

Site 13 – Creek North of Fortress Junction I

This site is located at an unnamed creek channel approximately 500 m north of the Fortress Junction service station. A fan of cobble to boulder sized debris was noted in the upslope (east) ditch and along the small creek channel above the highway during the site inspection in October 2005 (Photos 1 and 2). As shown in Photo 2, the culvert to carry the creek flow beneath the highway fill embankment is offset approximately 15 m north of the current position of the creek channel.

It appeared that the debris has washed down from the creek channel above the road earlier in 2005. The creek channel above the highway was traversed for approximately 300 m. The channel width typically ranged from 1 to 2 m and it was incised through the thin surficial soils and exposed boulder sized rocks (Photo 3). There were no major erosion areas noted along this segment of the channel or signs of large volumes of debris flowing along the channel that would be consistent with a debris flow event originating along the channel and depositing the debris fan in the upslope road ditch. Based on the observations during the site inspection, it appears that cobble to boulder sized rocks in the debris fan in the ditch were washed downslope from various locations along the channel during peak flows, likely during heavy rains in June 2005, rather than during a single debris flow event. The same peak flows probably caused the channel downcutting into the surficial soils between the apex of the fan and the edge of the cleared highway right-of-way.

AMEC recommends the following Risk Level factors for this site using the debris flow frequency-severity matrix:

- Probability Factor of 9 based on the deposition of the debris fan in the upslope road ditch during the heavy rains in June 2005.
- Consequence Factor of 2 based on the assumption that if a future significant rainfall event caused a similar amount of debris to wash down the creek channel, it would build upon the existing debris fan, nearly fill the ditch and possibly begin to encroach onto the road surface.

Therefore, the recommended Risk Level for this site is 18.

It is recommended that the debris fan in the upslope road ditch be cleared in order to restore the ditch capacity. When this is completed, the Consequence Factor can be reduced to 1 (i.e. the existing ditch should be sufficient to contain debris without it flowing onto the highway) and the Risk Level reduced to 9.



Photo 1 (top) – Fan of debris that has been deposited along the upslope (east) side of Highway 40 at an unnamed creek crossing approximately 500 m north of the Fortress Junction service station. The debris consisted of cobble to boulder sized rocks that appeared to have washed down along the creek channel during peak flows earlier in 2005.



Photo 2 (middle) – Facing downstream along the creek channel. The debris fan shown in Photo 1 is on the left side of this photo. Note how the culvert inlet is offset to the north (to the right, as seen in this photo) of the current position of the creek channel.

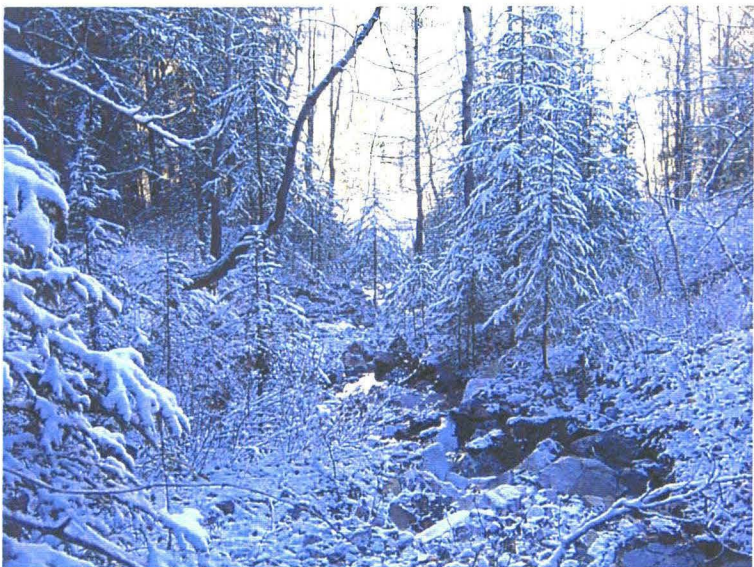


Photo 3 (bottom) – Facing downstream along the creek channel, approximately 30 m upslope from Highway 40. The creek channel was traversed for a distance of approximately 300 m above the highway and the channel was typically as shown in this photo – a narrow channel incised through thin surficial soils and exposed boulder sized rocks.