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Predicting the Ecological Outputs of Increased Base Flows in Ephemeral Texas Streams: Policy Implications for Agencies

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Inadequate stewardship of rangelands across many Western states has had profound implications for the hydrologic regime. Altered rainfall/runoff patterns, proliferation of native and nonnative brush species, and the drawdown of shallow groundwater resources have resulted in the loss of many aquatic and riparian ecosystems as once- flowing streams become increasingly ephemeral. Under its mission for environmental restoration, the Corps of Engineers is evaluating the potential to partner with state programs for brush management to restore base flows and the aquatic and riparian systems that depend on them.

Corps regulations require quantification of a potential project's outputs to demonstrate that its benefits exceed its costs. For projects such as those identified above, the analyst must quantify the ecological outputs of increased base flows. The Fort Worth District is partnering with researchers from Texas A&M University to predict the increase in the diversity of aquatic and riparian ecosystems when can be attributed to increased quantity and duration of flows as landscape management strategies are applied across the watershed.

The presentation will address three watersheds, and examine the application of a variety of models to simulate the vegetative/hydrologic relationship(s) as well as the development of ecological output models for the aquatic and terrestrial systems associated with these streams. The presentation will address the relationship of this modeling effort to planning studies underway for potential large-scale restoration projects in several Texas locations.