

Alpine Road Slip-out Repair Project Description **County of San Mateo Department of Public Works**

The County of San Mateo Department of Public Works (County) is proposing to reconstruct three roadside slip-outs (Sites 1 and 2) along Alpine Road north of the Joaquin Road intersection, within the community of Los Trancos in unincorporated San Mateo County (see attached maps). Alpine Road is one of two key access routes into and out of the Los Trancos community. The slip-outs occurred on the steep slopes directly above Corte Madera Creek, which parallels Alpine Road at the project locations. Corte Madera Creek flows into Searsville Lake, a manmade reservoir, which then flows into San Francisquito Creek and San Francisco Bay.

County biologists conducted field surveys on April 23, 2009, March 23, 2011, and April 1, 2013 to characterize habitat, document presence of sensitive species at the sites, and to determine appropriate best management practices (BMPs). The California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database¹ (CNDDDB) and Biogeographic Information & Observation System² (BIOS) were queried to determine if any special status species had been documented near the project sites. The results of the CNDDDB and BIOS queries are shown in the attached Location of Special Status Species Occurrences map (Figure 3).

The proposed work areas are located within riparian woodland and ruderal roadside habitat on steep embankments directly above Corte Madera Creek. Vegetation on or adjacent to the slip-outs consist primarily of California bay (*Umbellularia californica*), Coast live oak (*Quercus agrifolia*), Pacific madrone (*Arbutus menziesii*), maple (*Acer sp.*), Douglas-fir (*Pseudotsuga menziesii*), poison oak (*Toxicodendron diversilobum*), willow (*Salix sp.*), miner's lettuce (*Claytonia perfoliata*), sow thistle (*Sonchus sp.*), cut-leaf geranium (*Geranium dissectum*), French broom (*Genista monspessulana*), wild radish (*Raphanus sp.*), ripgut brome (*Bromus diandrus*), dandelion (*Taraxacum sp.*), California burclover (*Medicago polymorpha*), periwinkle (*Vinca sp.*), and snowberry (*Symphoricarpos albus*).

Only one special status species, legenere (*Legenere limosa*), has been documented within a ½ mile radius of the project sites. The population of legenere, a sensitive vernal pool plant species listed by the California Native Plant Society as 1B.1 (seriously endangered in California), was documented in 1906 as occurring in the vicinity of the ponds above the project site (Figure 3). However, no vernal pool habitat exists within the project area. Therefore, legenere would not be impacted. Two (2) San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) (SFDW) nests were observed within 15 feet of the proposed work area at Site 1. SFDW is listed as a Species of Special Concern by CDFW. Critical habitat for Central California Coast steelhead (*Onchorynchus mykiss*) and California red-legged frog (*Rana draytonii*) occur within 2 miles of the project sites. Corte Madera Creek (not to be confused with El Corte de Madera Creek, a steelhead stream in the San Gregorio Watershed) is located upstream of Searsville Dam, a fish passage barrier, and is therefore not expected to contain anadromous steelhead. No other sensitive plants or wildlife were observed in the vicinity during the site surveys. During a site visit on July 26, 2013, Corte Madera Creek was dry.

BMPs and conservation measures, including project timing during the dry season, pre-construction surveys, sensitive plant species surveys, and personnel training on sensitive species

¹ California Department of Fish and Wildlife. 2013. California Natural Diversity Database. Wildlife & Habitat Data Analysis Branch, Government Version, updated March 5, 2013.

² California Department of Fish and Wildlife. 2013. Biogeographic Information & Observation System. <http://bios.dfg.ca.gov>. Government Version accessed March 31, 2013.

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identification and avoidance measures, would be implemented to ensure nesting birds, sensitive animal species, and sensitive plant species are not impacted by the proposed project. Use of erosion control and containment BMPs would be employed to ensure water quality in Corte Madera Creek is not impacted.

Site 1:

The Site 1 slip-out is located along Alpine Road approximately 0.1 miles north of the Joaquin Road intersection. The slip-out was first discovered in March 2011 following a storm event. Additional slope failure occurred following a series of large storms in December 2012. The failure resulted in the loss of an embankment adjacent to the road and subsequent diminished stability of the road (Photo 1). Currently, the slip-out extends from the edge of pavement to Corte Madera Creek, below (Photo 2).

