2025 Secchi Day on Beaver Lake - Water Quality Results

For the 20th annual Secchi Day, a record high 38 teams covered 35 sample sites in duplicate throughout Beaver Lake. Sampling teams take Secchi disk readings to determine water clarity and collect water samples which are tested for Chlorophyll-*a*, Total Phosphorus, and Total Nitrogen to determine algal density and nutrient concentration. Secchi depth is inversely related to Chlorophyll-*a* concentration. Therefore, as Chlorophyll-*a* decreases, Secchi depth increases. When it comes to producing drinking water, greater Secchi depths and lesser Chlorophyll-*a* concentrations are best. Below is a results summary.

- Secchi Depth: The maximum depth at which a Secchi disk can be viewed from the surface of the water (Figures 1 and 3 below).
  - Across all sites, the whole-lake average Secchi depth for Beaver Lake was 2.57 meters (8.4 feet), slightly lesser than the 20-year Long Term Average (LTA) of 2.7 meters (8.86 ft).
  - The minimum depth was 0.94 meters (3.1 ft) near White River and Richland Creek confluence.
  - The maximum depth was 5.15 meters (16.9 ft) near Beaver Dam.

- Chlorophyll-*a* (Chl-*a*): A pigment in algae that is used to measure the density of the algal population of a lake. Chl-a is presented in µg/L (micrograms per liter), AKA parts per billion (Figures 2 and 4).
  - Across all sites, the whole-lake average Chl-*a* concentration for Beaver Lake was a record low 4.81 µg/L, much lesser than the 20-year LTA of 7.46 µg/L.
  - Minimum Chl-*a* concentration was 0.96 µg/L near the Beaver Lake Sail Club.
  - Maximum Chl-*a* concentration was 13.42 µg/L in Blue springs cove.

- Total Phosphorus (TP): A nutrient that promotes algal growth. Phosphates come from a variety of sources including agricultural and urban runoff, sewage treatment plant effluent, and faulty septic systems. TP is presented in mg/L (milligrams per liter), AKA parts per million.
  - Across all sites, the whole-lake average TP concentration for Beaver Lake was 0.022 mg/L, slightly greater than the 20-year LTA of 0.017 mg/L.
  - Minimum TP concentration was 0.002 mg/L in Indian Creek cove.
  - Maximum TP concentration was 0.153 mg/L in War Eagle Creek.

- Total Nitrogen (TN): A nutrient that promotes algal growth. Nitrogen also comes from a variety of sources including fertilizer runoff, faulty septic systems, municipal wastewater and animal wastes, erosion of natural deposits, as well as atmospheric Nitrogen deposition in water. TN is presented in mg/L (milligrams per liter), or parts per million.
  - Across all sites, the whole-lake average TN concentration for Beaver Lake was 0.254 mg/L, slightly lesser than the LTA of 0.297 mg/L.
  - Minimum TN concentration was 0.203 mg/L in the Coose Hollow embayment.
  - Maximum TN concentration was 0.507 mg/L near the White River and Richland Creek confluence.

- Secchi Depth and Chlorophyll-a are inversely related. From the Highway 412 Bridge to the Beaver Dam, Chlorophyll-a decreases while Secchi Depth increases with greater water clarity (Figure 5).

