

TAHOE:
STATE
OF THE
LAKE
REPORT
2010

CLARITY

CLARITY

Annual average Secchi depth

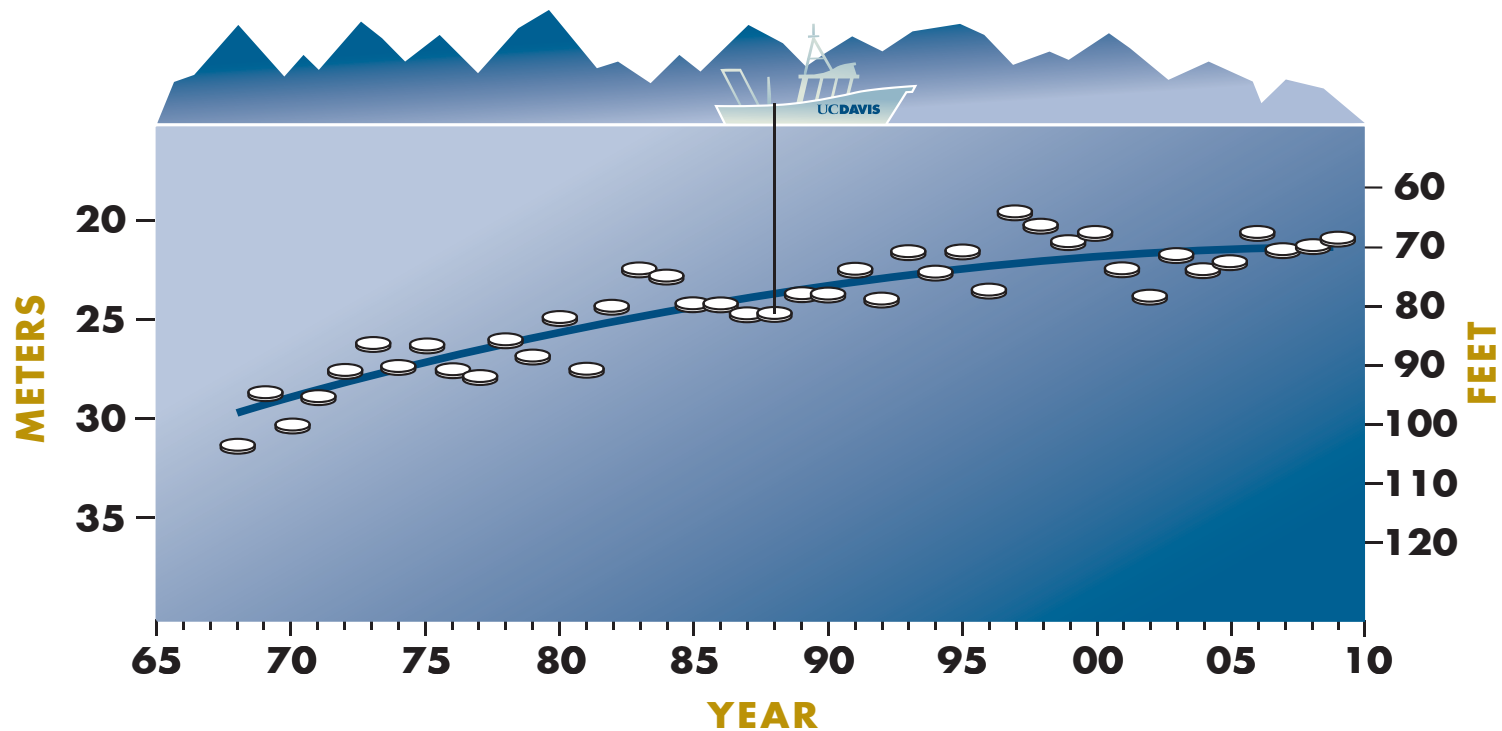
Yearly since 1968

Secchi depth (the point below the lake surface at which a 10-inch white disk disappears from view) is the longest continuous measurement of Lake Tahoe clarity. The annual Secchi depth is the average of 20 to 25 readings made throughout the year. While lake clarity has improved

for brief periods since 1968, the overall long-term trend has shown a significant decline. In the last nine years, Secchi depth measurements have been better than predicted by the long-term linear trend. Statistical analysis suggests that the decline in Lake Tahoe's clarity has slowed,

and is now better represented by the curve below than a straight line. In 2009, the Secchi depth was 68.1 feet, a decline of 1.5 feet from the previous year. This can in part be explained by the increase in precipitation in 2009, up approximately 40 percent from the previous two years.