The dimensions of the slope failure that occurred are estimated to be approximately 35 feet in length (parallel to the roadway) and approximately 25-feet from the roadway surface to Corte Madera Creek, below. The County proposes to reconstruct the upper embankment section of the slip-out.

The failure is to be reconstructed by cutting a 35-foot long by 8-foot wide keyway approximately 12-feet below the roadway, backfilling the constructed keyway with large boulders (3- to 4-foot diameter), and placing 2- to 3-foot diameter rock above the keyway to provide support for a reconstructed road embankment. The revetment would be covered with native or imported soil, seeded with a native plant mix, mulched with sterile rice straw, and covered with erosion control blanket. Live willow stakes and/or branches trimmed from nearby trees will be incorporated into the structure to help stabilize the slope and accelerate vegetation regrowth.

To perform the work, heavy equipment would be operated from the roadway and silt fencing would be installed beneath the work area to prevent water quality impacts to Corte Madera Creek. Prior to silt fence removal, accumulated soil and debris will be removed and properly disposed of off-site.

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Photo 1 – Site 1: Photo taken on March 23, 2011, shortly after the slip-out was first detected. The slip-out resulted in a near vertical drop from the edge of pavement down to approximately 25-feet below the roadway surface.



Photo 2 – Site 1: Photo taken on April 1, 2013, following additional bank failure due to large storm events in December 2012. The slip-out currently extends from the roadway to Corte Madera Creek. The County proposes to remediate the upper portion of the embankment (area indicated by dashed line). Location of Corte Madera Creek below the slip-out is indicated by arrow. The creek was dry during a site visit on July 26, 2013.

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Photo 3 – Site 1: Photo showing Corte Madera Creek and riparian woodland habitat immediately upstream of the Site 1 slip-out.

Site 2:

The Site 2 slip-out consists of two adjacent areas of failed roadside embankment, located along Alpine Road approximately 250- to 350-feet north of the Joaquin Road intersection. In 2009, portions of the embankments below the road at this location failed, resulting in the loss of much of the embankment which supported portions of the roadway.

In subsequent years, additional embankment has been lost, to the point where narrow sections of road now have no discernible shoulder and the roadway, no more than 14 feet wide in places, has vertical slopes above and below the road ranging from 20 to 40 feet in height. In order to assure continued passage along this road, it is essential that these failed slope areas be stabilized.

The County is proposing the installation of soil nails and a shotcrete facing to support portions of the slope immediately beneath the road. Soil nails would either be launched into the hillside at equally spaced intervals or drilled into the hillside, set in place, and then sprayed with concrete. Once the nailing has been completed, the upper embankment would be reconstructed to recreate a roadway shoulder.

The repair work would be limited to the upper sections of the embankments. Closest to Joaquin Road, the repair would be approximately 80 feet in length (distance parallel to the road) and 15 feet maximum in width (on slope distance between the road and the creek) (Photo 4).

The second slope failure at Site 2 is approximately 60 feet north from the first location described above. At this location, soil nailing and a shotcrete face is also proposed, and the length of the repair is estimated to be 30 feet (Photo 5).

For each repair, silt fencing will be placed at the base of the slopes, above ordinary high water, between the embankment being worked upon and the creek that parallels the road so that any

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concrete or loose dirt dislodged during construction can be captured before it is allowed to enter the creek. Construction equipment would operate from the roadway, and it is not anticipated that any equipment would require access onto the slope being repaired. Upon completion of the work, the disturbed areas will be seeded with a native seed mix. Prior to silt fence removal, accumulated soil and debris will be removed and properly disposed of off-site.



Photo 4 – Site 2: Photo looking north at the adjacent Site 2 slip-outs, located along Alpine Road approximately 250- to 350-feet from the Joaquin Road intersection.

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Photo 5 – Site 2: Photo showing the smaller slip-out immediately north of the slip-out shown in Photo 6. Note the colonization of invasive French broom in the disturbed slide area.



Photo 6 – Site 2: Photo showing near vertical drop from the roadway at the Site 2 slip-out located closest to the Joaquin Road intersection.