

BLACK STURGEON WATER QUALITY MONITORING - 2009 to 2015

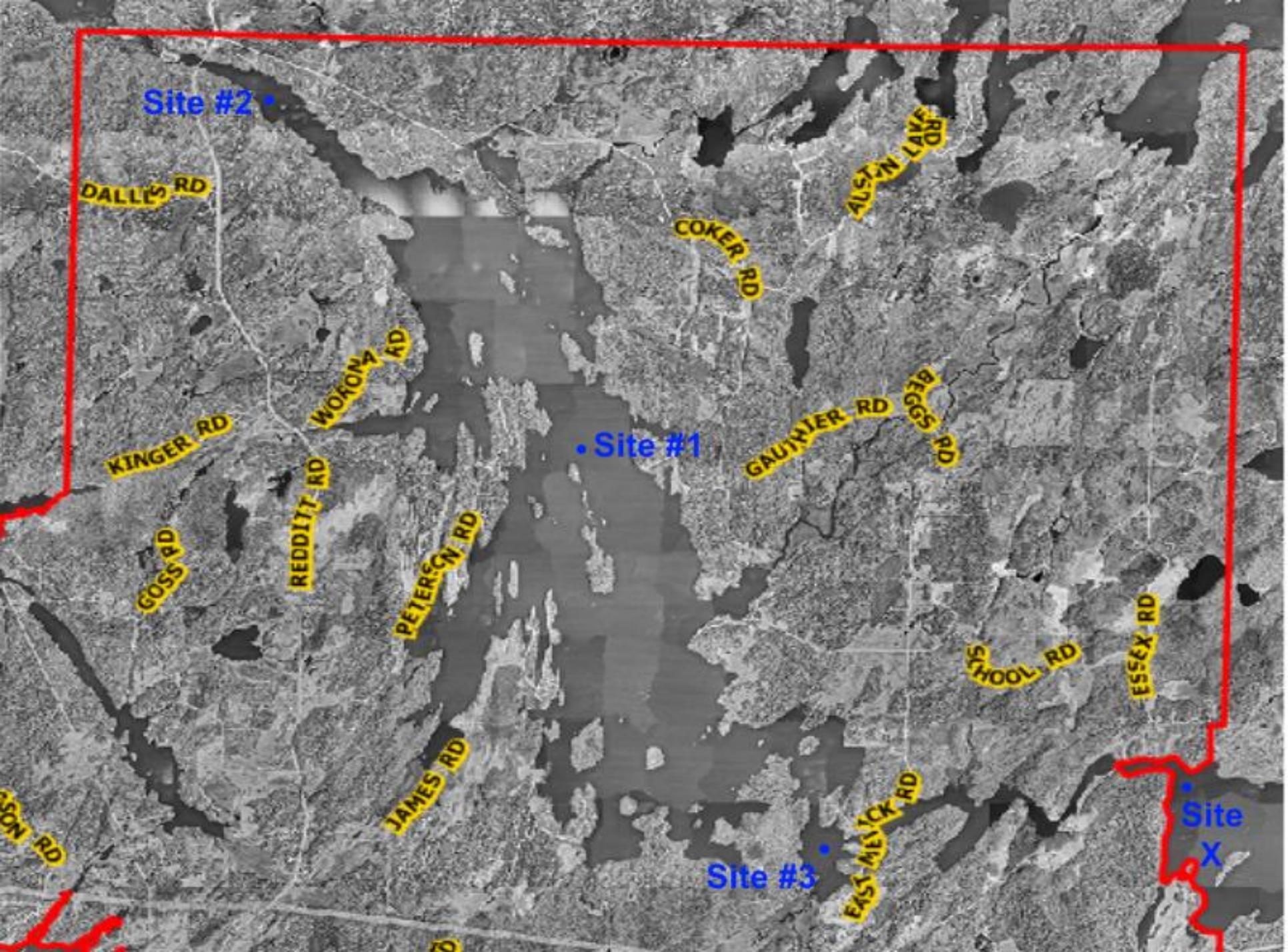
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Google

Summary of 2015 Results

- * Lower Black Sturgeon Lake results within provincial water quality objectives for all parameters





Site #2

DALL'S RD

ALSTON LAKE RD

COKER RD

WORONA RD

Site #1

GAUTHIER RD
BEGGS RD

KINGER RD

GROSS RD

REDDITT RD

PETERSON RD

SCHOOL RD

ESSEX RD

JAMES RD

Site #3

EAST MEYER RD

Site X

Why monitor water quality?