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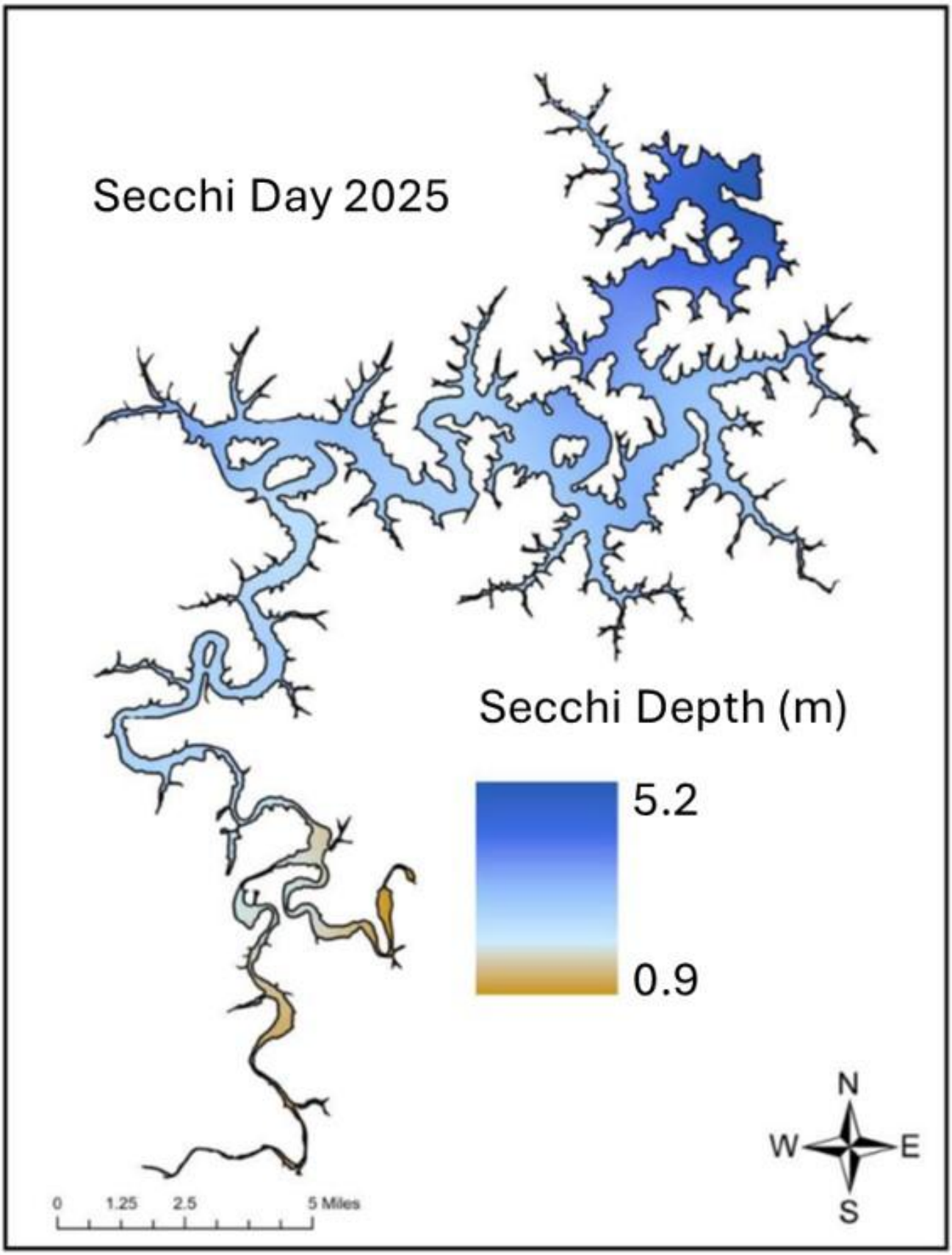

Figure 1: Secchi Depths ranged from 0.94 meters to 5.15 meters.

