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Effectiveness of Existing Highway Vegetation As Biofiltration Strips

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Effectiveness of Existing Highway Vegetation As Biofiltration Strips

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Abstract: The California Department of Transportation (Caltrans) establishes vegetation adjacent to roadways to accommodate a range of functions, including: aesthetic, safety, environmental mitigation, storm water pollution prevention, and erosion control purposes. Due to the range of functions that these vegetated areas serve, the design of a vegetated area may not necessarily conform to the design guidelines for biofiltration strips. Caltrans initiated a two-year study to assess the treatment effectiveness of existing vegetated areas adjacent to its highways. The study examines eight vegetated areas adjacent to highways located throughout California. Each vegetated area has one to four 30-meter (m) collection channels to capture storm water runoff as it passes through various sections of the vegetated area. In addition to the 30 m collection channels, an edge of pavement sample is collected to compare as a baseline. The collected samples are analyzed for nutrients, total metals, and total suspended solids (TSS). This paper introduces the methodology for the study and the preliminary results of TSS and total copper data for the first monitoring season. As expected, as the biofiltration strip length increases the TSS and total copper concentrations decrease. Biofiltration strips with relatively steep slopes (greater than 35%) also provide notable TSS reduction. Preliminary data trends are identified and discussed.