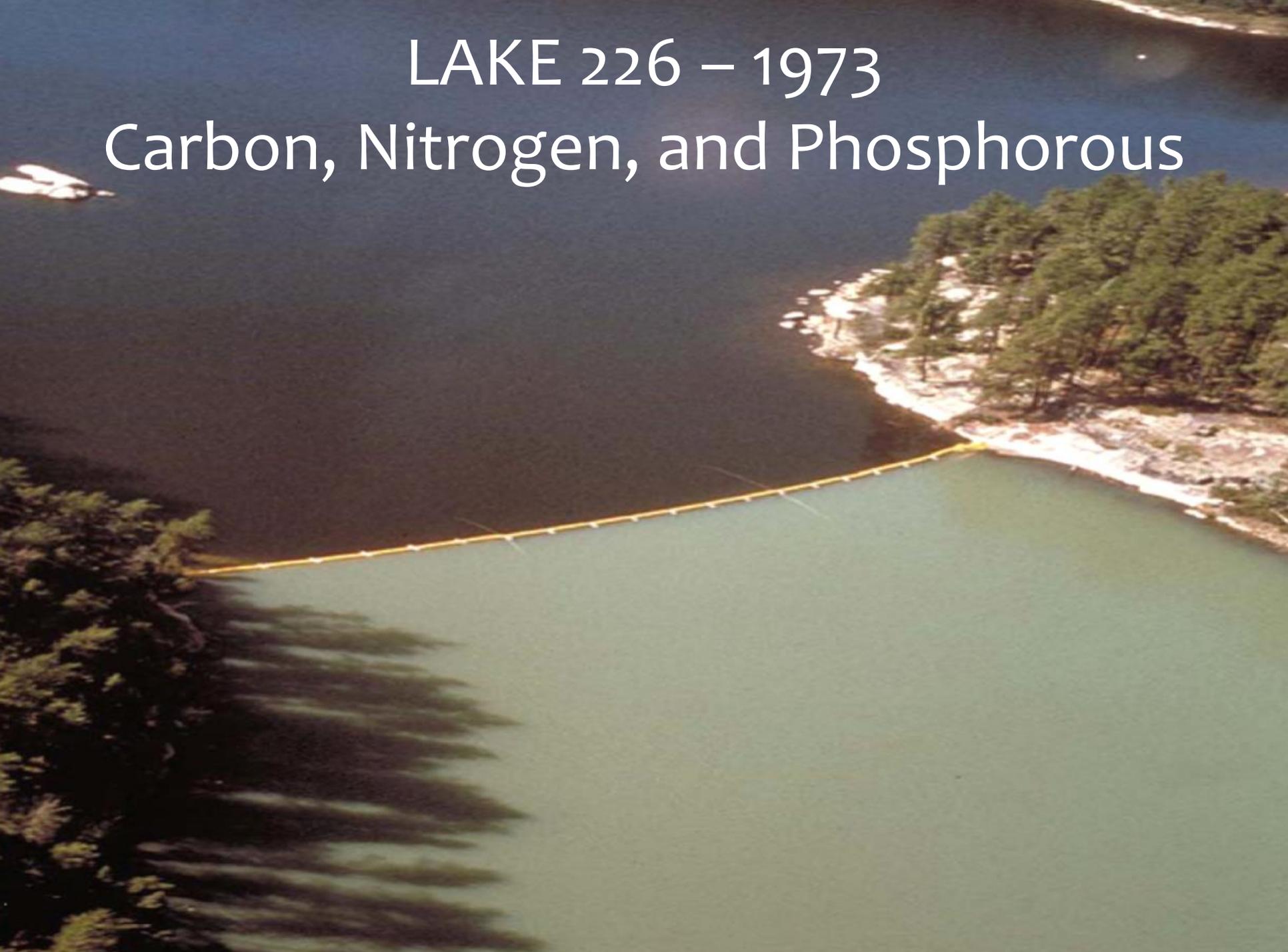
- * All Canadian Shield lakes are getting more eutrophic (shallower, more productive) over time. This is a natural process.
- * However, we want to make sure that human impacts are not accelerating the process (cultural eutrophication).
- * Phosphorous and water clarity are two common parameters used to determine if cultural eutrophication is taking place.

Why Phosphorous?

An aerial photograph of a body of water heavily infested with green algae. The water is a vibrant, almost neon green color, with numerous small, white, foam-like patches scattered throughout, likely from wind or currents. The overall texture is very busy and organic.

