What do we know about phosphorus in the lake and where it might be coming from.

- *A look at the trends in nutrient loading and in-lake changes*

LAKE SURFACE AREA AND LAKE VOLUME

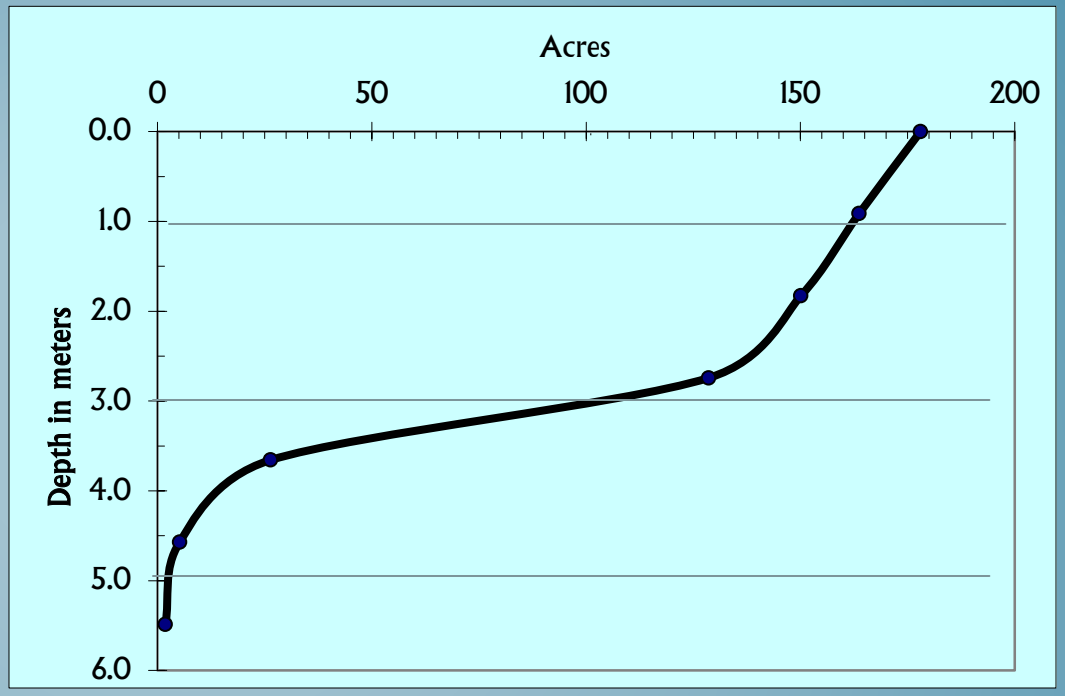
Surface Area in Acres

	Cumulative From Bottom		Of Each Stratum
(feet)	(acres)	(percent)	(acres)
0	178	100	14
3	164	92	14
6	150	84	22
9	129	72	102
12	26	15	21
15	5	3	3
18	2	1	2

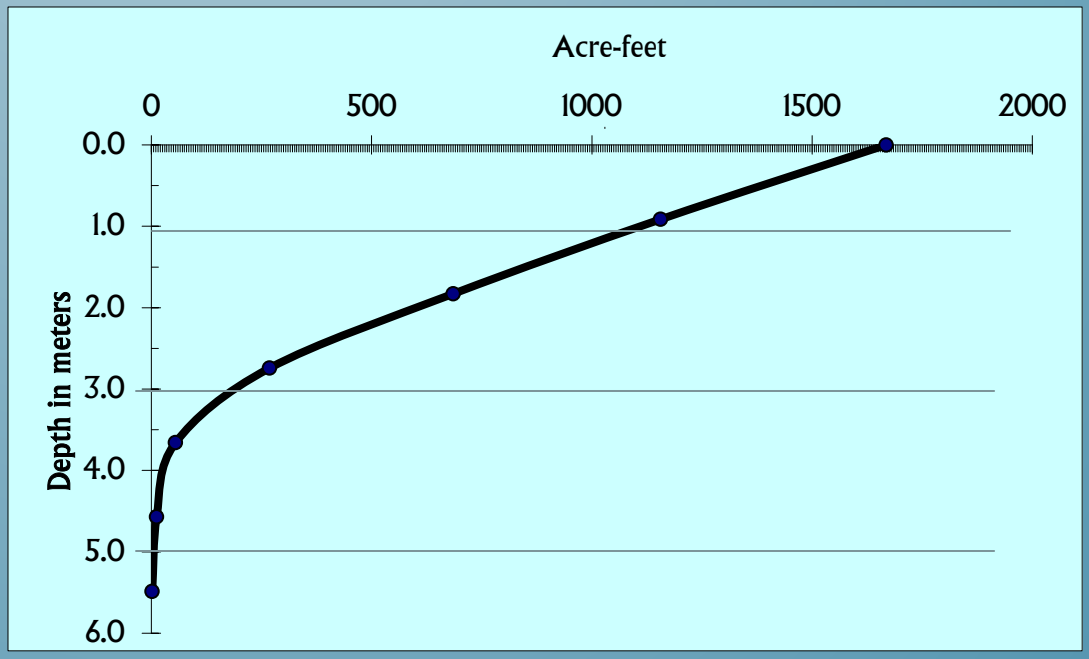
Lake Volume in Acre-feet

	Cumulative From Bottom		Of Each Stratum
(feet)	(acre- feet)	(percent)	(acre- feet)
0	1,668	100	512
3	1,156	69	470
6	685	41	418
9	268	16	213
12	55	3	43
15	12	1	10
18	2	0	2

