



USDA-CSREES 2006 National Water Quality Conference

Using a TMDL Approach to Water Quality Monitoring on a Watershed Scale - A Case Study

The Sun River Watershed consists of 1.4 million acres located in North Central Montana. The Sun River and several of its' tributaries are listed on the Montana 1996 and 2000 303(d) list. The types of impairments include sediment, nutrients, thermal modification, organic enrichment/DO, pH, salinity/TDS/chlorides, habitat alteration, and flow alteration. Probable causes for these impairments are agriculture and hydromodification that cause water bodies to only partially support beneficial uses of fisheries, aquatic life, swimming, and recreation.

The Sun River Watershed TMDL and water quality plan has recently been completed. While threshold water quality conditions were established, there were no provisions for an effective monitoring program. Without a monitoring program it is difficult to determine success of improvement efforts. It is also difficult to determine direction of future efforts.

By assessing historic and current water quality conditions and using thresholds set in the TMDL, this project attempted to address the following issues:

1. What are baseline conditions in the Sun River and major tributaries?
2. What would constitute an effective long-term monitoring program in the Sun River?

A total of 24 sampling sites were selected to monitor flow and water quality in 2004 and 2005. The following parameters were measured on-site along with associated flow volumes: salinity, water temperature, dissolved oxygen, conductivity, pH, nitrate + nitrite nitrogen, total kjeldahl nitrogen, total phosphorous, and total suspended sediment (TSS).

A long term monitoring plan for the watershed was established. Key monitoring sites and monitoring parameters were identified for effective long-term trend analysis.

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