LAKE 226 – 1973

Carbon, Nitrogen, and Phosphorous



Methodology - Phosphorous

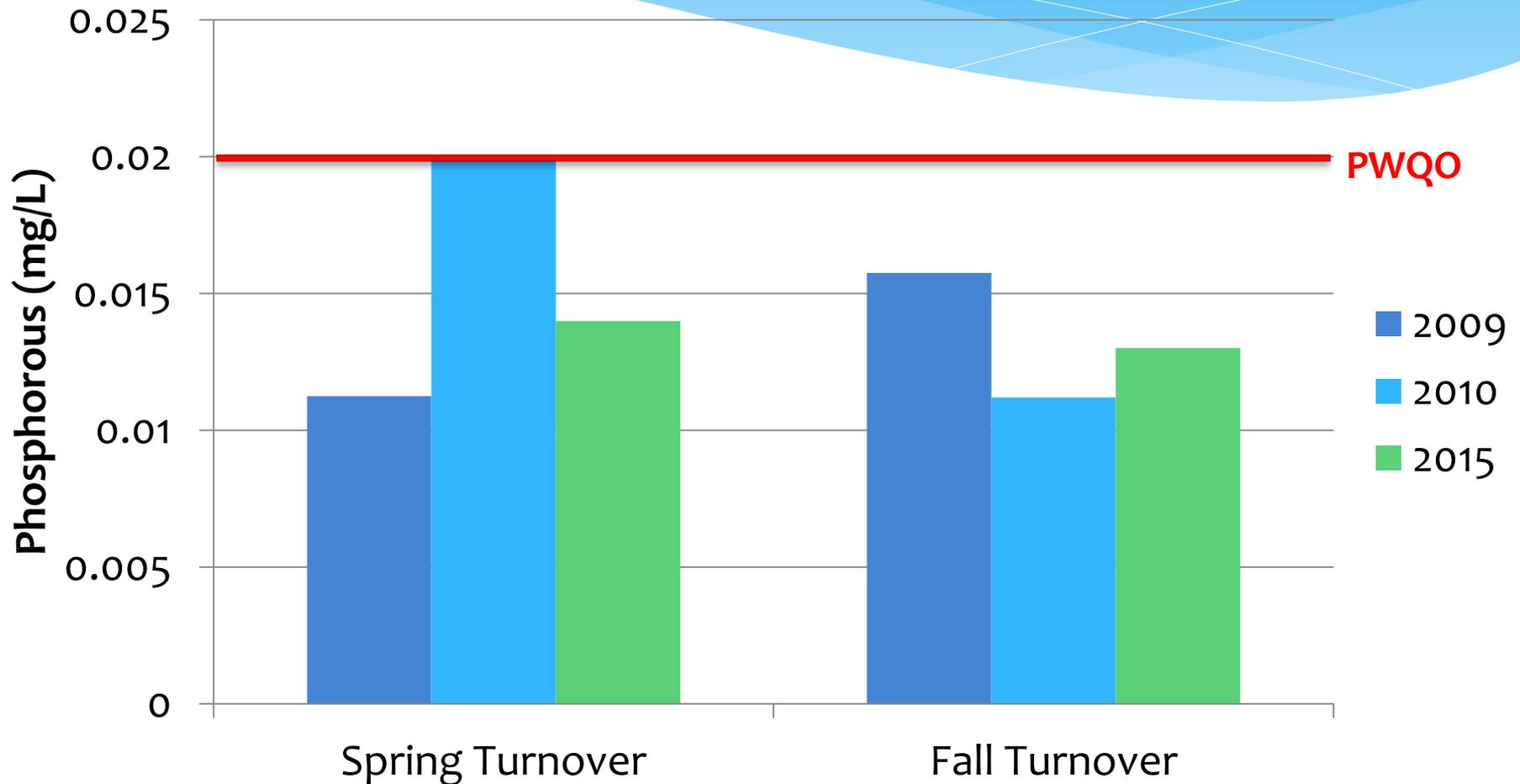


- 10 Sampling Sessions



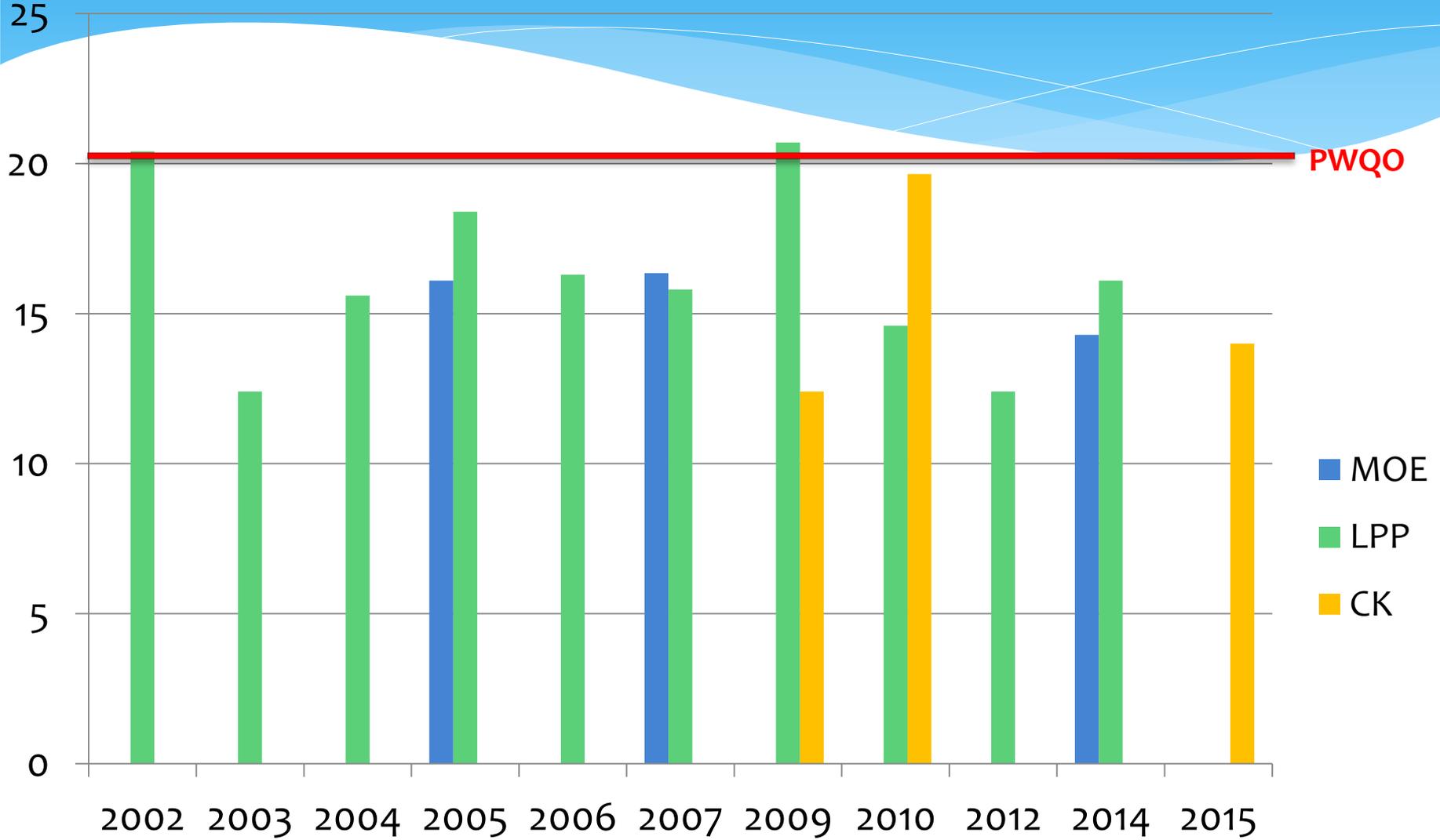
- Samples sent to laboratory in Winnipeg for analysis

Results – Site 2 Phosphorous Turnover Concentrations



Phosphorous Concentrations - 2002 to 2015

MOE, Lake Partner Program, City of Kenora



Discussion - Phosphorous

- * Phosphorous concentrations in 2015 were in between those found during the 2009 and 2010 seasons, potentially due to “average” summer (2009 was relatively dry and cool, 2010 was warm and wet).

Why Secchi Depth?