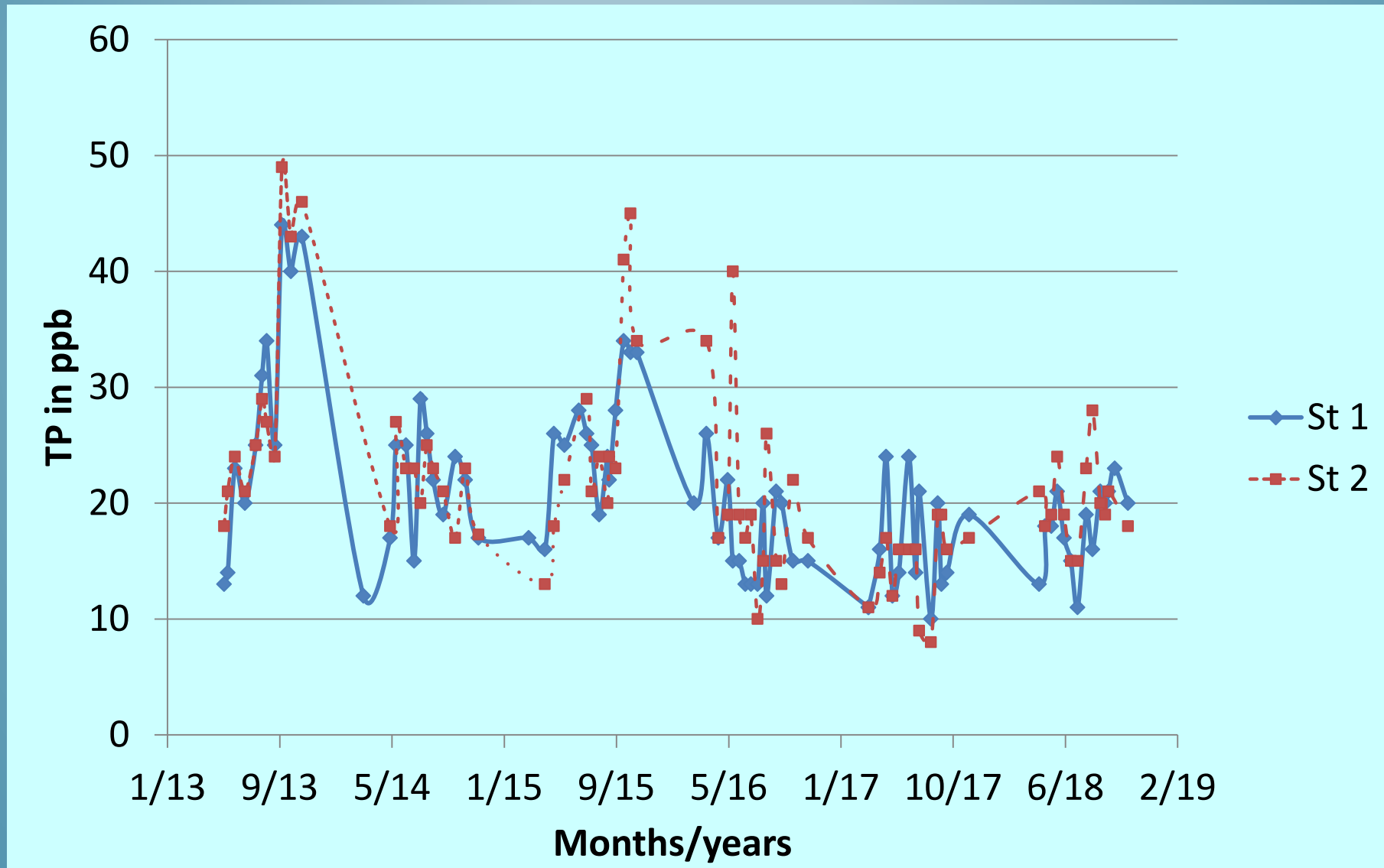
LAKE SURFACE AREA



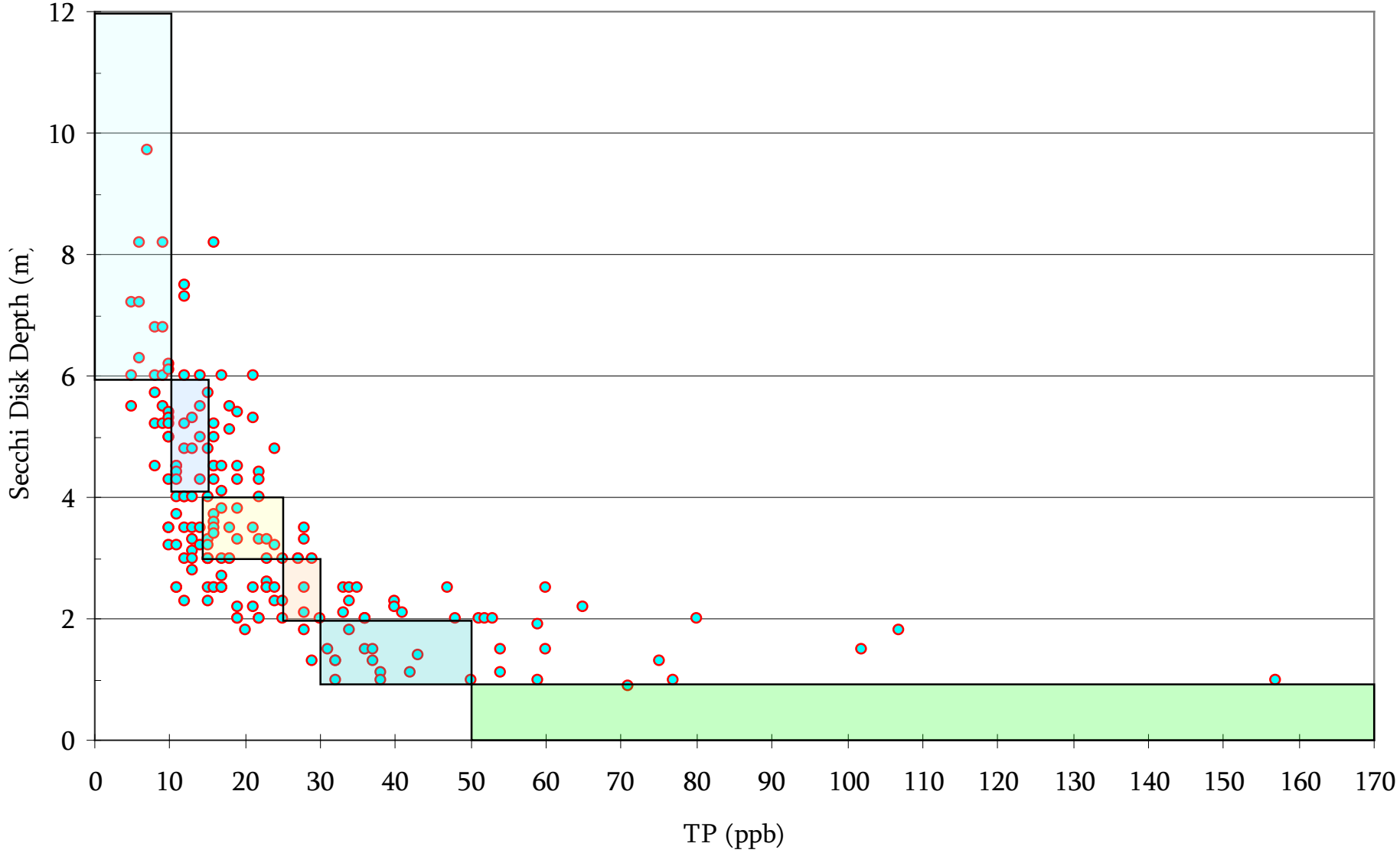
LAKE VOLUME



1 METER TP AT STATION 1 VS STATION 2

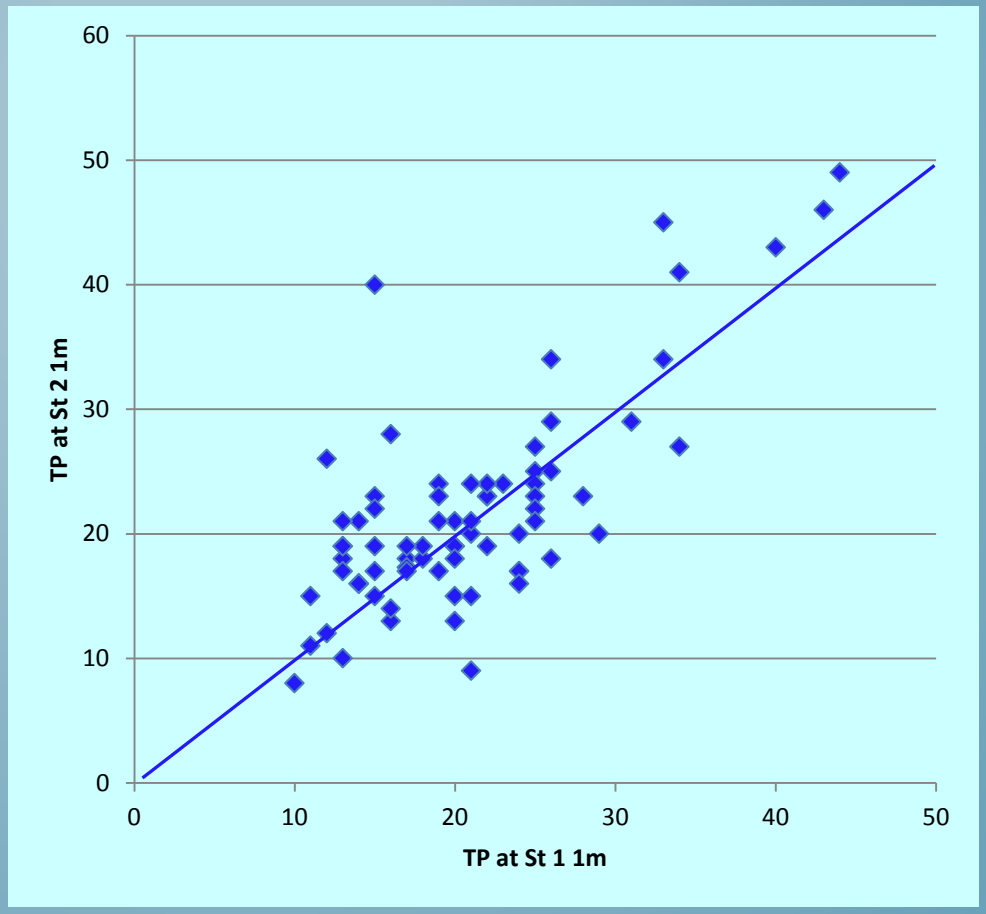


CT DEEP TROPHIC CATEGORIES AND PAIRED TOTAL PHOSPHORUS AND WATER CLARITY (FRINK AND NORVELL 1984)

