WDR 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 in the project area which will last for several years. These activities include culvert replacements at stream crossings, road maintenance and reconstruction, vegetative fuel treatment by various methods (hand, cut to length, whole tree), and pile burning in SEZs. Water Board staff has therefore determined that in-stream effectiveness monitoring is needed in addition to 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, specifically to comply with the narrative water quality objective for nondegradation of aquatic communities and populations, which states in part:

> *All wetlands shall be free from activities that would substantially impair the biological community as it naturally occurs due to physical, chemical and hydrologic processes.*

In-stream bioassessment monitoring is needed to ensure the biological communities are not impaired from the project activities and 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 likely to occur as a result of this Project (reference: Analytical Conclusions Section of the CEQA document) and can 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).

Monitoring of benthic macroinvertebrate communities shall be used in conjunction with the other monitoring procedures described in 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 that the mitigation measures implemented during the Project have not impaired the biological communities in the wetland. Bioassessment monitoring is expected to show natural variation through the project due to many natural factors, such as climate and precipitation. When compared to reference site bioassessment scores, such as Hidden Valley Creek in the Tahoe basin, the bioassessment for this project will indicate if degradation is within the range of natural variability or if the degradation is greater than the range of natural variability and likely due to anthropogenic affects.

Specified habitat measurements (i.e., "pebble counts," cobble embeddedness, etc.) are 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 Saxon Creek site specified for bioassessment monitoring (see MRP Attachment A) was selected based on a variety of treatments and project activities in the watershed without potential affect from adjacent urban development.The project 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 site was also selected to reduce any potential for confounding interferences (i.e., the site is 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, this site has been used for bioassessment monitoring in the past, which provides additional historical data for comparative purposes.