

LAKE TAHOE TMDL PROGRAM 2024 PERFORMANCE REPORT

Guiding Efforts to Restore Lake Tahoe's Historic Clarity

Background

The decline in Lake Tahoe's historic water clarity threatens its status as a world-class tourist destination, a premier location for sustainable outdoor recreation, and a vital source of clean drinking water. To tackle this issue, the Nevada Division of Environmental Protection (NDEP) and the Lahontan Regional Water Quality Control Board (Water Board) developed the Lake Tahoe Total Maximum Daily Load (TMDL) based on the best available science. This initiative aims to reduce pollutants entering Lake Tahoe, restoring visibility to depths of nearly 100 feet.

NDEP and the Water Board's ongoing commitment to achieving an interim target of 78 feet of clarity by 2031 (Clarity Challenge), as established by the 2011 Lake Tahoe TMDL Report, entails continuous progress evaluation and adaptive management. Annual and multi-year pollutant load reduction goals help assess progress toward achieving the Clarity Challenge. Based on the best science available, pollutants of concern include fine sediment particles (FSP), which scatter light and reduce its penetration through the water column, as well as the nutrients nitrogen and phosphorus, which promote algal growth.

NDEP and the Water Board collaborate to track accomplishments, evaluate progress and effectiveness, and incorporate new science and information. As part of this adaptive management system, they work with partners to produce the annual Performance Report. The 2024 TMDL Performance Report highlights 2023 accomplishments, honoring the program's commitment to transparency. For more details, visit the Lake Clarity Tracker at clarity.laketahoeinfo.org.

Urban Uplands Source Category

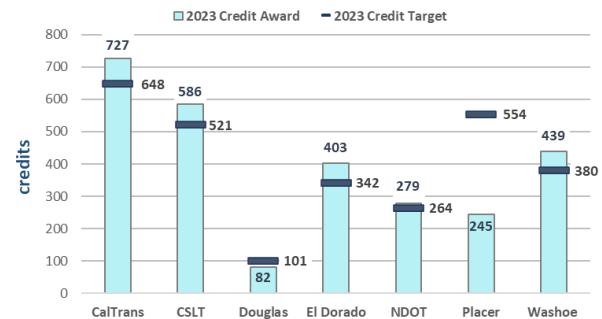
TMDL research shows FSP loads in urban stormwater must be reduced by one-third to meet the Clarity Challenge. Managing urban uplands is the greatest opportunity to control FSP pollution, as runoff from roads and other urban land uses accounts for over 70 percent of total FSP loading to the lake. Urban Implementing Partners – including the California and Nevada Departments of Transportation (CalTrans, NDOT); City of South Lake Tahoe (CSLT); and Douglas, El Dorado, Placer, and Washoe Counties – carry out controls such as roadway operations and maintenance, stormwater treatment facility construction and maintenance, and parcel-based best management practices (BMPs). These measures are registered through a comprehensive accounting system known as the [Lake Clarity Crediting Program \(LCCP\)](#).

Accomplishments

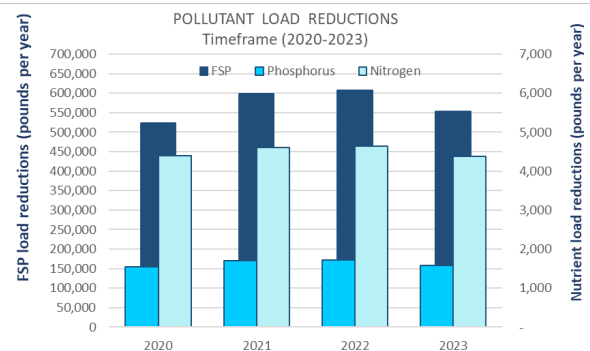
NDEP and the Water Board award program credits to implementation partners that show ongoing effectiveness of

controls. Credit awards are verified annually and compared against established targets, ensuring continued progress toward TMDL load reduction goals. Credits are awarded to registered BMPs and road maintenance activities, and do not include all stormwater systems and activities.

2023 CREDIT TARGETS AND AWARDS



As of 2023, there were 46 active registrations in the [Stormwater Tools](#) platform. Caltrans, the City of South Lake Tahoe, El Dorado County, Nevada Division of Transportation, and Washoe County exceeded targeted pollutant load reductions in 2023. In total, 2,761 credits were awarded to Urban Implementing Partners, not quite reaching the target of 2,810 credits. Because one credit is equivalent to 200 lbs./year of FSP reduced, FSP load reduction in 2023 totaled 553,325 lbs. Pollutant controls are also estimated to have reduced nitrogen loads by 4,380 lbs. and phosphorus loads by 1,580 lbs. for 2023.