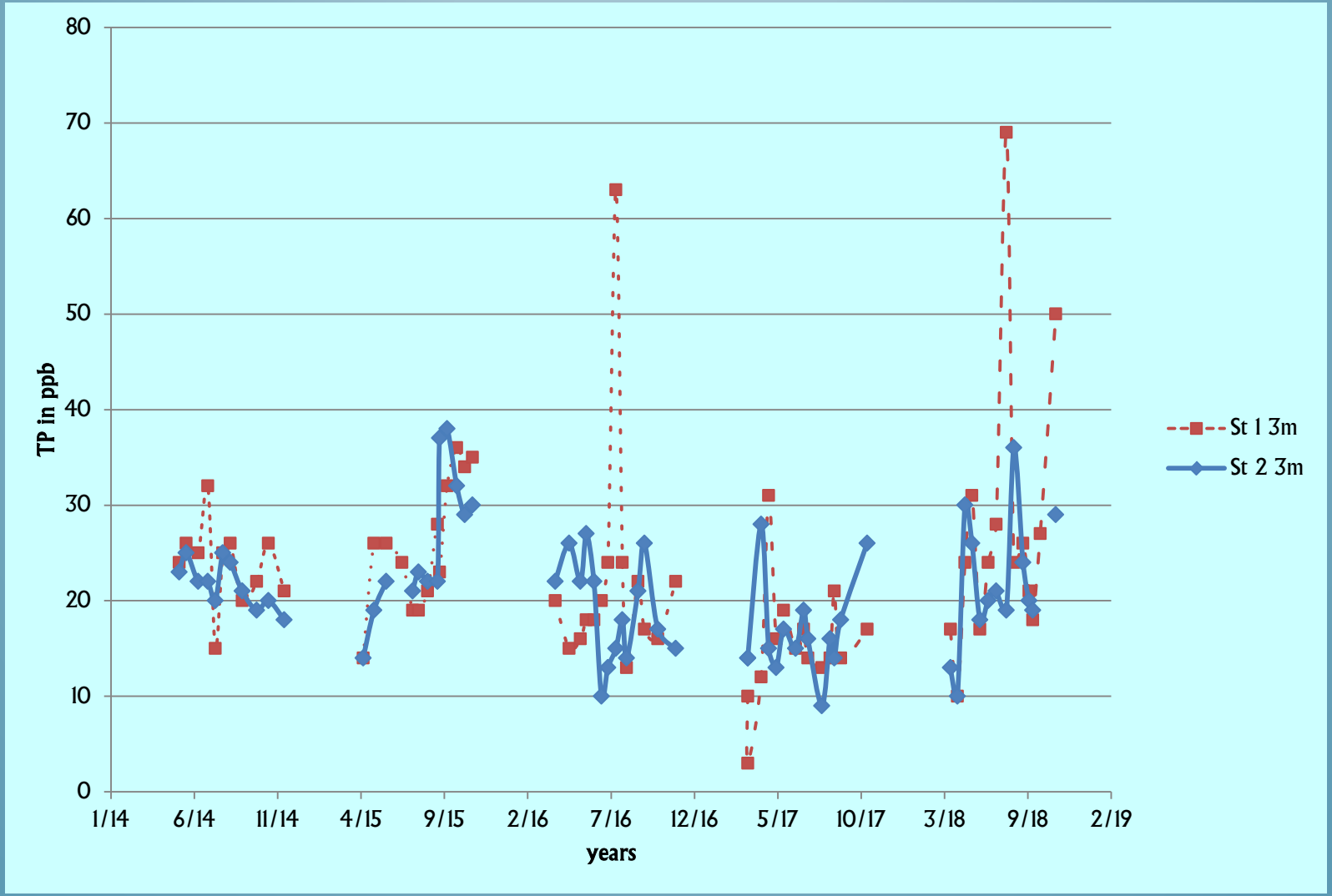


Relationship Between TP At Stations 1 & 2 At 1 Meter depth

TP at Station 2 tends to be higher than at Station 1

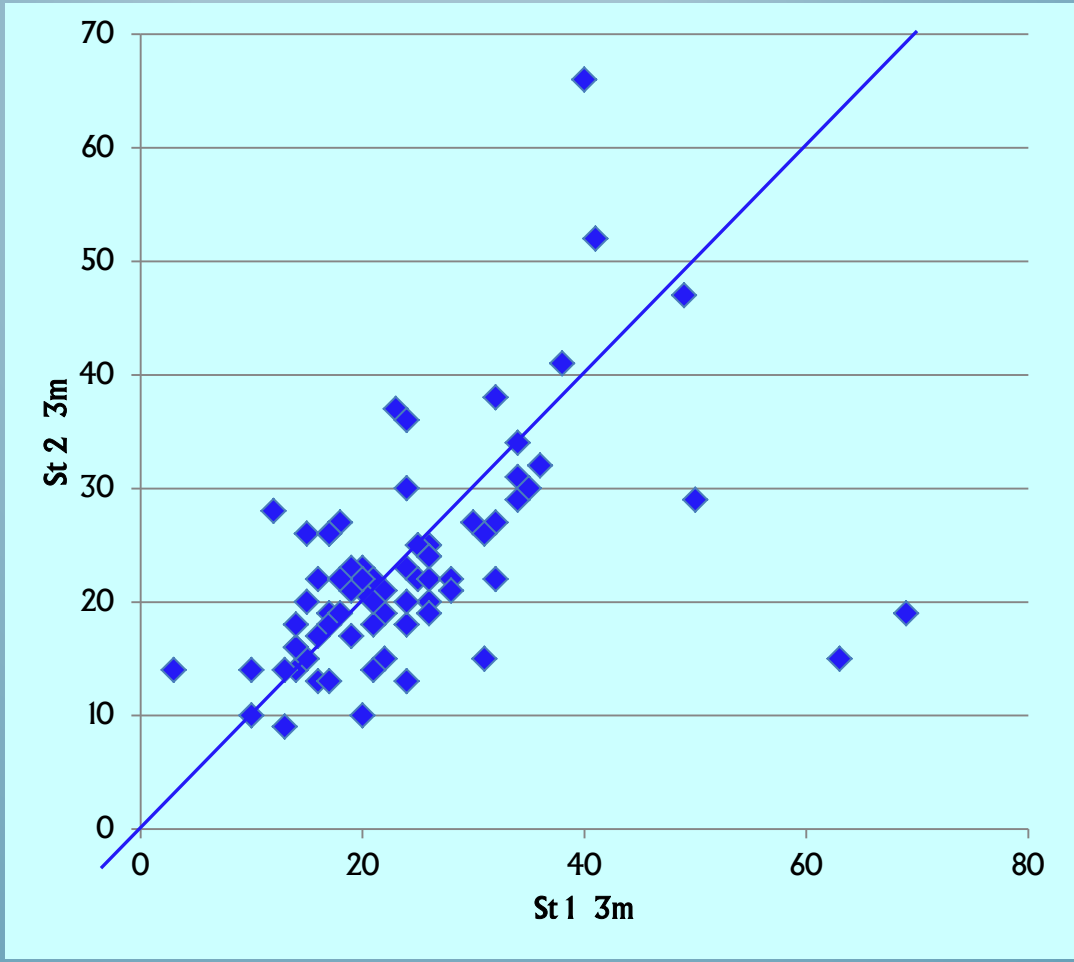


TP At Station 1 3 meter depth vs Station 2 at 3 meter depth

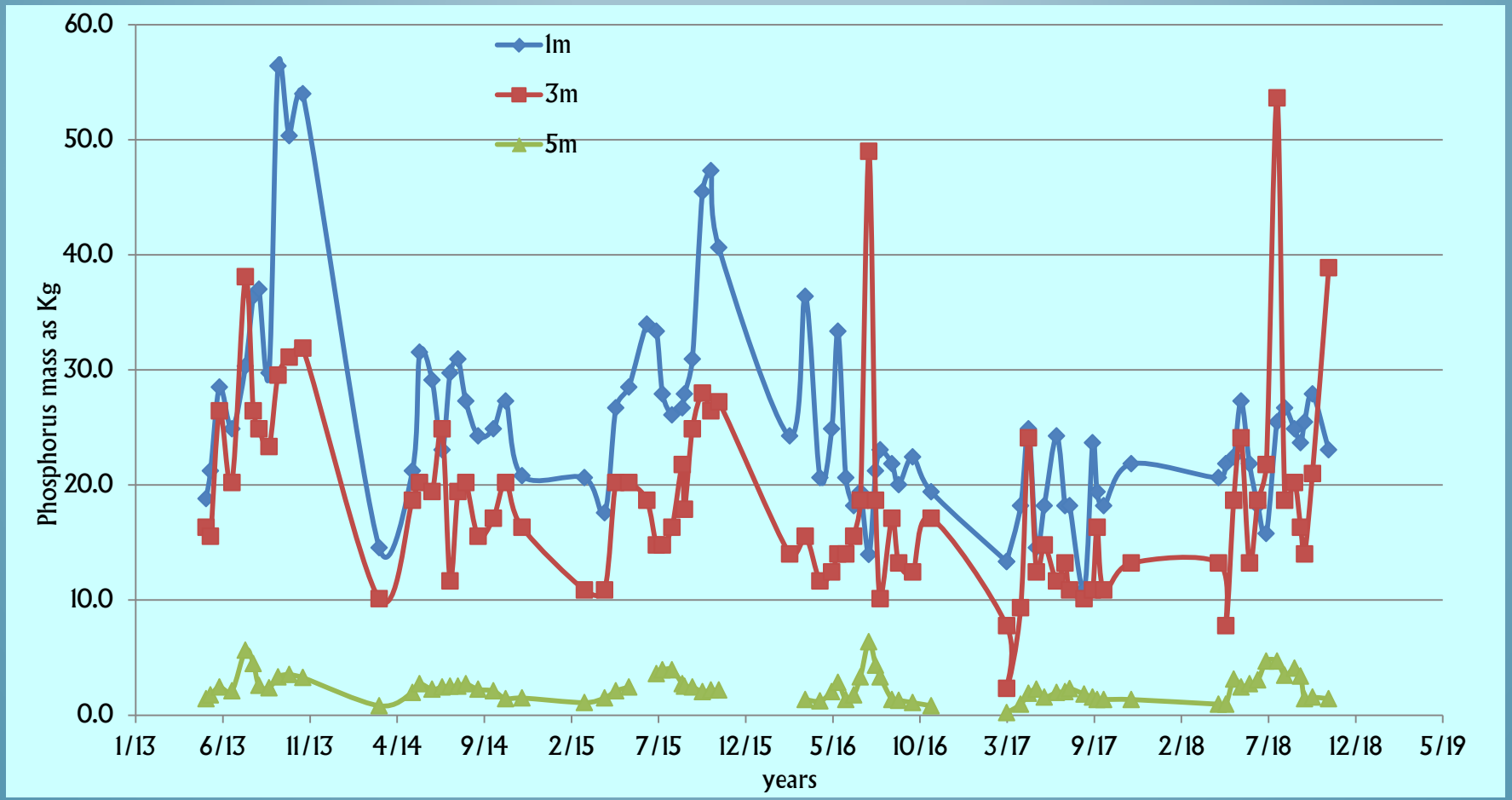


TP AT STATIONS 1&2 AT 3 METERS

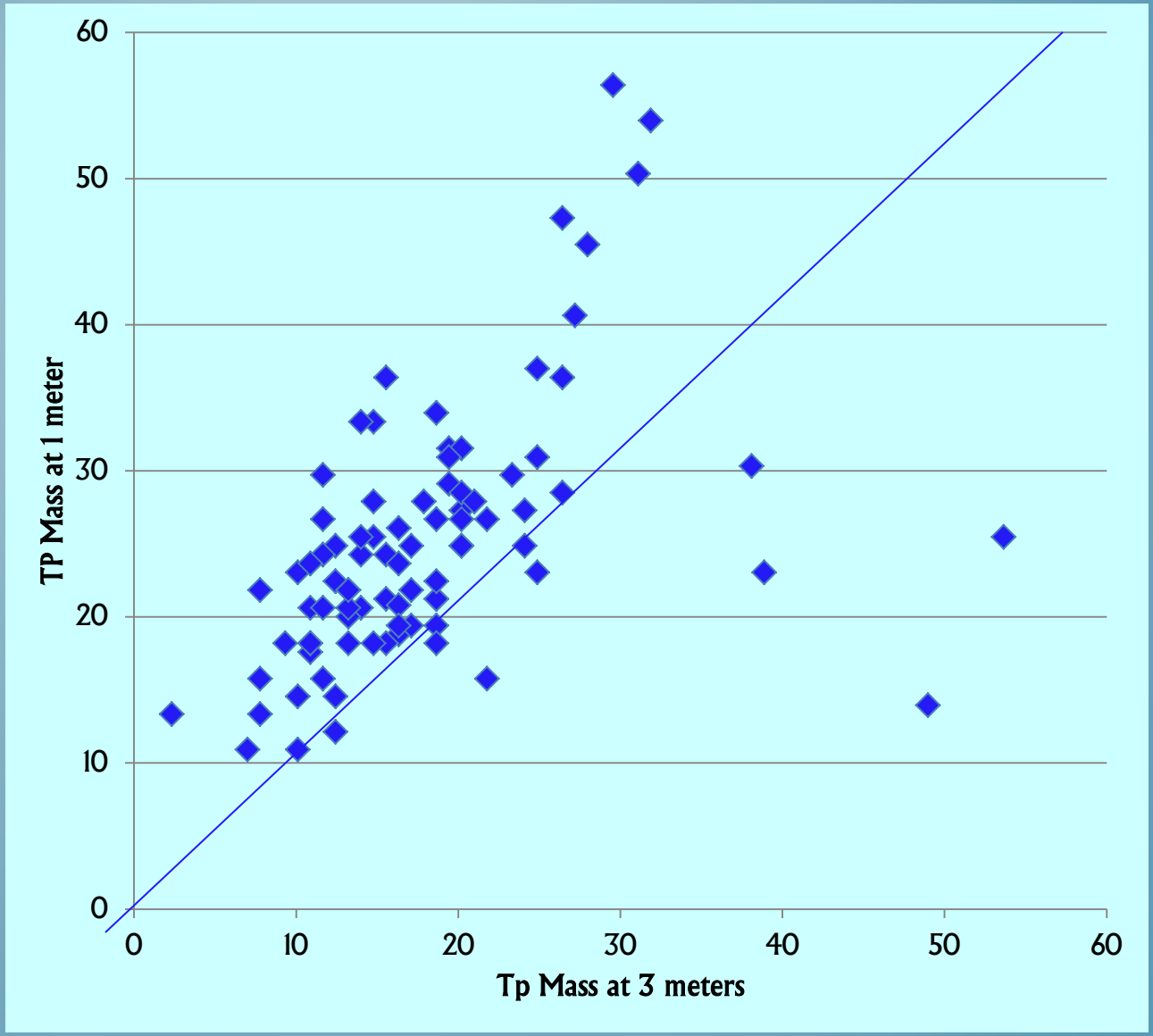
TP IS ABOUT THE SAME AT 3 METERS AT THE TWO STATIONS