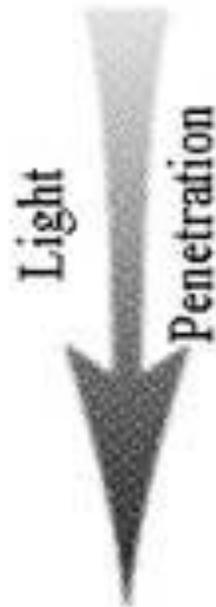
- * Measure of water clarity and light penetration
- * Related to algal growth
- * Previous data from Lake Partner Program



Methodology - Secchi Depth

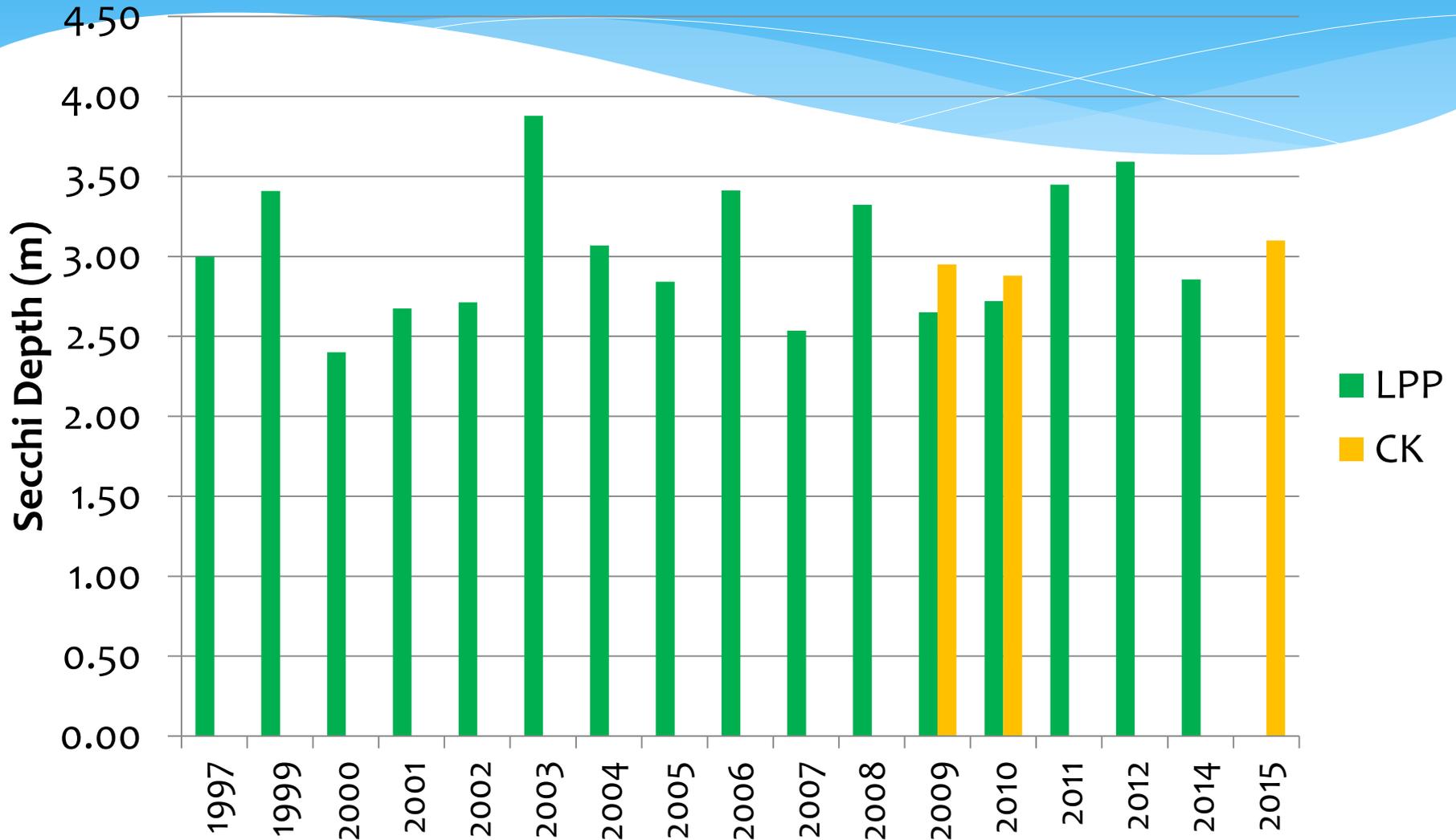


Clear lake having a small algal population results in a deep SDT reading, high clarity



Turbid lake having large algal population results in shallow SDT reading, low clarity

Results – Lower Black Sturgeon Secchi Depths



Discussion – Secchi Depth

- * Average Secchi depth at Site 2 in 2015 was similar to that found in 2009 and 2010, indicating no significant change (slightly improved) in water clarity over this time period
- * Average Secchi depths found at Site 2 during study years (2009, 2010, and 2015) are all within the range of values found during the 1997 to 2014 Lake Partner Program published results

Additional Data Collected

- * Phosphorous and Secchi Depth data was collected at all three sites (Site 2, Site 3, Site X) during each of the 10 sampling sessions
- * 54 parameters measured as part of spring turnover Water Quality Characteristics laboratory analysis – With no significant changes when compared to 2010 results and all within PWQO where provided
- * DO/Temperature profiles collected for all sites and sampling sessions (including at Site 1 in mid-summer)

