

Appendix C

Summary of the Moose Post-Fire Stream Monitoring Glacier View Ranger District Flathead National Forest

Introduction

The following is a short discussion of the post-fire stream monitoring done at several locations in Big Creek following the 2001 Moose Fire. Most of the sites were monitored in years 2001, 2002, and 2004; however three sites in Coal Creek were established in 2002 and only monitored two years. There were eleven stream cross-sections measured over some time-frame and the changes are discussed in general herein. There were other stream characteristic data gathered in 2001, but there was no repeat measurements taken, so it is not discussed herein. Data collected and photography taken at the cross-sections, along with other monitoring data, are stored in files at the Hungry Horse-Glacier View Ranger Station in Hungry Horse, Montana.

Cross-Sections in Big Creek

The main-stem of Big Creek had a cross-section located in the NE ¼ of section 25, approximately 3.5 miles above the confluence with the North Fork of the Flathead River. This cross-section is basically in the middle of the fire-affected portion of Big Creek. This cross-section has basically three channels through this reach. The left channel is a former main channel, a middle high flow “flood channel” and the right-side current main channel. There was virtually no change to the left-channel or the middle channels from 2001 through 2004. The right-side main stream channel deepened from 2001 to 2004 by approximately 14 to 16 inches across more than 50% of the 10 foot channel width.

The second cross-section was upstream of the first, about 50 meters downstream of the Hallowat Creek Bridge on the main-stem of Big Creek. This stream cross-section have only a small area of 2001 wildfire above it's location in the watershed. From 2001 through 2004 there was virtually no change in the stream cross-section at this site.

The third cross-section is the lowest in the fire affected portion of Big Creek. It is located slightly west of the Lookout Creek Bridge on Big Creek. There were some minor changes in this cross-section from 2001 to 2004. There was approximately 8 feet (11%) of the streambed width that deepened by 2 to 4 inches primarily in the 2004 season. Also there was a new gravel bar deposited on approximately 12 feet (16%) of the channel width to a maximum depth of approximately 12 inches.

The fourth cross-section is an ephemeral stream channel that enters Big Creek in the NW ¼ of section 25 identified as the “Big Dip Creek.” The cross-section of this stream changed from 2001 through 2004 by deepening in the middle and the left side of the channel, and becoming shallower on the right side of the channel. Approximately 20% of the channel deepened by 4 to 6 inches, and 10% of the channel became shallower by 3 to 5 inches.

The fifth cross-section is an ephemeral stream channel that enters Big Creek in the NW ¼ of section 25 identified as the “Channel West of the Big Dip Creek.” The cross-section of this “dry” stream channel changed from 2001 through 2002 due to a slump of the streambank that filled the bottom of the channel area. There was approximately 2 to 4 feet of material deposited across the channel at this location from the slumped streambank. A new cross-section was established

upstream of the slump affected area. There was no change to note in this cross-section from 2002 to the re-measurement in 2004.

The sixth cross-section is in Langford Creek a small tributary of Big Creek in the lower portion of the watershed, SW ¼ of section 21. A high percentage (approximately 85%) of the Langford Creek watershed burned in the Moose Fire. The cross-section of this stream changed from 2001 through 2004 by deepening on the left side and right side of the channel, and becoming shallower in the middle portion of the channel. Approximately 40% of the channel deepened by 2 to 4 inches, and 10% of the channel became shallower by 3 to 4 inches.

Cross-Sections in Coal Creek

The Coal Creek watershed had five cross-sections monitored after the fire. The lowest cross-section (#1) in the watershed was located 100 meters upstream of the Road #317 bridge on Coal Creek in SE ¼ of section 36. There was virtually no change in this cross-section from 2001 through 2004. Only a decrease in bed elevation was noted on two sites where stones probably moved. There was also some widening of the stream channel on the left bank by approximately 1 foot.

A second cross-section was located 30 meters downstream of the second bridge on Road #317. This cross-section was established in 2002 and had virtually no change when re-measured in 2004.

The third cross-section was established in the South Fork of Coal Creek in the NE ¼ of section 25. There were some minor changes in this cross-section from 2002 to 2004. Basically in this cross-section there was a balancing of some small amount (< 10%) of deepening by approximately 2 inches, and some filling in <10% of the stream by 2-3 inches.

The fourth cross-section was located in the NE ¼ of section 33 in Mathias Creek. This site was again established in 2002. There was basically no burned area above this site due to the 2001 Moose Fire. Like the South Fork of Coal Creek site there were some minor cutting and filling of a couple of inches of material that balanced the cross-sectional area from 2002 to 2004.

The fifth cross-section was in Deadhorse Creek upstream of the State Forest boundary. This site was established in 2001. Like the last two cross-sections discussed there were slight cutting and filling areas within the channel of 2 to 3 inches, but overall the cross-section balanced out for 2001 to 2004 with no major change occurring.

Conclusions

In summary, the stream channels that had the most significant change in cross-section area following the wildfire were the steeper ephemeral first-order streams, and the reach of Big Creek that is identified as being a dynamic/changing “unstable” reach with multi-stream channels in the valley bottom. The more stable channel reaches and the ones with less fire affected disturbance above them had very little change occur during the monitored timeframe.

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