

*** Development of a Modeling Framework for Assessing Flood Management Performance and Floodplain Habitat Creation in the South Delta**

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Abstract: River-floodplain connectivity is increasingly being recognized as critically important for the survival of native fish species in the San Francisco Bay Delta and for reducing flood risk throughout the Bay-Delta and Central Valley systems. Levee setbacks, bypasses, and off-stream flood storage and attenuation are often proposed as actions that would expand the floodplain habitat and reduce downstream flood risk. However, the complex network of channels, islands, bridges, and other infrastructure in the Delta makes it difficult to quantitatively assess the improvements proposed actions would actually make.

We present a modeling framework developed with publicly available tools from the USACE Hydraulic Engineering Center (HEC) that is currently being used by multiple stakeholders to simultaneously and quantitatively evaluate the flood attenuation and ecosystem restoration benefit of levee setbacks and bypass channels in the South Delta. Unlike most previous studies, these efforts assign equal weight to flood and ecosystem benefits. Results of these modeling efforts have shown significant improvements in both floodplain habitat and flood management performance in the South Delta, and are informing ongoing planning efforts in the Delta including the Bay Delta Conservation Plan (BDCP).