

**MEMORANDUM**

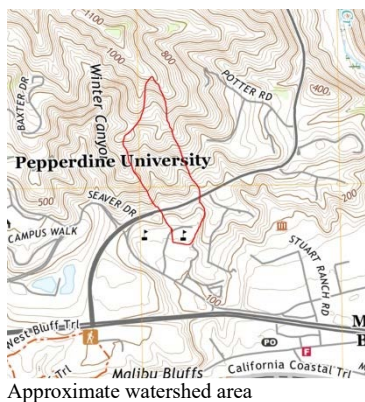
To: Michael Burke, NCARB  
From: Michael Mulgrew, P.E.  
Date: January 31, 2025  
Psomas Project: 1SAN080148  
Subject: Webster Elementary School Erosion Control  
Site Observation and Recommendations

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A site observation and erosion control recommendations were requested by Santa Monica Malibu Unified School District (SMMUSD, “District”) for the Webster Elementary School (“School”) campus. In December of 2024, the Franklin Fire burned areas north (uphill) of the school. The District is concerned that the loss of upstream vegetation may lead to debris flow towards the school property. The District wishes to mitigate the impact of potential debris flows on the School through the use of erosion control measures. The following observations and recommendations are based on a site walk held on January 24, 2025, attended by Michael Burke (SMMUSD) and Michael Mulgrew (Psomas), on review of topographic surveys prepared by Psomas, dated 02/06/2008, 01/15/2009, 07/15/2009, 11/03/2017, and review of a geotechnical Monitoring Well report prepared by GeoConcepts, Inc., dated 06/23/2009.

**Setting**

Webster Elementary is located at 3602 Winter Canyon Road in the City of Malibu immediately south and east of Winter Canyon Road at an approximate elevation of 140 feet above sea level. The terrain rises rapidly north of the campus to an approximate elevation of 240’ at Malibu Canyon Road, rising further to elevations over 1000’ in the Santa Monica Mountains. Review of existing USGS topographic data shows an area of approximately 50 acres that could be considered the watershed tributary to the School location.



View looking north along Winter Canyon Road



## **Existing Drainage Patterns**

Most of the 50-acre tributary area is north of Malibu Canyon Road. In the event of a debris flow, the roadway would serve as the first barrier for the School, as the road slopes to the west and may intercept and direct flows away from the School. Several concrete terrace drains exist along the top of road cuts, and the majority of run-off from this area is directed toward two culverts that cross beneath the roadway. The easterly culvert daylights south of the road into an earthen drainage channel that runs along the east property line of the school, terminating in a headwall structure that conveys the flows into an underground storm drainage system. The outlet condition for the westerly culvert was not visible during the site walk and it was assumed to continue underground. The general surface drainage gradient for the School is north to south, with limited on-site storm drain infrastructures that serves the immediate campus property.



Easterly culvert headwall



Existing earthen channel along east School property line



The Authority Having Jurisdiction (AHJ) over Malibu Canyon Road has deployed temporary erosion control measures along the roadway consisting of series of sand bag berms and concrete barriers to control run-off from the burn area and further direct flows to the existing culverts. These erosion control measures will help to mitigate flows toward the school. Additionally, embankments exist at locations along the south side of Malibu Canyon Road that would contain flows within the roadway.



Looking south toward School from hillside north of Malibu Canyon Road



Sand bag barrier and concrete barriers along toe of slope north of School





Sand bag barriers and concrete barriers at culvert inlet north of School, concrete terrace drain also visible



Existing drainage patterns in the vicinity of Webster Elementary School



A business, Malibu Glass & Mirror, and a Southern California Edison substation are present immediately north of the School. Each of these facilities would also serve to protect the school in the event of debris flows occurring in the Santa Monica Mountain north of the School, should those flow bypass Malibu Canyon Road. A terrace and berm exist uphill over a portion of the Edison station, directing flows east toward the earthen channel. A gap exists between the facilities which could be an avenue for debris to move onto the campus. An access road serving the Edison station crosses this gap and drops from the east to the west, providing a potential conduit to capture flows and direct them down Winter Canyon Road, around School structures.



Existing drainage patterns immediately north of School





Looking south toward School through gap between Edison station and glass business

### **Recommendations**

Debris has accumulated in the channel east of the School near the headwall inlet; this debris should be removed so that it is not flushed into the inlet, clogging it. Given the depth of the channel and its gradient, it would be expected that, should the inlet clog, the channel would back up and outlet through a vehicle access roadway and surface discharge through the apartment complex immediately southeast of the School. The headwall structure has a debris rack to capture debris before entering the storm drain system, however, large volumes of debris could overwhelm and clog this structure. The access roadway appears to be within an easement dedicated to the County of Los Angeles (per document recorded 9/24/1965 as Instrument No. 3958, OR).