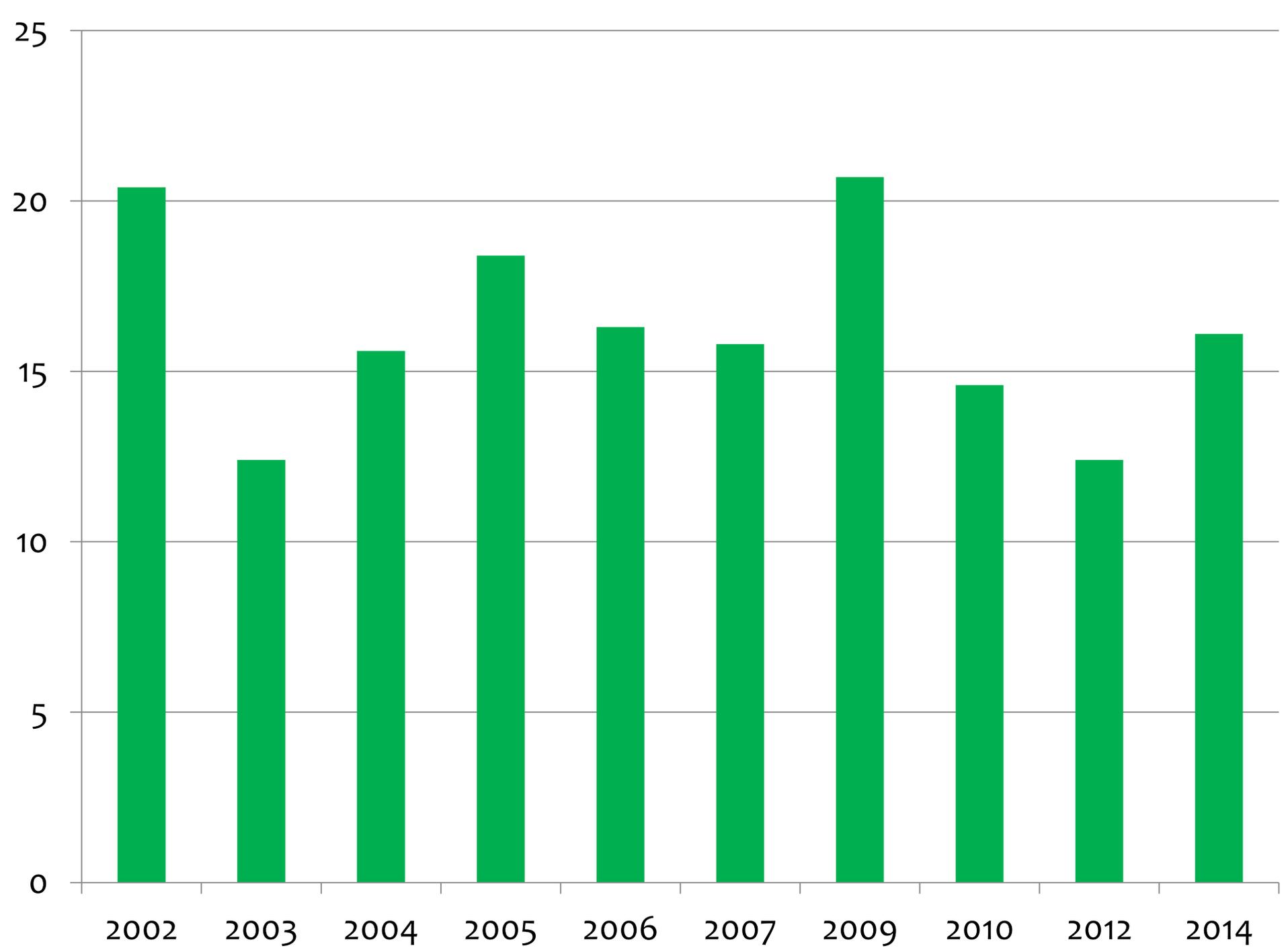
Invasive Species – Zebra Mussels

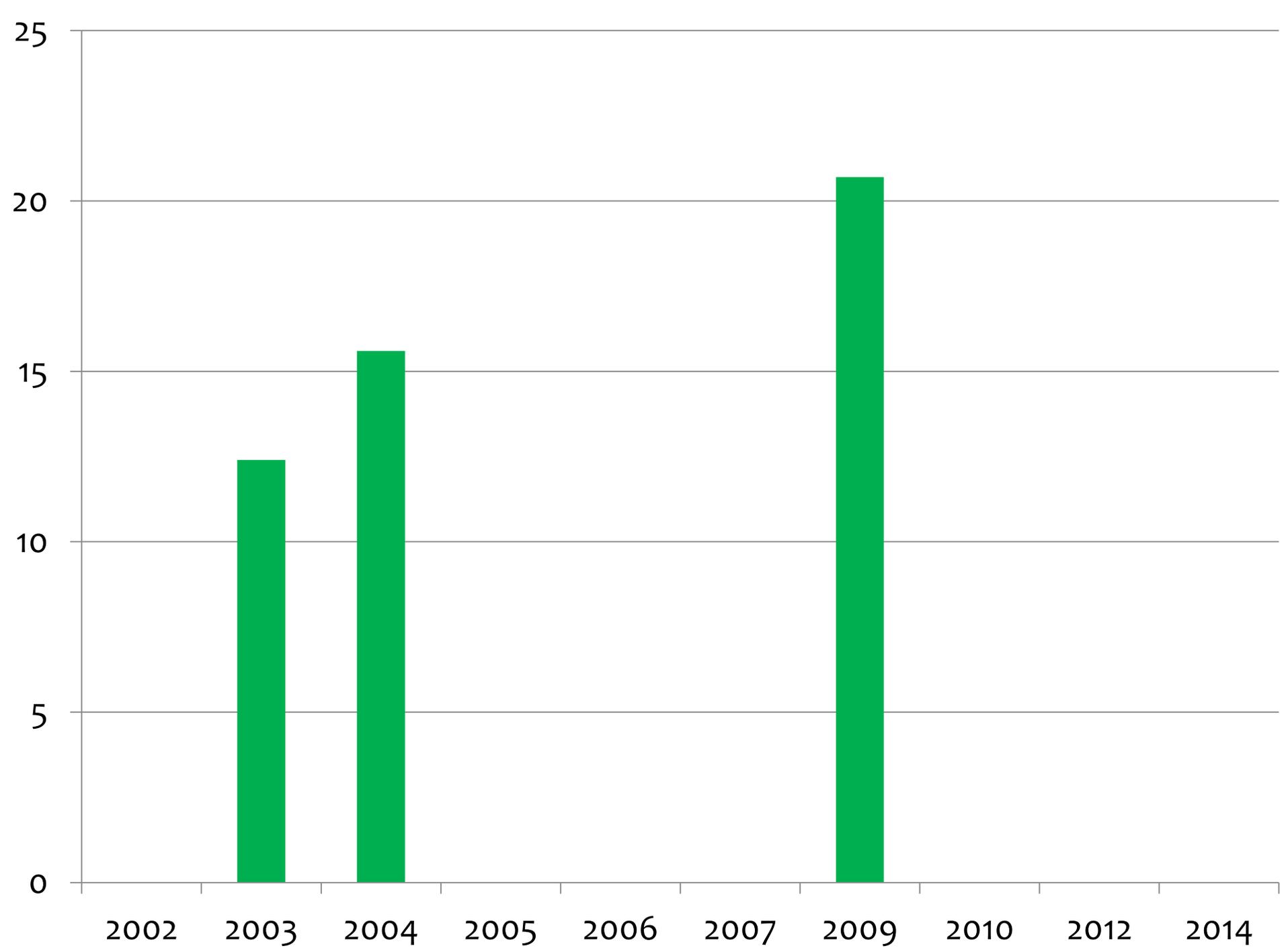


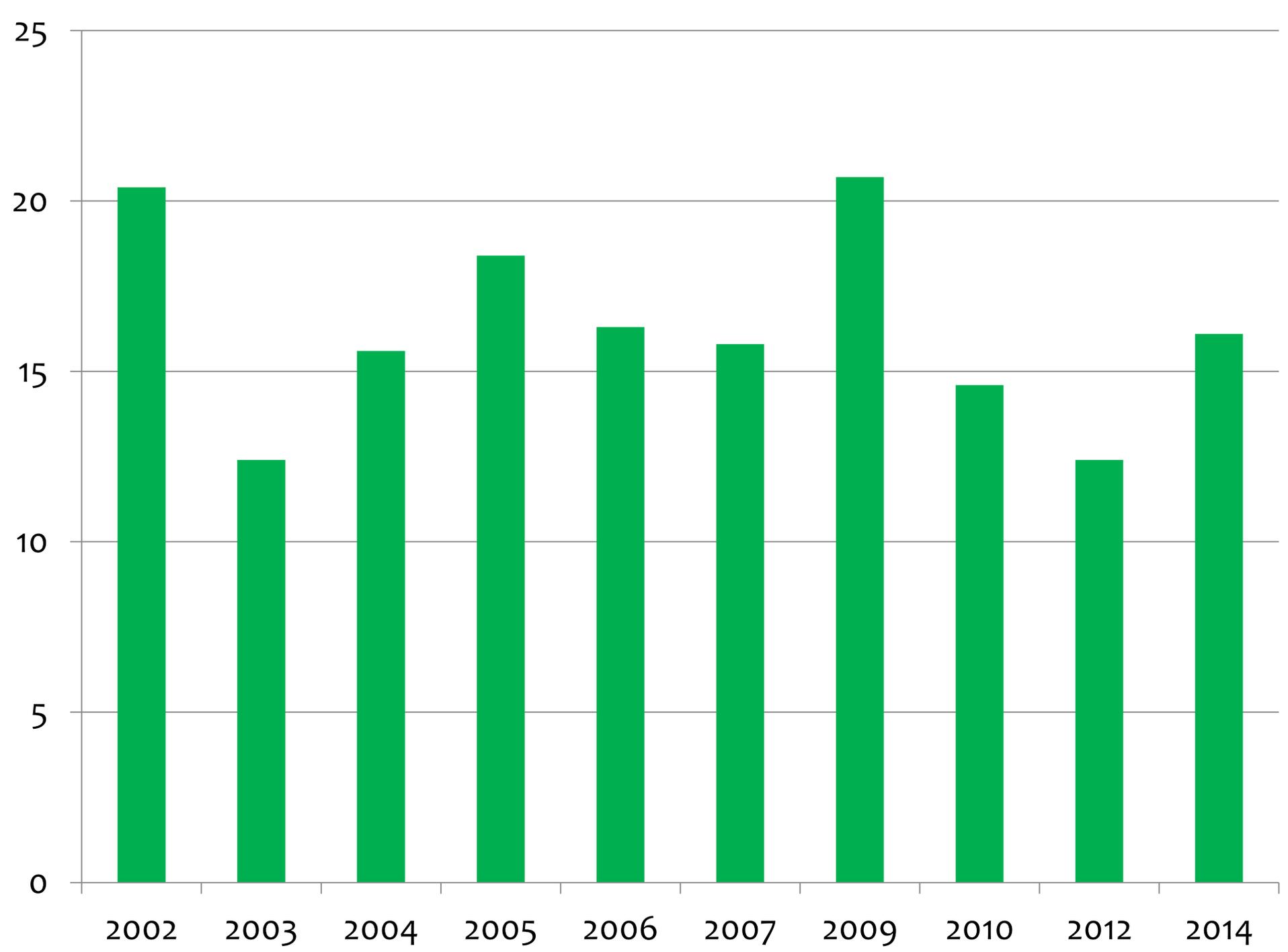
- * Calcium levels need to be at least 8.5 mg/L to support zebra mussels
- * Study results indicate that Calcium concentrations in Black Sturgeon Lakes are less than 6 mg/L
- * There is the potential that zebra mussels may not be able to survive in Black Sturgeon Lakes

