Daily measures of phosphorus and sediment to identify contributions of sub-watershed loads that fuel reservoir cyanobacteria growth.

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The burgeoning human population, combined with anthropogenic changes to land use have greatly altered the quantity and ratios of typically limiting nutrients (phosphorus -P, and nitrogen -N) delivered to water bodies resulting in cultural eutrophication often manifested in blooms of cyanobacteria. To maintain and remediate surface waters requires we understand the source of nutrients to effectively target corrective actions on the landscape. To calculate loads of P and sediment and understand the origins of these loads, we instrumented sub-watersheds of Willow Creek Reservoir with automated samplers and depth loggers to obtain daily samples over the course of one year. Surprisingly, high loads originated from the Willow Creek headwaters where the dominant land cover is forest, while valley bottoms where land use includes pasture and overwintering cattle contributed a relatively small load only during 3 months. Our results suggest future remediation efforts should be concentrated in the high elevation sub-watershed to optimize monetary investment and reduce nutrient loads. The information gathered in this study can be directly related to lakes and reservoirs in Idaho that suffer from toxic algae blooms such as Fernan Lake and Lake Coeur d'Alene. It is crucial that we base mitigation strategies on real data rather than assumptions so that we can ensure access to clean water for future generations.