DECLINE OF WATER CLARITY AT LAKE TAHOE



CLARITY

Secchi depth measurements

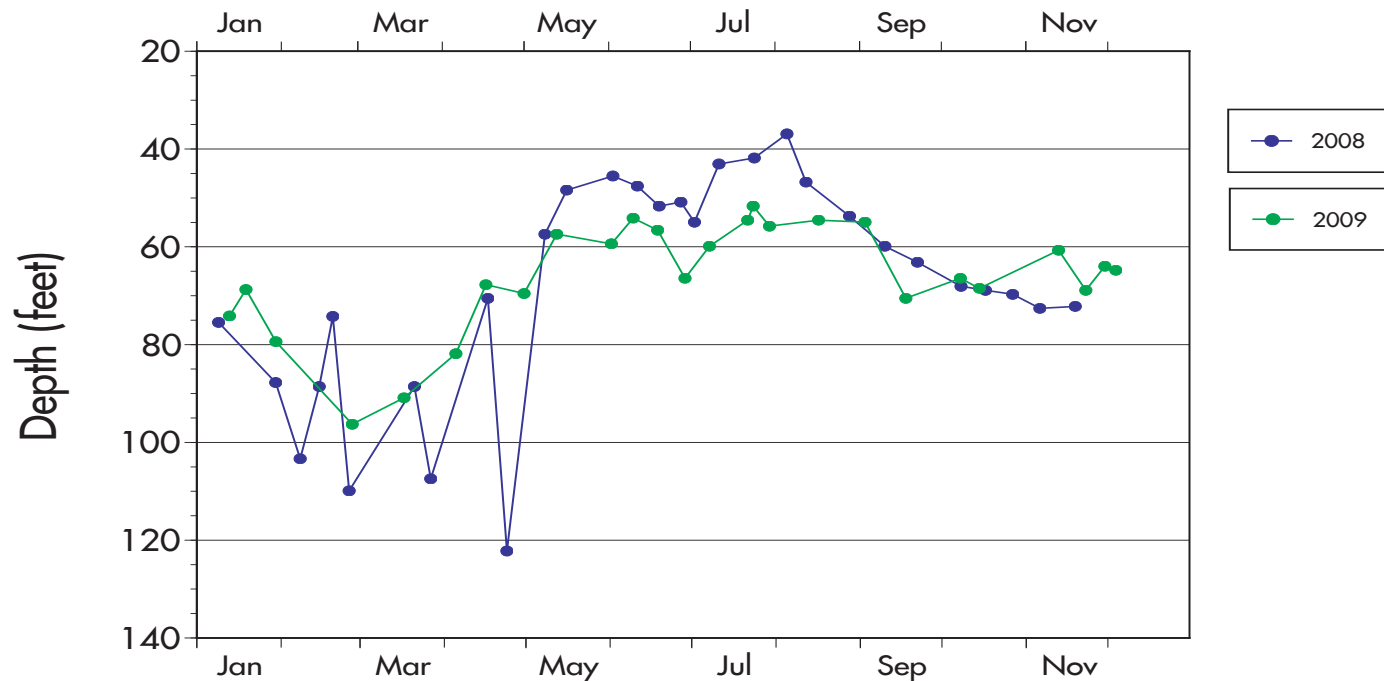
2008 and 2009

Secchi depth has a strong seasonal feature which was clearly expressed in 2009. The deepest Secchi depth readings (the clearest water) typically occur in winter and last year was no exception. In 2009, the deepest reading was 96.3 feet on February

27th, while the lowest (51.7 feet) was measured on July 24th. Comparing the 2008 and 2009 Secchi depth data, it is evident that summer Secchi depths actually improved from 2008. The high winter clarity in 2008 was due to the numerous upwellings that caused

clear bottom water to be brought up to the surface (causing the spikey appearance). The annual average Secchi values (Fig. 11.1) represent the most robust indicator of the status and trend in Lake Tahoe clarity.

Secchi depth, Index Station



CLARITY

Penetration of photosynthetically active radiation

In 2009

Photosynthetically active radiation (PAR) is that part of solar radiation spectrum that is utilized in photosynthesis. The black line below shows the depth at which PAR is 1 percent of its level on the lake

surface, known as the euphotic depth. PAR penetration varies throughout the year, but is often deepest in the summer when the sun is highest in the sky. In 2009, the euphotic depth increased in February when the lake

was undergoing its deepest mixing and clear, deep water was brought to the surface (Fig. 8.9). The latter half of 2009 had similar PAR penetration to 2008. The data gap was due to instrument repairs and calibration.