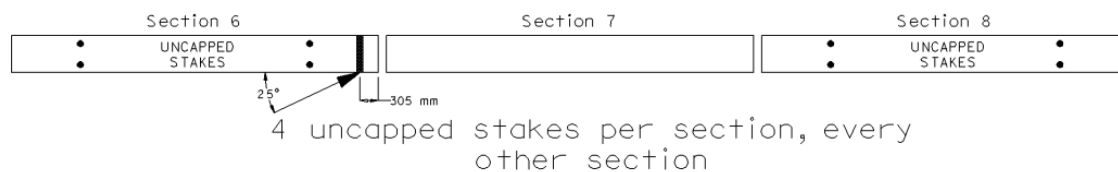
Looking upstream in earthen channel from top of vehicular access way, note debris accumulation





Headwall with debris rack at downstream terminus of earthen channel; vehicle access way on right

Within the School's property, Psomas recommends installing a concrete barrier (Caltrans "K-Rail") along the curb and gutter at the north side of the School. K-Rail consists of 20-ft long concrete barrier sections staked into the ground, connected together with pin and loop connections, each section weighing approximately 8000 lbs. This barrier would assist in containing flows within Winter Canyon Road where they would be conveyed to the south, around School structures.

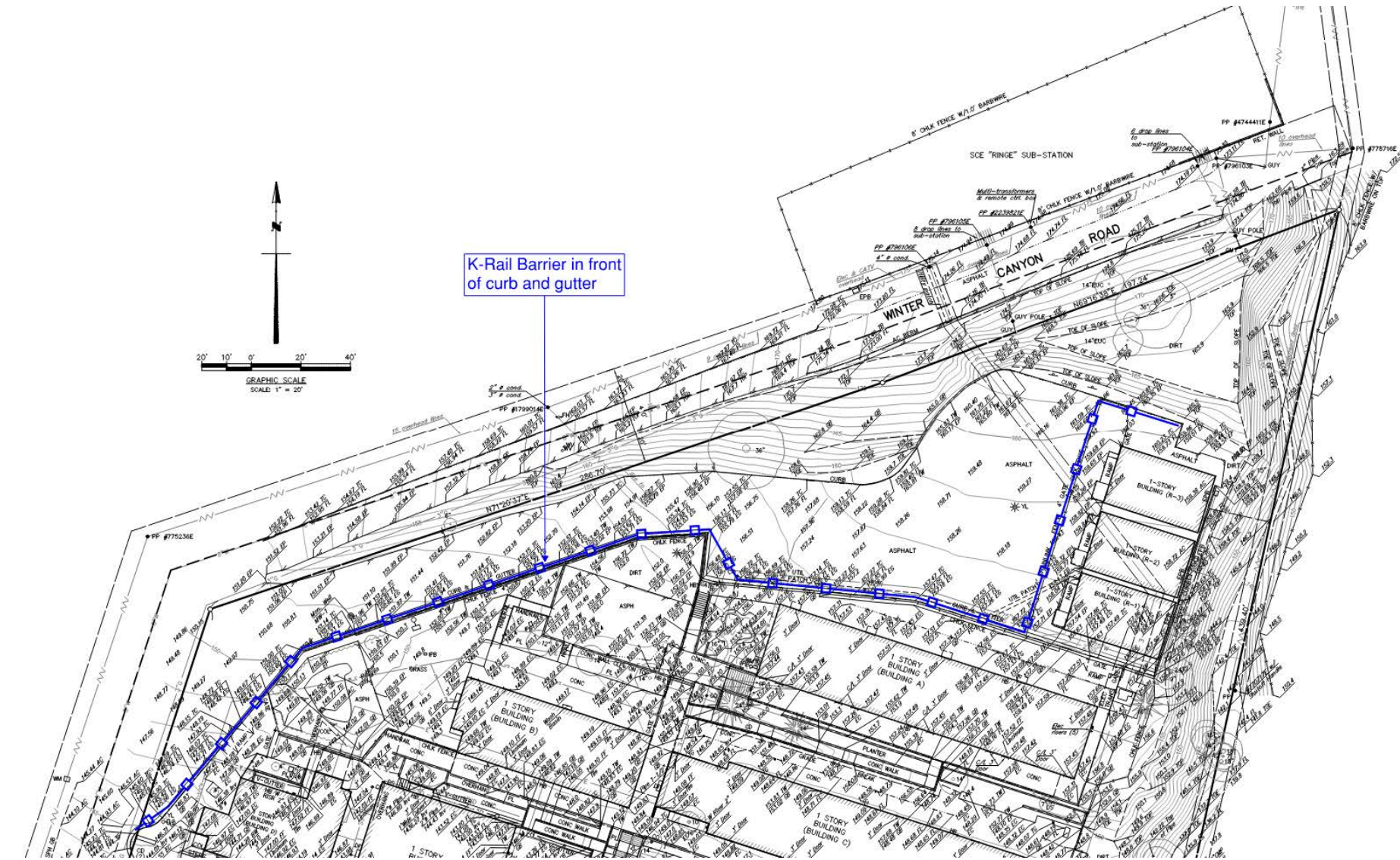


Example K-Rail staking configuration



Uncapped stake

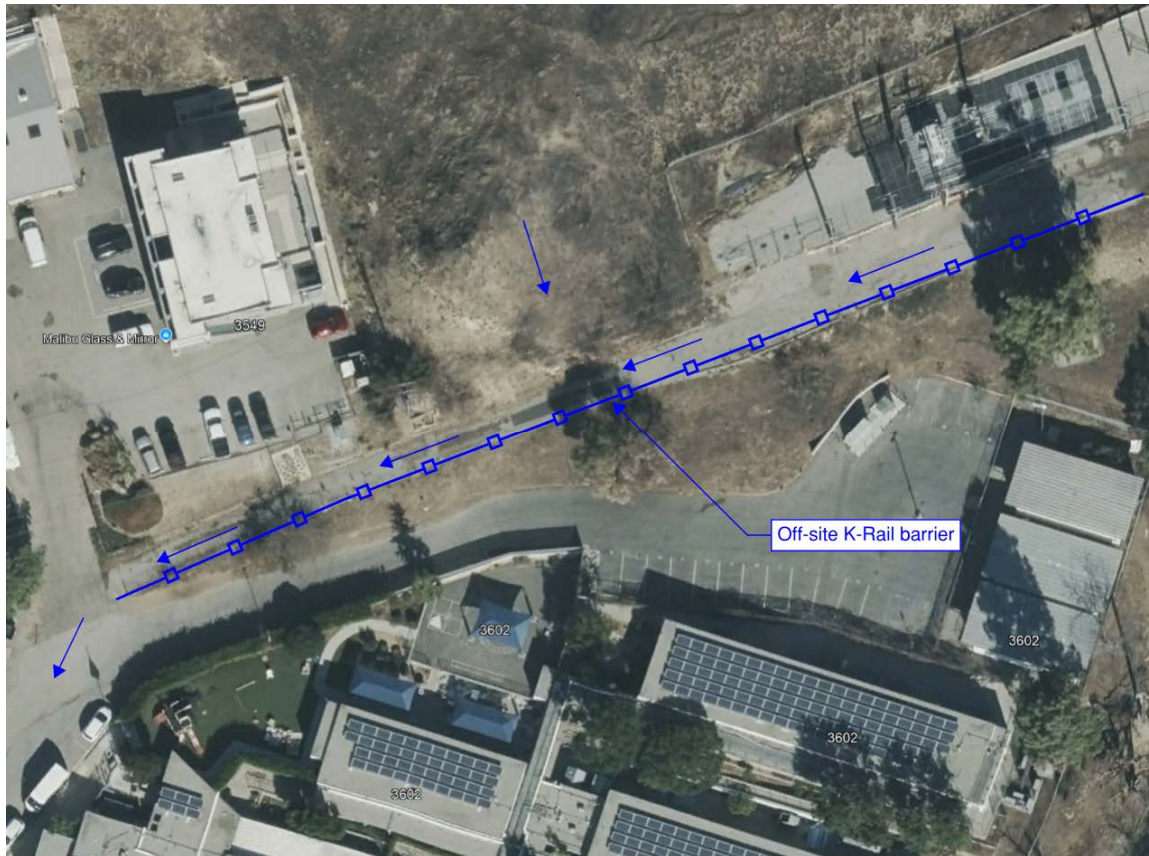
Psomas also recommends that the District stockpile filled sandbags at the campus for rapid deployment on an as-needed basis during storm events.



Proposed location of on-site K-Rail barrier



Outside of the School property, it is recommended to install a K-Rail barrier along the access road serving the Edison station. This would require permission from the property owner.



Work in this area would require permission from the property owner

Additionally, with coordination from the adjacent property owner, geotextile erosion control mats could be installed along the slopes north of the School. The ground surface was observed to be firm and unyielding during the field walk, but this could change as the ground becomes saturated during a storm.



Example of geotextile erosion control mats installed on a steep slope



**Maintenance and Review of Effectiveness**

Psomas recommends regular maintenance of the temporary erosion control measures, including after each storm. All accumulated debris should be removed.

The recommendations contained herein were made based on observations and available data. Psomas is available for further field reviews with District staff upon request. A further review after the first storm event may be useful to adjust the temporary erosion control measures.