

How the Lake Interacts with its Watershed and Ecosystem

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Lake Tahoe's watershed is the natural drainage system that supplies the lake with water. From the high peaks and ridgelines all the way to the shore, rain and snowmelt flow in creeks or through the ground into the lake.

Water that is conveyed to a lake by an undisturbed watershed is usually quite pure, because the watershed's soils, plants and organisms act as a natural water purification system. In fact, in many undisturbed forests, more than 95 percent of rain and snowmelt percolates into the ground, where it is filtered on its way to the nearest stream.

The exceptional clarity of Lake Tahoe's water is a result of the relative absence of suspended sediment and free-floating, single-celled algae in the water. Very few plant nutrients are present in the water to feed algae. Given undisturbed conditions, the lake's water quality would be expected to change so slowly that the changes would be imperceptible over a human lifetime.

However, Lake Tahoe's water quality has deteriorated since settlers arrived in the mid-1800s. Its clarity has decreased by more than 33 percent since the 1960s. In 1968, scientists could routinely see objects lowered into the lake at depths of over 30 meters (100 feet). By the end of the twentieth century, they could see only about 20 meters (65 feet) into the lake's water (see graph).

Water quality deterioration has occurred primarily because we've disturbed the watershed by building roads and urban areas in the basin. The pavement, rooftops and other impervious (hard) surfaces we've created shed over 90 percent of all precipitation. Instead of being filtered by the soil, the water runs off the surface rapidly. Surface runoff typically concentrates in ditches and gullies, causing soil erosion. When these higher-than-natural flows reach streams, increased streambank erosion occurs.

The lake's natural biological cycle has been disturbed over the past 50 years due to these influences. Lake Tahoe suffers from increased loads of fine sediment and dissolved nutrients. The nutrient inflows, mostly phosphorus and nitrogen, are literally fertilizers, which boost the growth of free-floating algae, diminishing water clarity. This process, called eutrophication, is accelerating from the increased input of nutrients.



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