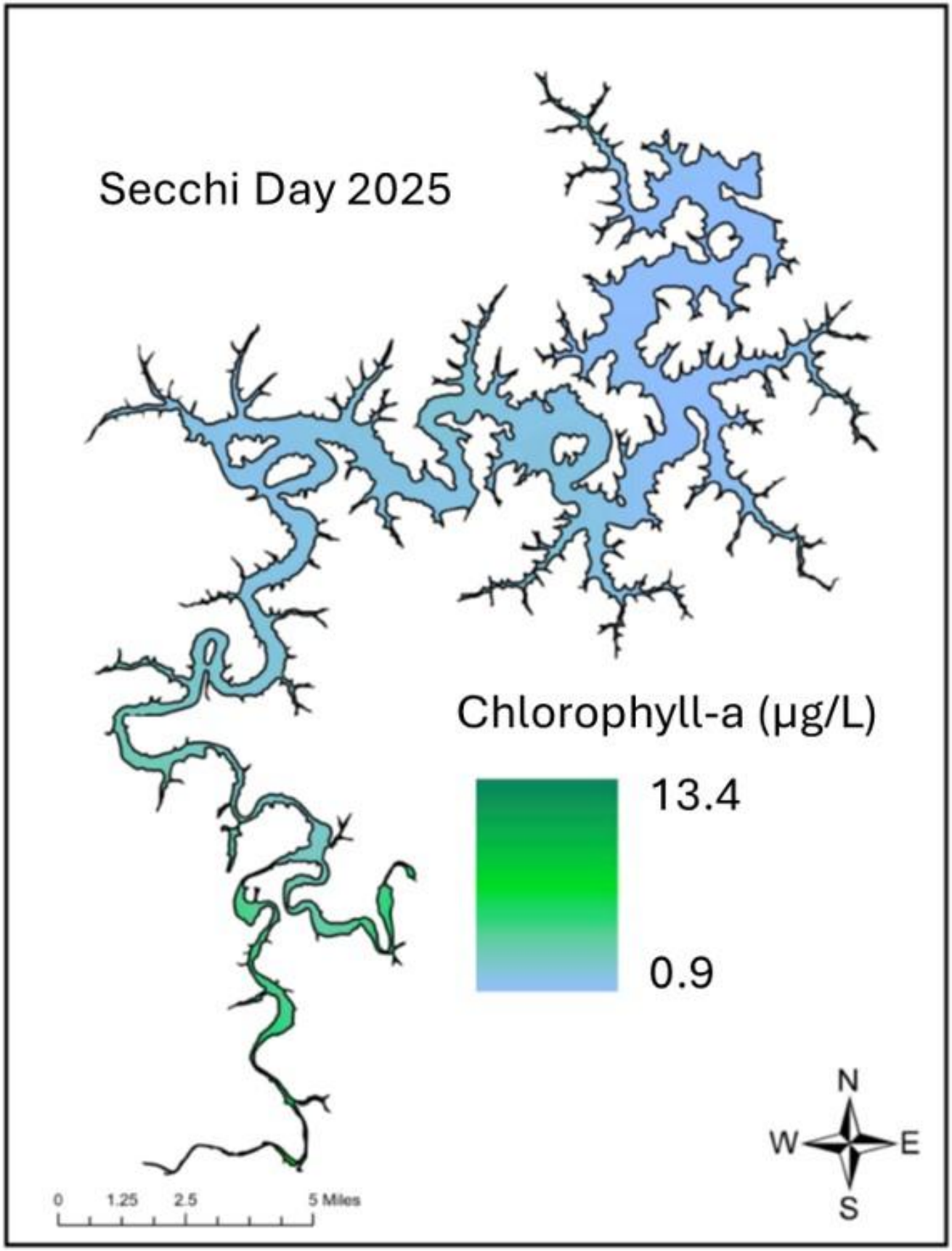

Figure 2: Chlorophyll-a concentrations ranged from 0.96 µg/l to 13.42 µg/L.

