



Urban Flood Demo Program & Southwest Demo Program

Assessment of Stream Ecosystem Modeling Methodologies within McCarran Reach Section, Lower Truckee River

Products	A report will detail the effectiveness of integrating the Ecosystem Function Model (EFM) with hydrologic models for determining species habitat. Habitat maps for the entire Truckee River and transect descriptions within the McCarran Ranch restoration area have been provided in a digital format.
Benefits	The study will give riverine restoration planners added insight into the effectiveness of current USACE tools in providing valuable preproject restoration information.
Issue	River habitat restoration projects are being initiated at an increasing rate with many rivers in the western United States becoming a point of focus. Private, local, state and federal agencies are allocating financial and agency resources to achieve different yet similar goals. The U.S. Army Corps of Engineers (USACE) has developed tools to assist in assessing the temporal aspects of run-off in relation to species needs. Although the tools are loosely coupled, required is the need to comparatively assess the effectiveness of the entire modeling and coupling process. A test of the process would provide a proactive means to assess the effectiveness of proposed restoration activities and a means to determine likely sites which could be receptive to restoration activities. A coupled process composed of tools directed at achieving this goal could alleviate some of the stress placed on financial and personnel resources.
Description	The objective of this assessment is to quantitatively compare three separate overarching methodologies or variations in methodologies to identify potential aquatic habitat. The three methodologies to compare are: (1) the existing Hydrologic Engineering Center-River Analysis System/HEC-Ecosystem Functions Model (HEC-RAS/HEC-EFM) potential habitat delineations, (2) the two-dimensional (2-D) hydrodynamic model/HEC-EFM potential habitat delineations, and (3) an assessment of field identified habitat delineations linked to statistical significant habitat predictions using Wildlife Habitat Relationships (WHRs). The third methodology will have two variations using the relationship between field identification of habitat and flow information from the 2-D and HEC-RAS hydrologic models. A comparison among the three methodologies should help answer questions such as to what degree can hydrologic models be utilized to address ecosystem processes from an indicator species or community perspective and do hydrologic models show any improvement for habitat prediction as compared with simple field mapping. Answers to these questions have direct consequences on other restoration efforts planned for the Lower Truckee River and should assist efforts in other similar mountain stream locations. The McCarran Reach restoration plan will serve as an example case of the utility of these methodologies to be implemented in a restoration effort.
Sponsor	Urban Flood Damage Reduction and Channel Restoration Development and Demonstration Program (UFDP).
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