Phosphorus mass in Kg



STATION 1 TP MASS AT 1 METER VS 3 METERS



PHOSPHORUS AT 1 METER TENDS TO BE HIGHER AT STATION 2 THAN STATION 1

PHOSPHORUS TENDS TO BE SIMILAR BETWEEN BOTH STATIONS AT 3 METERS

PHOSPHORUS MASS IS MOSTLY HIGHER AT 1 METER THAN 3 METERS BUT NOT ALWAYS

PHOSPHORUS MASS VARIES BETWEEN A LOW OF 10 KG AND A HIGH OF 56 KG (46 KG COMES AND GOES)

FLUSHING AND RETENTION

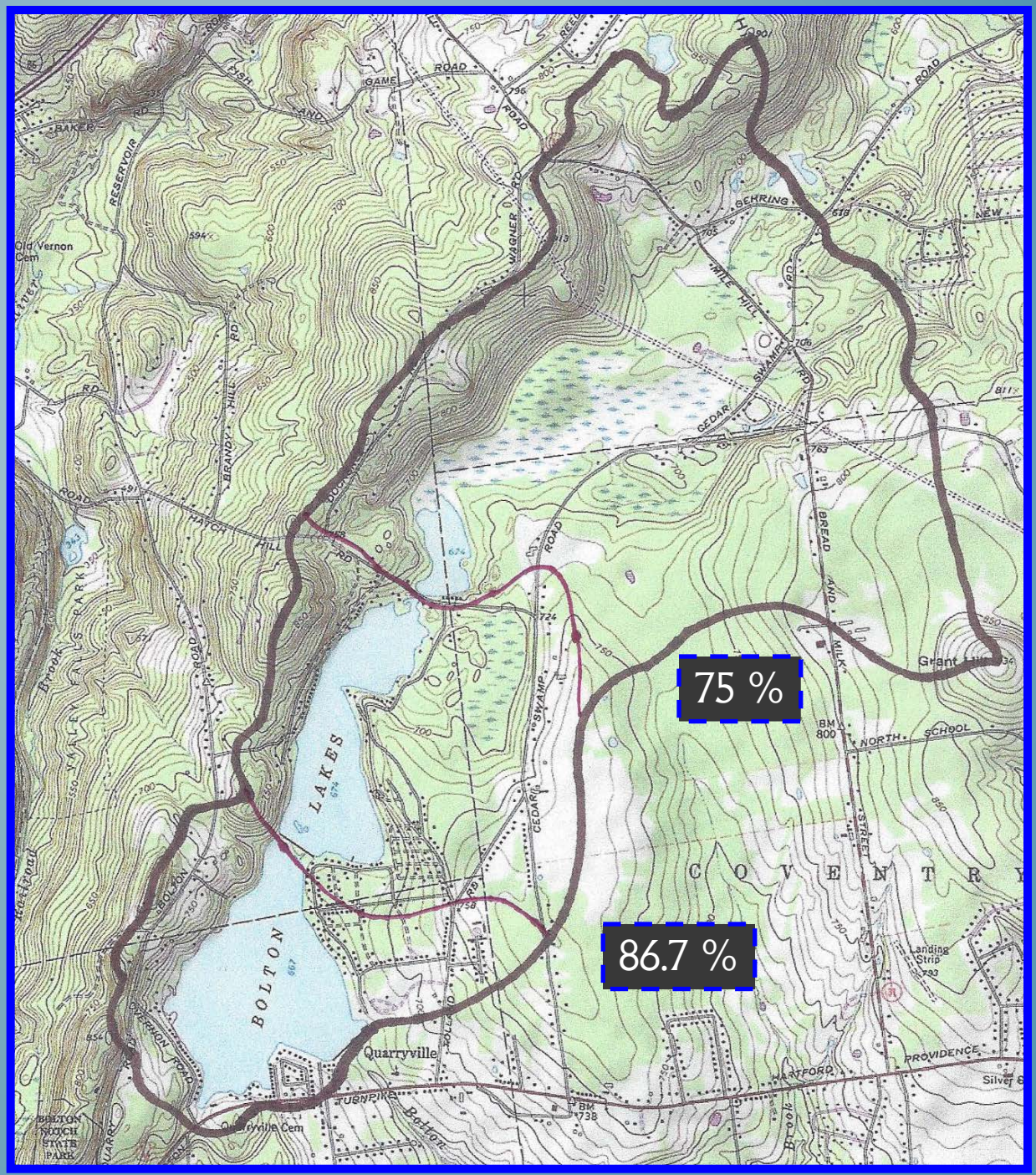
THESE ARE THEORETICAL VALUES BASED ON WATERSHED SIZE AND LAKE VOLUME

- Flushing is the volume of water that comes in vs the total volume of lake water, usually reported as the number of times a year the water is renewed.
- Lower Bolton Lake = 2.8 /year
- Retention is the inverse of flushing usually reported as the fraction of the volume that is flushed in a year.
- Lower Bolton Lake = 0.53 /year

