

## DEVELOPMENT OF A WATER QUALITY CREDITING FRAMEWORK FOR FINE SEDIMENT LOADING FROM URBAN STORMWATER IN LAKE TAHOE, CA

Achieving the goal of protecting Lake Tahoe’s famed clarity while allowing 90,000 residents and millions of visitors to live, work and recreate in the sensitive watershed required innovation. While researchers developed Lake Clarity and Watershed Models, others experimented with wetland treatment in Tahoe’s cold climate and analyzed BMPs to reduce nutrient and sediment concentrations to levels below what is considered baseline for much of the country. These paved the way to establish the Environmental Improvement Program (EIP) in the Lake Tahoe Basin; innovative regulations developed by the Regional Board through municipal storm water permits that require load limits, particularly for fine sediments.

Given projected costs of \$1-2B to address these urban stormwater loads that are largely responsible for declining Secchi depths of one foot/year, creative ways to select, prioritize and credit cost-effective actions were necessary. A water quality crediting scheme was devised by Kieser & Associates, LLC (K&A) under contract with Environmental Incentives based in South Lake Tahoe, CA. Funded by an EPA Targeted Watershed Grant, a feasibility study determined that water quality crediting structures were viable in the Lake Tahoe Basin. The project team delivered a recommended system design in 2010. The system is now being implemented as of 2015. Components of this crediting system for urban stormwater are transferable to other national settings where urban stormwater and altered hydrology are impairing water quality.

By defining pollutant load reduction “credits”, this project provided a clear, recognizable focal point to protect lake clarity. BMP project implementers will design strategies to maximize the generation and use of such credits to accelerate water quality improvements, provide environmental benefits beyond those achieved with traditional command



and control approaches, and conserve economic resources for additional environmental investments.

Funders will be able to monitor success through credit production, not just dollars spent. Regulators will track load reduction credits to determine if an entity is in compliance with its load allocation that is uniquely defined in Phase II stormwater permits. Also unique in this application are fine particle sediment (< 20 micron) reductions targeted by the TMDL and established as the crediting parameter.

To develop crediting zones, K&A analyzed expected costs of load reduction in specific areas as well as working with watershed modelers to determine baselines. This economic perspective resulted in a more equitable load allocation system that addresses the concerns of economically-minded stakeholders. A crediting ratio analysis examined the impact of load reductions from different media (in-basin and external atmospheric loading versus land use) and different areas within the watershed. The myriad of policies and regulations in the Basin required an intricate level of analysis to determine baseline conditions for credit generation.

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*Project Costs:*  
\$182,000 (K&A)

*Project Duration:*  
2007-2010