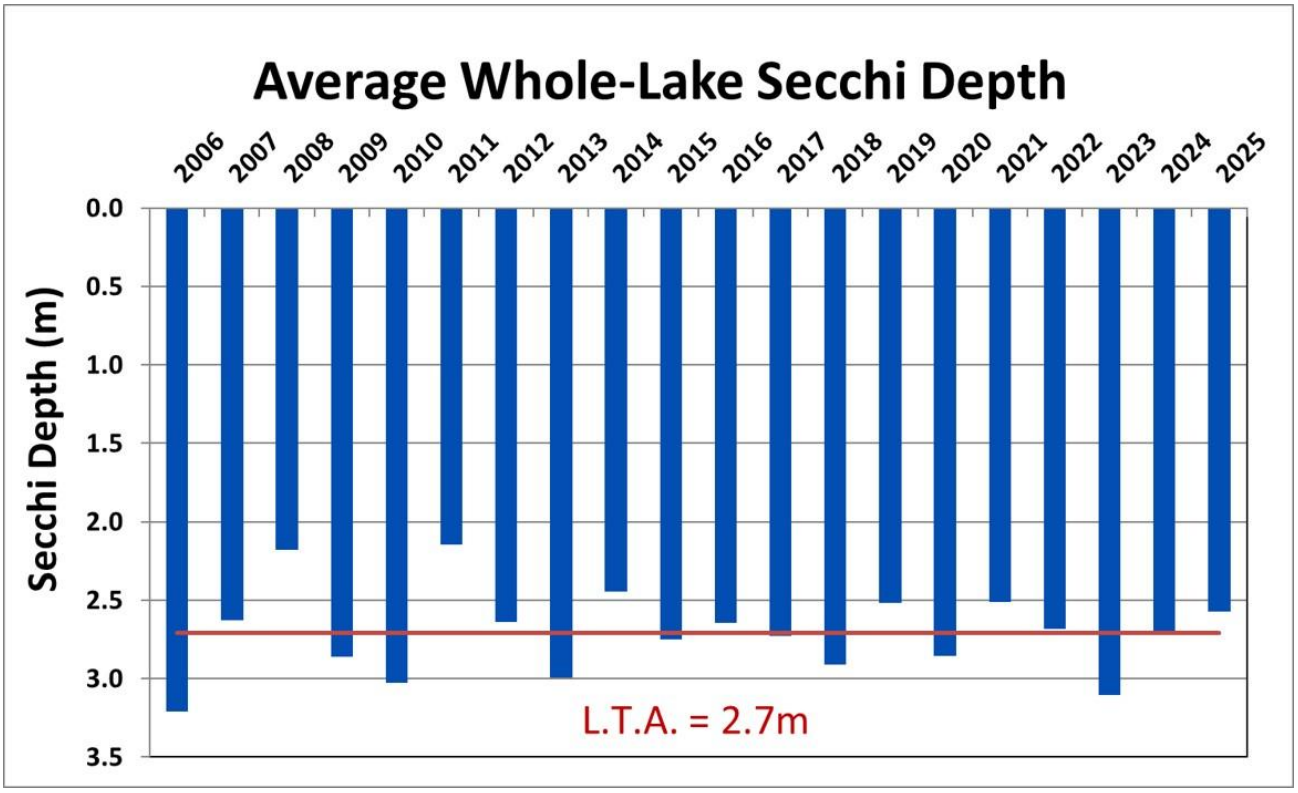

Figure 3: Whole-Lake Secchi Depth average by year. The red line indicates the 20-year LTA of 2.71 m.

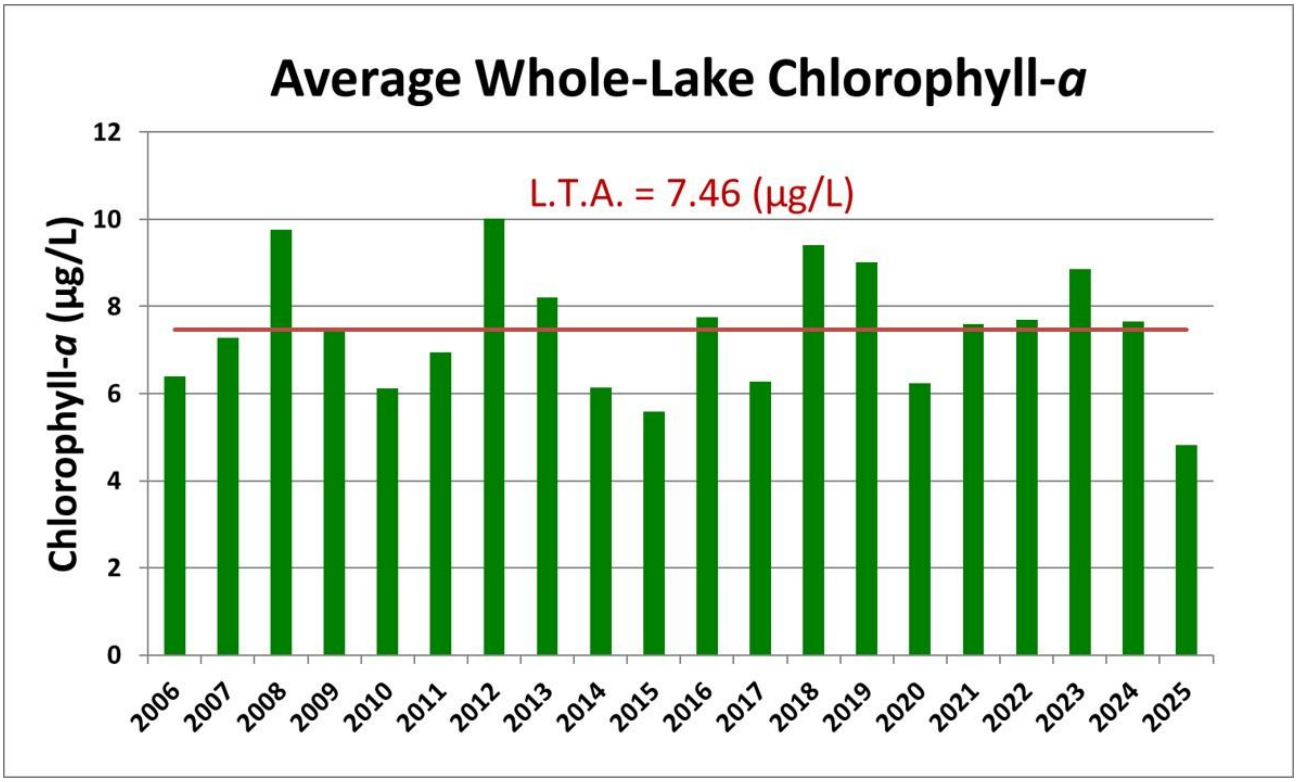

Figure 4: Whole-Lake Chlorophyll-a average by year. The red line indicates the 20-year LTA of 7.46 µg/L.

