2008 USDA-CSREES National Water Conference
Sparks, NV

CEAP: Cumulative Effects Modeling and Interdisciplinary Analyses

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Abstract Text:

As part of the USDA Conservation Effectiveness Assessment Program (CEAP), we are studying the effectiveness of conservation practices at the watershed scale using data from Paradise Creek watershed, located near the town of Moscow in northern Idaho. Using these data and geo-spatial modeling, we examine how watershed restoration in a mixed-land use watershed can be optimized by considering its biophysical and socio-economic characteristics. We report on progress towards cumulative effects modeling and integration of socio-economic data and physical data. In this presentation, our objective is to provide an overview and status update of the following activities in the project: geo-spatial modeling of soil loss and sediment delivery using the Water Erosion Prediction Project (WEPP) model, sediment transport in the stream using CONCEPTS, as well as interdisciplinary analyses of the physical, economic and social data. In the cumulative effects modeling, we show effectiveness at the field scale and watershed scale, with emphasis on the time lag. In the integrated modeling framework, our project evaluates different management scenarios to arrive at the optimal suite of practices at the watershed scale. We briefly introduce a regional survey conducted during year three of the project, with reference to poster presentations at the meeting.

Impact Statement:

A thorough understanding of sediment transport and cumulative effects (e.g., delay of sediment transport and storage in streams), will assist in interpretation of stream monitoring data which are used to assess progress in watershed management. This research helps in better selection of conservation practices in a watershed, and in providing recommendations for monitoring after implementation. Particularly the long-term effects of conservation practices are targeted in this research. Through the socio-economic surveys, the perception of landowners/operators on the effectiveness of selected practices as well as the desired level of cost-sharing will impact future farm programs.