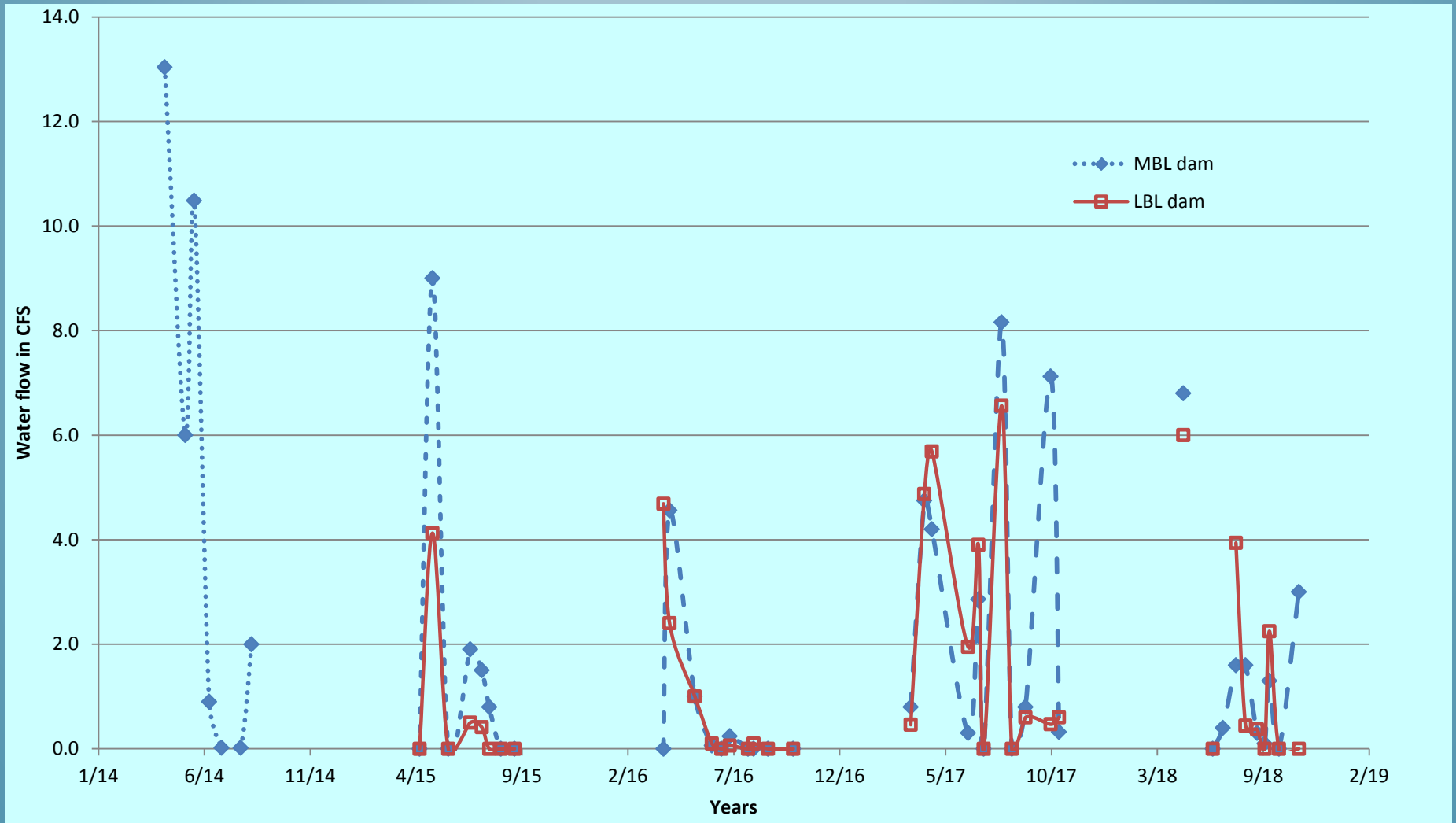
LOWER BOLTON LAKE WATERSHED

Watershed of Lower Bolton Lake is = 2,419 acres with a drainage area of 2,244 acres

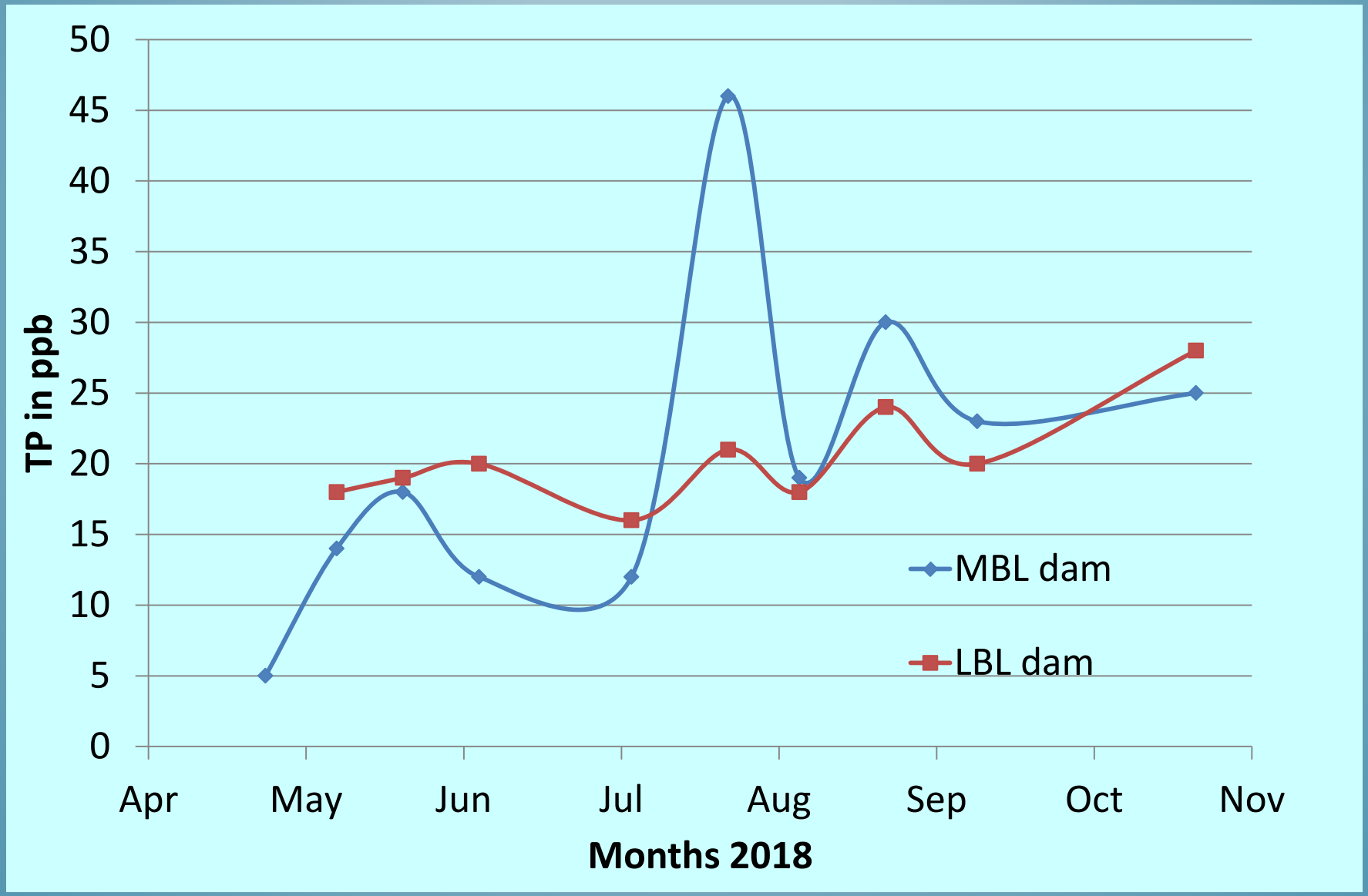
Subtracting the watershed of Middle Bolton Lake = 1,945 acres, leaves 299 acres of direct drainage around Lower Bolton Lake



