

PROJECT DESCRIPTION

In June of 1999, the South Dakota Department of Game, Fish and Parks, the South Dakota School of Mines and the University of South Dakota were awarded a \$602,000 cooperative research grant by the Federal Sport Fish Restoration Program. **The objective of this 3-year study is to develop a multi-agency management plan that identifies best management practices which can be used by City, State and Federal agencies to insure the future existence of the only urban coldwater fishery in South Dakota by June of 2003.**

Since the late 1960's and early 1970's several efforts have been made to improve the brown trout fishery in Rapid Creek through Rapid City. Since the establishment of a greenway along Rapid Creek, the City of Rapid City, SD Game Fish and Parks (SDGFP), the Bureau of Reclamation (BOR) and SD Department of Environment and Natural Resources (DENR) have collaborated on bank stabilization and fish habitat improvement projects worth an estimated \$750,000. Most recently Rapid City, with partial funding through DENR 319 program made improvements within Canyon Lake to enhance water quality.

The SDGFP discontinued stocking the reach of Rapid Creek below Canyon Lake in the early 1970's and this wild brown trout fishery now supports approximately 1,800 to 2,000 trout per mile. Although, these numbers indicate an excellent fishery, recent fish sampling efforts by the SDGFP have identified some issues of concern regarding the only urban trout fishery in South Dakota. Key issues of concern are the reduction in brown trout and mountain suckers numbers and increase in white suckers since 1985 (Figure 1.) The pollutant tolerant white sucker appears to be replacing both of the coldwater species. If this trend continues, angling opportunity within Rapid City could be severely impacted.

A year long creel survey conducted by GFP in 1994 and 1995 estimated the annual fishing pressure from Campbell Street upstream to Canyon Lake, a distance of 6.4 miles at 4,140 angling days. Based on a US Forest Service WFUD (one wildlife fishery user day) of \$70 in 1995, the annual economic impact of the sport fishery was approximately \$290,000 in 1995.

We are requesting authorization to install 5 continuous water monitoring and sampling devices for this 3-year study. The samplers will be used to quantify the magnitude and the duration of the stormwater events as well as the background water quality conditions in the stream. Each system will continuously monitor and record specific conductance, turbidity, dissolved oxygen, pH and depth. During storm events the instruments will automatically collect 1-liter samples of water on an hourly basis for 24-hours. These samples will be analyzed by an EPA certified lab for biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), total suspended solids (TSS), total dissolved solids (TDS), volatile solids, organic N, TKN, NH₃N, NO₃N, Soluble and total PO₄, alkalinity, pH, coliform bacteria, fecal coliform, oil and grease, heavy metals, and total phenol.

Plasma chloride, glucose, lactic acid and cortisol samples will be collected from brown trout throughout the year to quantify the physical condition of the trout. The findings from both studies will be compared to quantify the importance of water quality on the health of the fishery. During the final year of the study, a model will be developed to provide city, county, state, and federal resource managers best management practices and guidelines for insure the long-term maintenance of the fishery.

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Planning Department