Suspended Sediment in Silvester Creek and its Potential Effects on the Westslope Cutthroat Trout Population: Photo Appendix

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This Appendix contains photos primarily documenting sediment sources to Silvester Creek and its tributaries identified during studies in May and June, 2013, and is intended to accompany the report of the same title.
Photo 1. Bridge & ford at 11U 0660407 5633752 ± 4 m, part of the extensive sediment source 13. Note muddy runoff directly into the creek from both sides of the ford. 30 May 2013

Photo 2. Looking downstream toward road & Silvester Cr from sampling site 07 at 11U 0660260 5633609 ± 4 m. Arrow points to location of new undesignated track draining to creek (developing sediment source 29). 30 May 2013
Photo 3. Truck trail bridge over Silvester Cr tributary at 11U 0660155 5634300 ± 2m, sediment source 31, looking south. Runoff from the south approach runs directly into the tributary. 30 May 2013

Photo 4. Road runoff flowing overland to clear headwater tributary (flooding in foreground, main channel just behind camera) at 11U 0660121 5634329 ± 2 m, sediment source 30. Overland flow from roads is common, but routes are difficult to detect except during rainfall.
Photo 5. Bare right bank, a natural sediment source on Silvester Cr approximately 10-20 m above confluence with a left bank tributary at 11U 0660294 5634427 ± 2m, sediment source 14. Several of these occur along the creek above Husky bridge, but all have not yet been mapped. This one does not appear to be contributing much suspended sediment even under the current high-rainfall conditions, but is actively eroding as evidenced by the small rills, lack of vegetation and small slump blocks from the top of the bank. 30 May 2013

Photo 6. Two naturally eroding banks (arrows) combined as sediment source 15, (see map, position approximate). One appears from this distance to be actively slumping, the other appears to be stable. 30 May 2013
**Photo 7.** Part of sediment source 37 on a major tributary of Silvester Creek. A large amount of muddy water displaced from a large puddle 100 m in the distance minutes earlier by a vehicle approaches (arrow), and will flow into the tributary here. The meadow in the background is heavily tracked by mud-bogging vehicles, the muddy water from which also flows to this tributary at various locations. 9 June 2013

**Photo 8.** Part of sediment source 37, same location as above, but taken from uphill on the north approach. This trail runs down a natural intermittent watercourse (sediment source 38). Judging from the amount of erosion, which extends 350 m uphill behind the camera, it has contributed much fine sediment to the tributary below. 9 June 2013
Photo 9. Nonfunctional silt fence @ 11U 0659884 5635495 ±2m, start of sediment source 39. Muddy runoff went around and through this fence during the prolonged rainfall beginning 18 June 2013, to flow into the major tributary below. 30 May 2013

Photo 10. Prolonged rainfall produces runoff down Husky Rd to bridge over main tributary. Water flows under the silt fence (left), also over the bridge to flow into the tributary (right). 19 June 2013
Photo 11. Muddy runoff from road entering tributary below the bridge at approximately 11U 0659763 5636134 (part of sediment source 39), showing pipeline crossing (arrow, part of sediment source 40). 19 June 2013

Photo 12. Husky Road bridge over Silvester Creek, sediment source 16. Muddy runoff drains to the soggy floodplain, thence overland to the creek, and also flows onto the bridge where it spills, drips and splashes into the creek. 30 May 2013
Photo 13. Sediment source 17, an undesignated trail connecting the Husky Road with the cutline to the north. Muddy runoff drains overland to the left and northward to the cutline, where it then flows to Silvester Creek (left). 30 May 2013

Photo 14. Fords on and around a cutline, sediment source 18, looking approximately NE. Main entry points for muddy runoff into Silvester Creek are shown by arrows. 30 May 2013
Photo 15. Pipeline crossing over Silvester Creek, sediment source 19, looking approximately E. 30 May 2013

Photo 16. Pipeline crossing over Silvester Creek, sediment source 19, looking approximately W. 30 May 2013
**Photo 17.** Livestock crossing, sediment source 20. This location was producing negligible suspended sediment at the time the photo was taken. 30 May 2013.

**Photo 18*.** The same location as above, 17 June 2013. The undesignated quad track was laid down between the afternoon the photo was taken and the afternoon of the previous day. It now enhances the site as a sediment source.
Photo 19. The W approach to the quad bridge, sediment source 22. Large amounts of muddy water displaced from deep puddles at the top of the hill, as well as rainfall runoff, enter Silvester Creek here. 6 June 2013

Photo 20. Sediment source 23. The trail parallels Silvester Creek for 350 m E of the quad bridge. Rainfall runoff and water displaced by vehicles from deep puddles (e.g., background) flows overland to the creek. 6 June 2013
Photo 21. Silvester Creek above the pipeline crossing (sediment source 19) immediately before a quad crossed at the arrow. 17 June 2013

Photo 22. Silvester Creek approximately 10 m downstream from the pipeline crossing (sediment source 19) approximately 2 minutes after a quad crossed the stream at that point. 17 June 2013
**Photo 23.** Sampling station 4, bottom of meadow reach, 17 June 2013. TSS 179 mg/L. The source of the suspended sediments appeared to be the pipeline crossing, based on inspection of the creek immediately after this photo was taken (see Photos 21 and 22, above.).

**Photo 24.** Spawning westslope cutthroat trout (arrows) in Silvester Creek approximately 3 m downstream from the quad bridge, sediment source 22, in unusually clear water. These fish would subsequently be subjected to the suspended sediments observed at station 4 in Photo 23 above as the TSS slug moved downstream. 17 June 2013