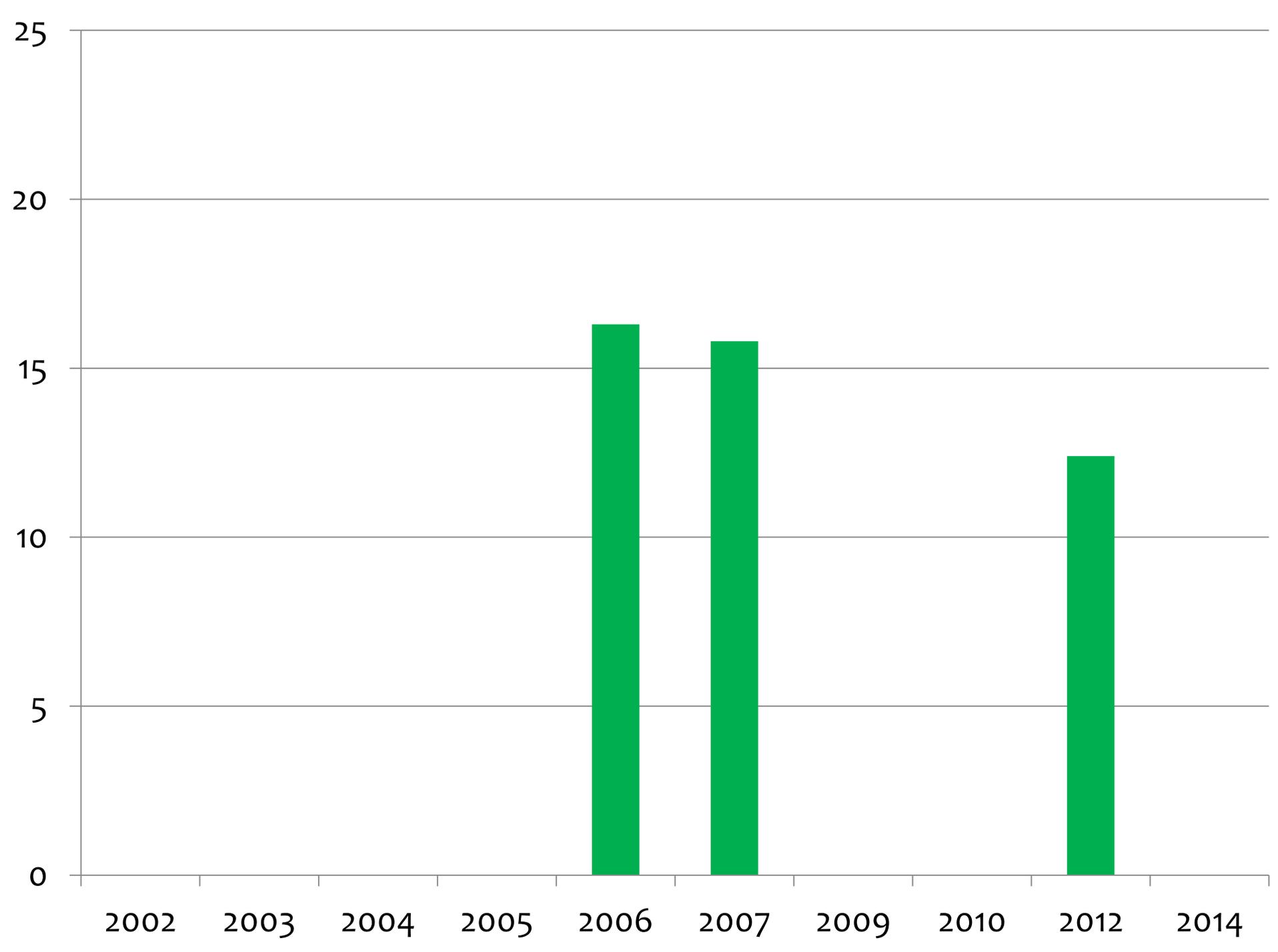
Recommendations – Annual Sampling

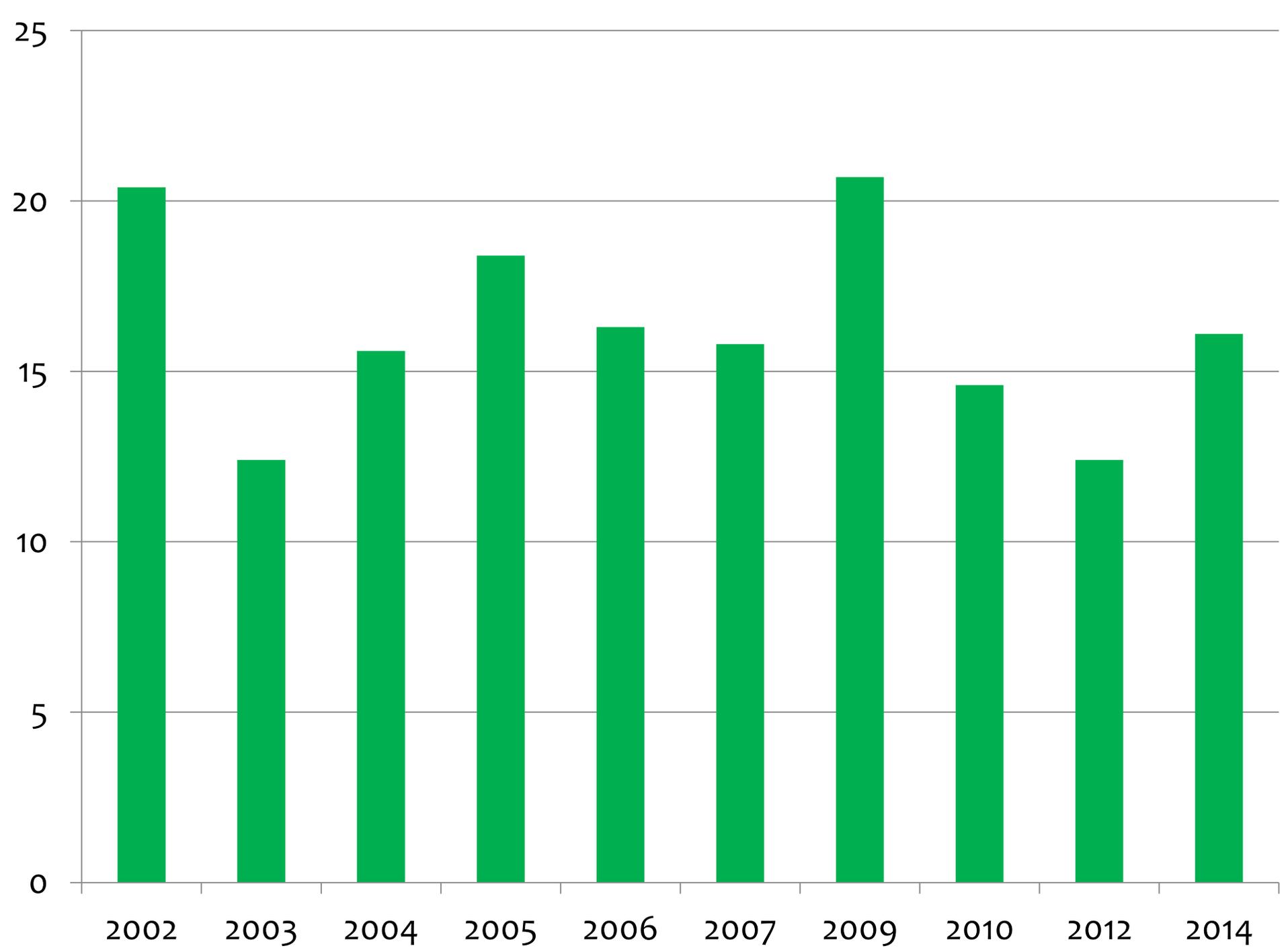
- * With sampling every five-years, there is the potential that yearly fluctuations will be mistaken for trends over time
- * This could result in both “False Positives” and “False Negatives”





