

## Attachment G

California Regional Water Quality Control Board  
Lahontan Region

# Rationale for Bioassessment Monitoring

## South Shore Project Waste Discharge Requirements

The EPA's Water Quality Handbook, Chapter 4 (40 CFR 131.12), section 4.7 Outstanding National Resource Waters (ONRW) – 40 CFR 131.12 (a)(3) notes that ONRWs, such as Lake Tahoe, are provided the highest level of protection under the antidegradation policy. According to this source, Best Management Practices (BMPs) for timber harvesting in ONRW watersheds should include preventive measures more stringent than for similar logging in less environmentally sensitive areas.

The Discharger is proposing potentially soil-disturbing activities extensively throughout several watersheds of the Lake Tahoe Basin, which will last for several years. Additionally, the Discharger is proposing numerous high-risk activities (see Attachment C, MRP, List of High Risk Activities and Sites) which either require additional protection measures, or for which little is known about the potential impacts. Water Board staff has therefore determined that in-stream effectiveness monitoring is needed rather than relying simply on visual observations of BMP performance by the Discharger's staff. Visual observations of BMP effectiveness are extremely important because they can allow the Discharger's staff to timely identify and correct potential erosion and other water quality problems, and because the visual inspections can focus the Discharger on specific practices that may threaten water quality and beneficial uses of water. However, since the visual inspections are based on a random selection of sites, and are performed intermittently throughout the life of the Project, these alone cannot verify that water quality objectives are met, or that beneficial uses of water have been protected. In-stream monitoring is needed to verify the Discharger's assertion that the expected relatively high rates of BMP implementation and visual effectiveness observations will translate into compliance with Basin Plan objectives and protection of beneficial uses of water.

The transport and deposition of coarse and/or fine sediments (fine sediments are less than 16 micrometers in size) from roads, log landings, stream crossings, skid trails and other silvicultural activities have been identified as potential impacts that may affect aquatic life. Benthic (i.e., bottom-dwelling) macroinvertebrate communities are sensitive to suspended sediments as well as settleable sediments that cover and bury stream habitats. Therefore, accelerated erosion and sediment delivery can degrade habitat quality and affect the survival, diversity and composition (i.e., health) of macroinvertebrate communities. The use of in-stream macroinvertebrate communities as indicators of stream health is

known as “bioassessment.” Bioassessment monitoring of long-term projects such as this one can reveal project-induced impacts often missed by intermittent visual observations of BMPs. Any significant shifts in macroinvertebrate assemblages associated with this Project would also indicate the potential for sediment delivery to Lake Tahoe (i.e., a reduction in population would show that there is excessive sediment getting into the tributaries, which would also eventually distribute this sediment to the Lake).

Again, due to the sheer magnitude of the proposed Project, monitoring of benthic macroinvertebrate communities shall be used in conjunction with the other monitoring required in WDR Attachment C, Monitoring and Reporting Program (MRP) to indicate the effectiveness of the Project’s management measures at preventing/mitigating discharges of sediment to watercourses and protecting aquatic life. Bioassessment monitoring results will be used to validate the effectiveness of mitigation measures implemented during the Project and to quantify whether the Project impacts aquatic life beneficial uses.

Specified habitat measurements (i.e., “pebble counts,” cobble embeddedness, etc.) are also required to be collected along with (i.e., at the same time as) the bioassessment samples. This will allow staff to determine if any changes in macroinvertebrate communities are associated with sedimentation. Further, where coarse sediment is found in streambeds, fine sediment (if no longer present) was likely delivered downstream.

The three sites specified for bioassessment monitoring were selected because they are downstream of a variety of potentially high-risk Project activities, such as the construction of new temporary road segments including temporary and permanent stream crossings; the use of existing roads located within 50 feet of a Stream Environment Zone (SEZ), 100-year floodplain, or waterbody; mechanized logging within 100 feet of watercourses; using ‘in-lieu’ practices (i.e., alternate BMPs to those prescribed in WDR Attachment F); temporarily repairing rutted roads with spot-rocking outside of normal operating periods; and pile burning within SEZs. Such activities may disturb soils that can then easily be transported to the nearby surface waters in storm runoff, or may compact soils, thereby reducing infiltration capacity in near-stream areas and increasing runoff volumes. Pile burning may create extreme temperatures that may “scorch” soils (reducing infiltration; killing seeds, roots, and rhizomes thereby inhibiting revegetation; and reducing the nutrient removal capacity of wetlands). Conducting these activities within or in close proximity to SEZs greatly increases the potential that sediments may be transported into Lake Tahoe’s tributaries. The three sites were also selected to reduce any potential for confounding interferences (i.e., the sites are located downstream of primarily Project-specific vegetation management activities and above the influence of other potential sources, such as urban developments, roads, highways, etc). Finally, these three sites have been used for bioassessment monitoring in the past, which provides additional historical data for comparative purposes.