Applying knowledge to improve water quality
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Mill Coulee and Muddy Creek Water Quality Assessment

Evaluation of effectiveness of natural resource conservation practices, which involve voluntary implementation of Best Management Practices (BMPs), has gained substantial attention in the last several years. An assessment was completed to determine whether natural resource management programs and BMPs implemented to enhance water quality and quantity within the Mill Coulee and Muddy Creek watersheds, located in north-central Montana, achieved their desired goals. Water quality parameters assessed included: specific conductance (electrical conductivity), nitrate + nitrite - N, phosphorus, suspended sediment concentration, pH, and selenium. Available water quality and quantity data was gathered and grouped into pre-EQIP and post-EQIP implementation periods. The grouped data sets were then compared statistically to determine significance of differences between the pre- and post-EQIP data sets. Efforts were undertaken to correlate significant differences between pre- and post-EQIP data to EQIP-related BMP implementation within each watershed. While lack of sufficient pre-EQIP water quantity and quality data precluded any valid statistical analysis for Mill Coulee, analyses conducted for Muddy Creek showed that there have been significant changes, deemed to be improvements, in water quality in Muddy Creek between the period prior to EQIP initiation and since EQIP initiation within the watershed. While it is difficult to say that a particular EQIP-sponsored or related practice implemented resulted in a specific change in any particular water quality parameter, decreases in water quantity between pre-EQIP and post-EQIP periods were not evident. Thus it would be valid to conclude that the improvements which are reflected as reductions in specific conductance, trends towards reductions in nitrate + nitrite – N concentrations, reductions in suspended sediment, and trends towards reductions in selenium concentration from the pre-EQIP to the post-EQIP period of study are a result of the practices implemented as a whole.

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