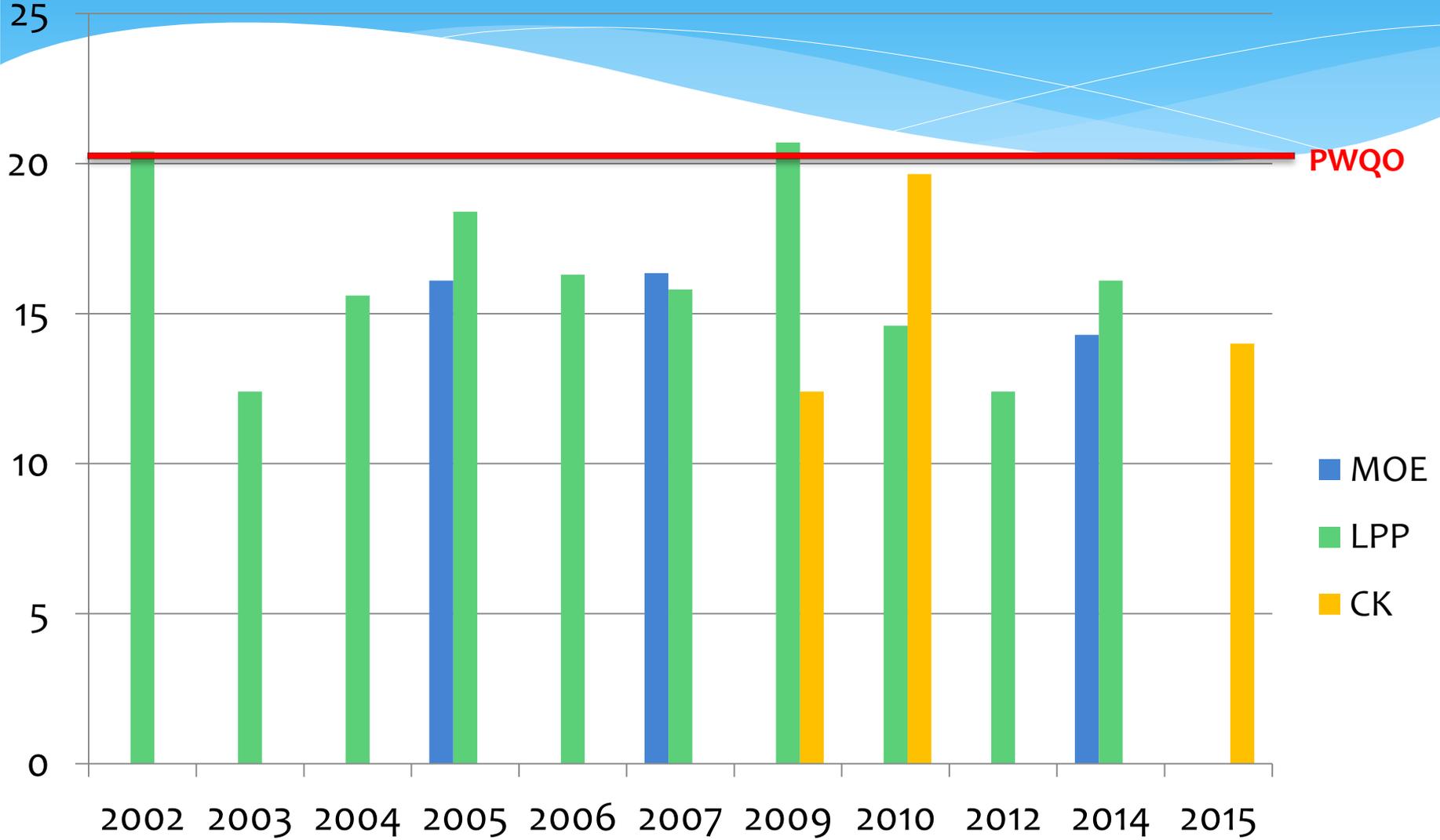






Phosphorous Concentrations - 2002 to 2015

MOE, Lake Partner Program, City of Kenora



Recommendations – Annual Sampling

- * It is felt that there is the potential to establish an annual sampling protocol for approximately the same total cost as the current five-year sampling regimen
- * This would help to ensure that trends over time are being monitored and minimize the potential for both “False Positives” and “False Negatives”