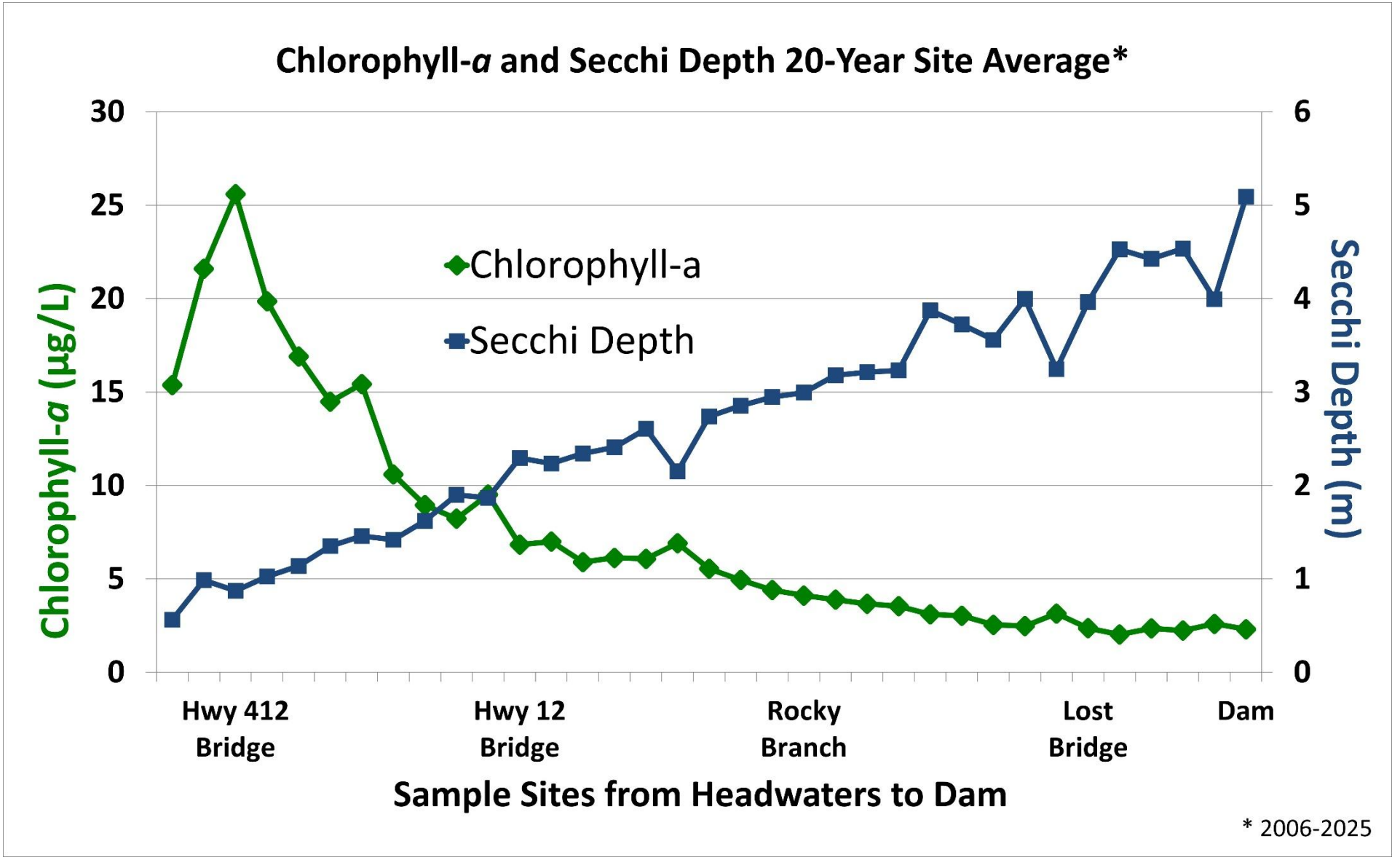

Figure 5: 20-year inverse relationship between Secchi depth and Chlorophyll-a concentration.