

Attachment 5 - Additional Elk River Watershed Monitoring Activities

Elk River Recovery Assessment

CalTrout and its subcontractors are implementing the Elk River Recovery Assessment, a sediment and hydrodynamic modeling project by which to answer several key questions relevant to recovery of the Elk River Watershed, including:

1. What is the trajectory of sediment supply, transport, and storage in the channel network?
2. How will changes in channel morphology alter flow conveyance capacity in channels and on floodplains?
3. What will the ecological responses be to the potential trajectories in physical processes?

To this end, the contract between the State Water Resources Control Board and CalTrout outlines several tasks. Under the contract, the Elk River Recovery Assessment project team (project team) is engaged in a number of monitoring activities. Monitoring has been conducted to support the development of the sediment and hydrodynamic model of the Recovery Assessment, which will establish existing and predict future sediment and water transport from the top of the impacted reach to the mouth of the river.

Update Existing Data

Northern Hydrology Engineering (NHE), a subcontractor on this project, has been working with Humboldt Redwood Company (HRC) to develop improved discharge ratings for the North Fork and South Fork Elk River, and Tom's Gulch monitoring sites. Further, NHE has been working with Dr. Jack Lewis to generate sediment concentration and load estimates for several HRC stations. Lewis' Water Year 2014 and 2015 analyses will be recomputed using updated discharge ratings recently provided by HRC and will be augmented by calculating load estimates for station 509 (Steel Bridge) for 2014 and 2015.

Geomorphic and Topographic Data Collection

The Elk River Recovery Assessment project team has completed all geomorphic and topographic data collection at intensive study sites and within study reaches. All facies mapping within intensive study sites have been digitized. These data were used to calculate facies areas, which were then used in combination with bulk sediment sample results to calculate area-weighted particle size distributions for all intensive study sites. Cross section surveys were conducted by HRC in September 2015, and have been delivered for a number of sites. All 2014 and 2015 cross section surveys have been plotted against LiDAR data. Surveyed tops, toes, and thalweg callouts have been extracted and plotted with the cross sections as well. A comprehensive geodatabase has been created to contain all of the most up-to-date geomorphic and topographic data for the Elk River project area.

The project team has also been researching Elk River watershed fisheries status; held discussions with California Department of Fish and Wildlife (CDFW) fish biologists and HRC biologists. They have continued to collect and review documents and other available information, and begun the process of writing a fisheries resources memo.

Water Data Collection and Reports

All water data apparatus has been removed and decommissioned. Preliminary water quality data analysis for 2 reaches have been summarized and a preliminary stage-to-water surface elevation (WSE) analysis conducted for all measured data.

The project team is currently drafting a *Data Collection Report*, which is close to completion. It will include a description of physical and water quality information collected as part of the Recovery Assessment to date. This report will also include recommendations for monitoring stations and parameters for a Long-Term Monitoring Program to evaluate progress towards watershed recovery.

Elk River Watershed Stewardship Program

Under a grant from the State Water Resources Control Board, Humboldt County in coordination with a Steering Committee, has been developing the Elk River Watershed Stewardship Program as a stakeholder-driven organization under which to plan, fund, and implement sediment remediation and stream restoration activities, health and safety projects, and science and monitoring. The U.C. Cooperative Extension and CalTrout are identified as co-leads of the Science and Monitoring Coordination subcommittee. The Watershed Stewardship Program and its subcommittees will be initiated in the summer of 2016. The Science and Monitoring Coordination subcommittee is tasked with the following and will be supported by the results and recommendations of the Elk River Recovery Assessment:

1. Coordinate and communicate with stakeholders currently monitoring, likely to monitor, or interested in monitoring results.
2. Compile readily available reports, monitoring results, and data and post monitoring data and reports on the Program website.
3. Develop a framework for monitoring goals, objectives, and parameters and evaluate the sufficiency of the current monitoring network for monitoring long-term trends, effectiveness of remediation actions, and other purposes. Identify how existing and new data will be assessed, shared, and used to guide projects and activities.
4. Prepare a science and monitoring implementation strategy and submit to the steering committee and the Grant Manager.
5. Develop a *Coordinated Science and Monitoring Action Plan* that describes the actions necessary to implement the monitoring strategy and include preliminary cost estimates. The Action Plan will draw from a number of sources, as determined by the subcommittee, but will include consideration of the interim and final reports and monitoring recommendations of the Recovery Assessment project team.
6. Submit the Action Plan to the steering committee for review and to the Grant Manager for review and approval.

Elk River Sediment Remediation Pilot Implementation Projects

CalTrout is also implementing a number of pilot projects as a companion to the Elk River Recovery Assessment, which are funded by the Timber Restoration Fund. Pilot projects will be initiated in early summer 2016 following completion of the contracting process. The projects will be located and monitored in a manner to best support the long-term monitoring program described in the Recovery Assessment *Data Collection Report* and the Elk River Watershed Stewardship Science and Monitoring Coordination subcommittee's *Coordinated Science and Monitoring Action Plan*. There are a number of project specific monitoring and reporting requirements associated with these pilot projects, for example:

1. Conduct pre-, during, and post-implementation photo documentation according to State Water Board guidelines. Submit photos to the Regional Water Board Grant Manager.
2. Conduct post-construction monitoring including field mapping of habitat, channel and geomorphic conditions, as-built topographic survey of the project site, and an as-built digital terrain surface. Resurvey cross sections established during construction to document sediment deposition on constructed floodplain surfaces.
3. Monitor construction sites for at least one season to observe geomorphic and sediment depositional responses, including conducting two site visits during winter high-flow conditions to observe flow patterns, and one site visit during the subsequent summer low-flow season to conduct more detailed monitoring.
4. Upload compatible data to the California Data Exchange Network (CEDEN) and submit any non-CEDEN-compatible data to the Regional Water Board Grant Manager.
5. Analyze monitoring results and include a summary of monitoring and data analyses in the Final Project Report.