

## FOCUSED ENGINEERING GEOLOGIC EVALUATION OF ROAD MAP POINTS FOR SUPPLY CREEK 2013 PROJECT, HUMBOLDT CO.,

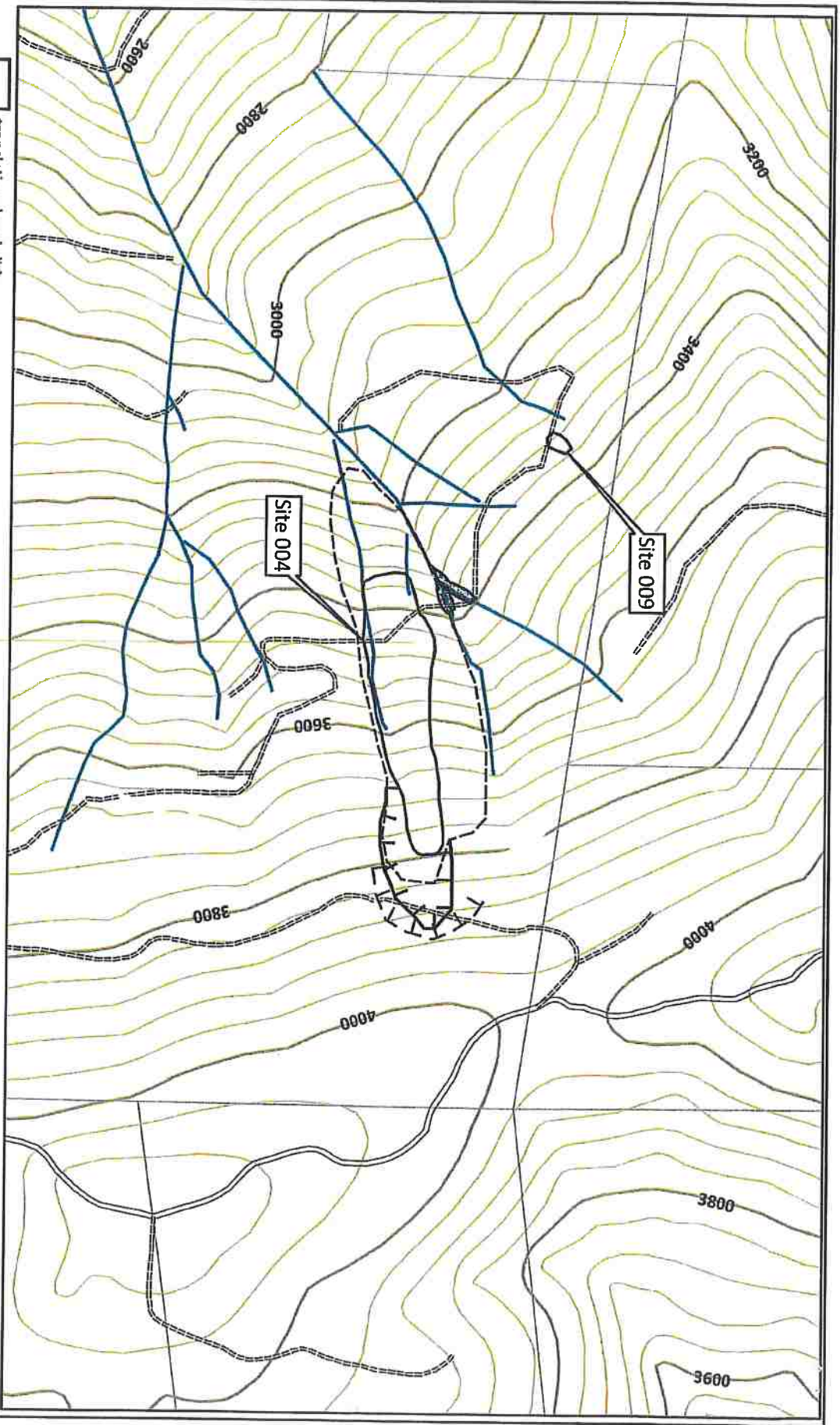
### Oswald Geologic

#### Site 004




Site 004 is a section of road reconstruction through an unstable area first observed in the 1972 aerial photography. The failure is a dormant-historic, advancing, translational rockslide (Figure 2a). Road alignments and skid trails are truncated at the lateral margins and the body is hummocky with undrained depressions and sharp, well defined lateral scarps. Old Growth stumps in the body of the unstable area are deformed and the second growth timber is predominantly undeformed with pockets of deformed conifer near scarps and on steep slopes. The upper extent of the failure appears less active than other portions of the unstable area and the crown scarp has morphology indicative of a dormant-young activity status. A rock road crosses the crown scarp and is undeformed. There is an undeformed skid road downslope of Site 004 that runs immediately downslope of the toe of the unstable area. The morphology of the slopes adjacent the toe of the recent failure is consistent with a larger, pre-existing dormant-young rockslide at this location. The existing road alignment is located on the lower body of the displaced mass. The road prism is offset and deformed by movement on the landslide but the alignment can be traced across most of the unstable area. A Class III watercourse extends up the left lateral margin of the unstable area and has eroded through the road prism in a gully that is about 2- to 5-feet deep. Adjacent to the Class III watercourse a lobe of slide mass covers the road prism and is about 8-10 feet deep. An internal scarp crosses the road alignment and the road is offset about 6-8 feet on the far side of the lobe from the watercourse. The Class III watercourse crossing should be "built to fail". Ford crossings are preferred. Culverts, if used, should have armored inlets and have a well established and armored critical dips and outfall. The amount of fills used to reconstruct the crossing should be minimized. Smooth grade transition across sharp topography within the unstable area should be attained by both cutting into the top of the sharp grade transition and placing fill at the base of the sharp grade transition. Based on review of the site cuts into the unstable area and fills placed on the unstable area should **not** be greater than 5 feet in height or depth, respectively. The final road alignment should be outsloped and be a minimum width needed for equipment access. Cutslopes should be graded to 1:1 (h:v) or less or graded to match adjacent natural slopes. Fillslopes should be final graded to 1.5:1 (h:v) or less. Fills should be track compacted in 6- to 8-inch lifts to form a firm unyielding surface.

### Site 009

Site 009 is a dormant-historic cutbank failure. The failure is about 75 feet wide and 125 feet long. The majority of the failed cut rests on and covers the existing road prism. The outboard edge of the road is eroded and steeply inclined. The upper extent of the failed mass is inclined at about  $57^\circ$  ( $\sim 0.5:1$ , h:v). The toe of the failed mass is steeper and extends to the edge of the steeply inclined outboard edge of the road. The failure did not delivery to a watercourse. The road prism across the failure should be reconstructed using a combination of cutting into the slide mass on the road and ramping onto the lower portions of the slide mass. A smooth grade transition across the unstable area should be attained by both cutting into the top of the failed mass and placing fill at the base of the failed mass to reduce the grade transition. Fills should be placed in 6- to 8-inch lifts and compacted to a firm unyielding surface. The final cutslope should be graded to  $0.5:1$  (h:v) or less to match adjacent cuts. The road prism should be full bench and insloped across the unstable area. A cross road drainage structure (bar or berm) should be placed up road grade of insloped road section. The insloped road section should be drained outside of unstable area by means of cross road drainage structure (bar, berm, culvert).



2012 NAI imagery

-  translational rockslide
-  debris slide
-  debris slide slopes

-  unstable area, solid where dormant-historic or younger
-  dashed where dormant-young or older

location of all features is approximate



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project:

**Supply Creek 2013 Project**

**Figure 2a: Site 004 and 009 Map**