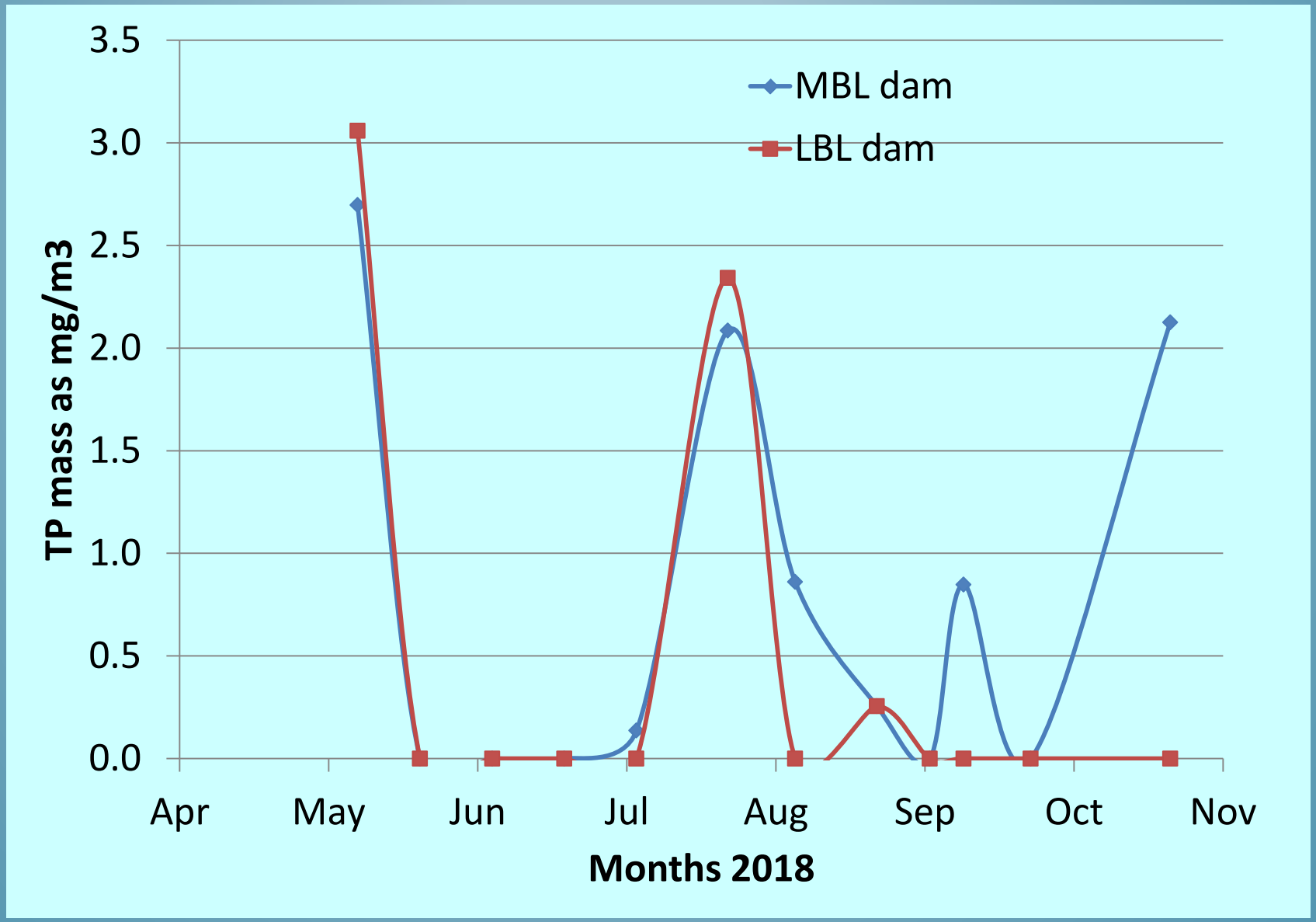
WATER FLOWS OVER THE MIDDLE AND LOWER BOLTON LAKE DAMS



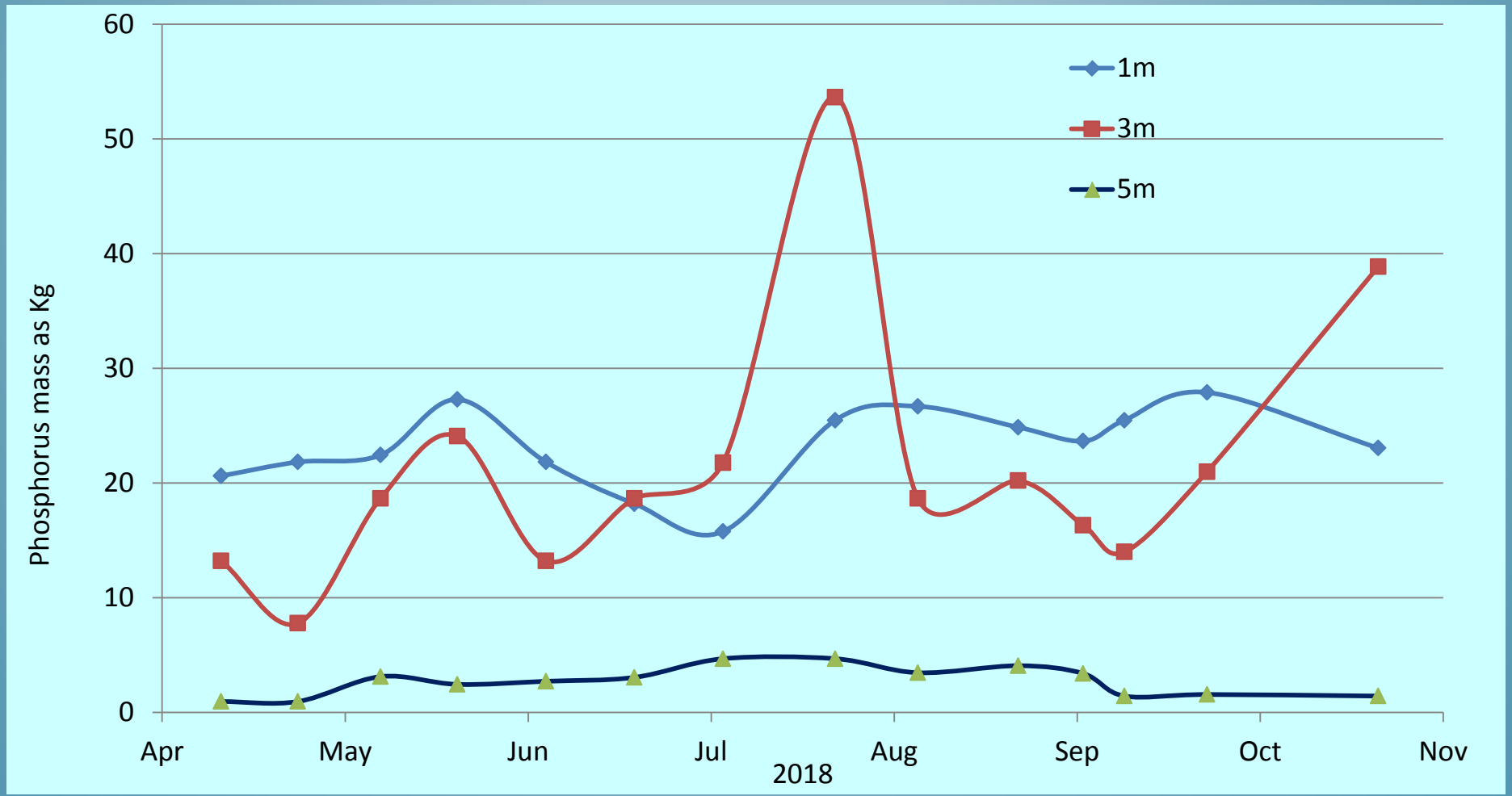
TP CONCENTRATIONS AT MBL AND LBL DAMS



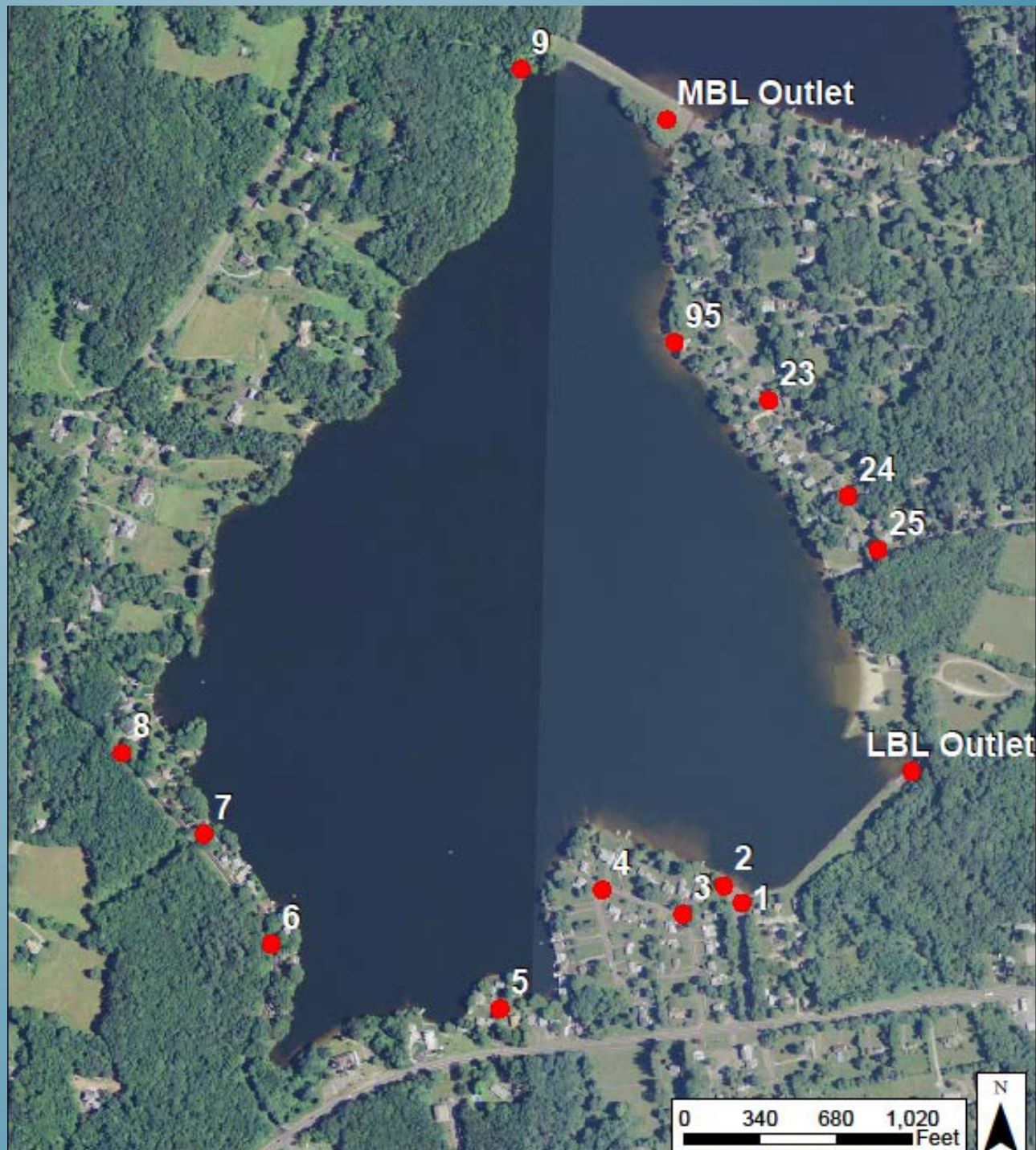
PHOSPHORUS MASS FLOW



TP MASS IN 2018



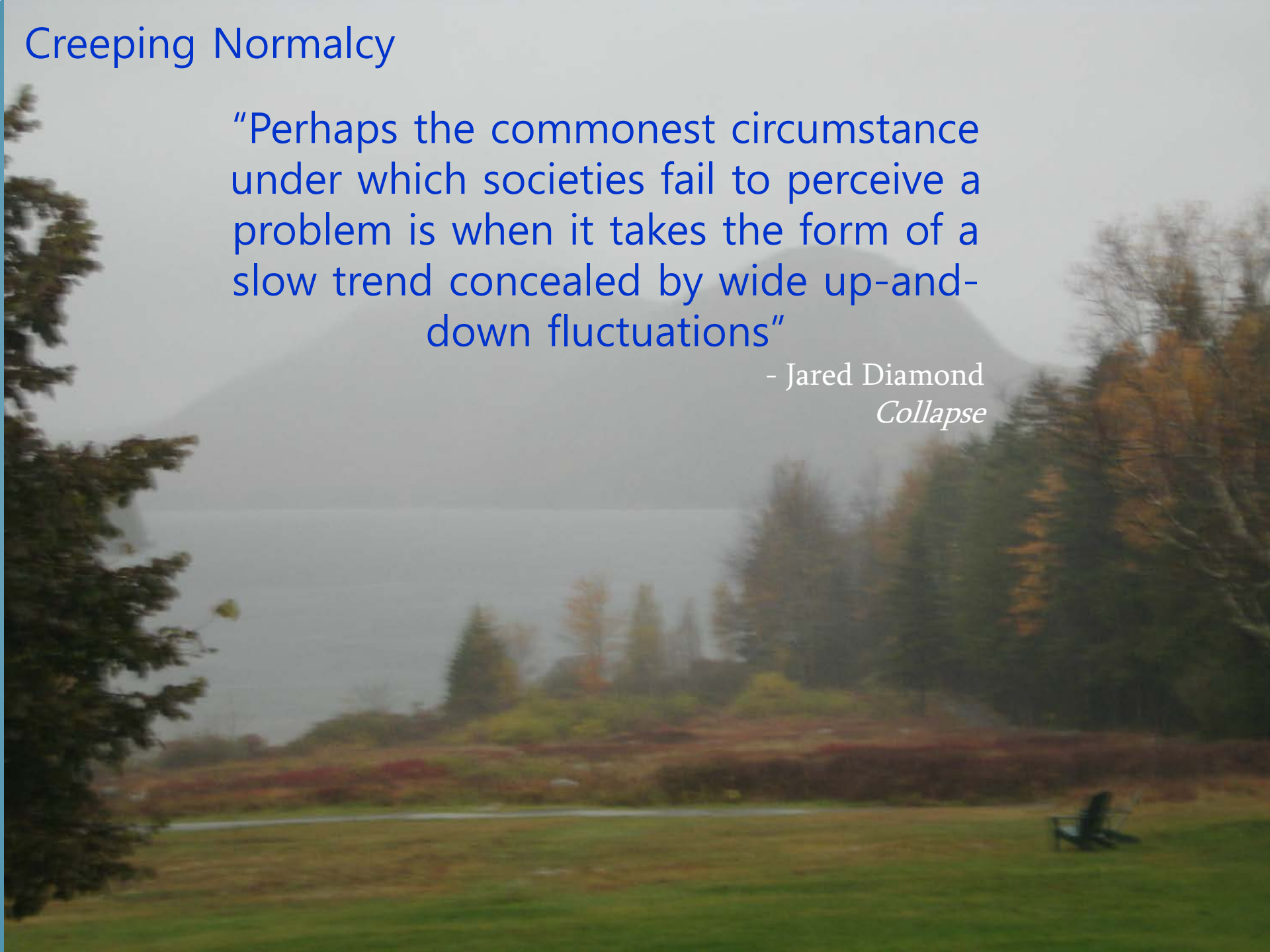
WATERSHED SAMPLING SITES



STORM WATER SAMPLES COLLECTED OVER FOUR YEARS 2015-2016

Station	TN	TP	#
1	1553	323	10
2	1602	182	3
3	1494	248	3
4	1817	74	4
5	1057	161	6
6	1961	200	3
7	547	25	7
8	869	103	8
9	886	213	10
23			0
24	4030	4200	1
25	489	87	1
95	1620	223	5

Creeping Normalcy



"Perhaps the commonest circumstance under which societies fail to perceive a problem is when it takes the form of a slow trend concealed by wide up-and-down fluctuations"

- Jared Diamond
Collapse