The Clarity Crediting program documented Placer County and Douglas County not reaching their target pollutant load reductions. The Winter of 2022 - 2023 was a historic year in terms of snowfall and low temperatures, which led to long and continuous periods of deep snow and cold temperatures. Difficulties in obtaining these credits were caused by the record snowfall. Placer County could not replace filter cartridges in their King's Beach Registration and therefore only received 98 out of a possible 174 clarity credits. Due to too much snow, Placer County was also not able to schedule road condition assessments, which resulted in a score of zero

out of a possible 283 clarity credits for road registrations. Though Placer County fell short in achieving clarity credits for one of its registered stormwater best management practices (BMPs), other non-registered stormwater facilities throughout Placer County are well-functioning and helped prevent FSP inputs to the lake. However, credit was not awarded because these facilities were not registered at the time.

Douglas County achieved 82 credits, falling short of the 101 credit target. Kingsbury General Improvement District expanded the Kingsbury Road registration for WY23, however due to the extraordinary 2022-23 winter, road condition assessments were not performed within the allotted timeframe. Because of this Douglas County received zero out of the possible 24 credits. Going forward, Douglas County is increasing staffing and creating strategies to mitigate monitoring challenges for future extreme weather conditions. Even though Douglas County did not meet their target, the State of Nevada as a whole achieved 800 credits exceeding the Nevada State target of 745 credits.

Non-Urban Source Categories

Forest uplands, stream channel erosion, and atmospheric deposition contribute just over one-quarter of the total FSP loading to Lake Tahoe. Non-urban sources also make up a significant percentage of the nitrogen and phosphorus loading (71 and 43 percent, respectively). Thus, actions taken by local, state, and federal land and natural resource management agencies to improve water quality are integral to helping achieve TMDL goals.

Pollutant load reductions from non-urban sources are not measured like urban upland sources; instead, load reductions are tracked and assessed using a set of activity-based performance measures. Performance measures are compared against priority implementation actions in the TMDL Program to determine if progress is being made over time.

Accomplishments

The TMDL strategy to reduce pollutants from atmospheric deposition calls for controls to limit dust from roadways, parking lots, and construction sites in the Lake Tahoe Basin. In 2023, 5,148 miles of streets were swept; 4 non-compliant wood stoves were removed or replaced; and 0.3 miles of pedestrian and bicycle routes were constructed. The strategy also relies on the Tahoe Regional Planning Agency's (TRPA) air quality and transportation management plan to reduce nitrogen deposition from vehicle emissions. The plan's accomplishments are summarized in the [TRPA 2023 Annual Report](#).

The TMDL strategy to reduce pollutants from forestlands is to control stormwater runoff from paved and unpaved roads, disturbed areas, and public facilities. To that end, one upland facility was retrofitted for stormwater controls in 2023; 2.0 miles of forest roads were decommissioned or retrofitted; and 1.6 acres of disturbed area were enhanced. Forest

partners continue to regularly inspect their road networks and perform maintenance as needed.

The TMDL Program prioritizes channel restoration and enhancement of the Upper Truckee River, Blackwood Creek, and Ward Creek. These three systems make up the vast majority of FSP loading from stream bed and bank erosion in the Basin. No additional channel restoration has been reported for 2023.

Looking Forward

Long-term lake clarity trends have been seen as a more representative metric of Lake health than year-to-year variation. However, the Tahoe Science Advisory Council (Science Council) is facilitating a rigorous statistical analysis of clarity data to determine trends and the difference between natural variability versus statistically significant, which will help discern meaningful changes over time. In 2023, Lake Tahoe's annual average clarity was around 68 feet, and though less than the 72 feet annual average clarity in 2022, the value is in line with measurements over the past two decades.

Reducing fine sediment particles and nutrients is essential to the lake's ecological health and clarity. Wildfires, in-lake processes, and climate change interactions may also impact Lake clarity. While there is uncertainty surrounding these processes, scientists and agencies agree that the TMDL Program and associated pollutant reductions are fundamental to protecting Lake Tahoe's water quality.

Currently the Science Council is facilitating a review of the Lake Tahoe clarity and water quality monitoring strategy. An outside peer review team has begun to highlight the importance of increasing biological monitoring, refining particle monitoring and expanding watershed monitoring. Although current funding to support additional monitoring is limited, these improvements would lead to an improved understanding of complex in-lake processes and watershed inputs.

Opportunities for improvement within the urban implementers' realm could include registering additional treatments within the clarity crediting program, performing more proactive maintenance and better planning between major storm events.

