Session I6: Dam Removal and Associated Water Quality Impacts

Room C120-122
10:00 – 11:30 am

0228
I6-1

Tribal Water Quality Monitoring Programs in the Klamath River and Major Tributaries

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The Yurok and Karuk Tribes have lived in the Klamath Basin for time immemorial. Today, these Tribes are collaborating on a technical level to monitor water quality over 190 river miles in their ancestral territories and Reservation boundaries. Each Tribe will highlight its water quality monitoring program and reflect on the benefits of collaborating with neighboring Tribes to meet Tribal goals and objectives. This relationship has allowed the Tribes to efficiently collect and manage water quality data to establish baseline conditions over a wide array of water years and track spatial and temporal trends prior to dam removal on the Klamath River. This established monitoring network is crucial in order to adapt to monitoring needs prior to, during and after the removal of 4 hydro-electric dams on the mainstem Klamath River.

0236
I6-2

Assessing Dam Removals on a Shoestring: Underwater Photos Using Digital Cameras to Complement Bug Data

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Musconetcong Watershed Assoc., Asbury, N.J., USA

The Musconetcong Watershed Association is a leader in the removal of stream barriers and dams in New Jersey; to date it has coordinated the removal of four run-of-the-river dams from the main stem of the Musconetcong River. The Finesville dam, near the confluence with the Delaware, was removed in November 2011. In order to measure the results of the dam removal and subsequent stream restoration in improving water quality and habitat at the site, macro invertebrate samples were collected at four sites upstream and downstream of the dam before and after removal; these were submitted to a taxonomic lab for identification and analysis. Starting in 2009, trained volunteers collected dissolved oxygen and temperature data using simple field test kits, and documented changes to the stream habitat using macroinvertebrate and habitat assessment and photographs. Because the MWA understood that one of the most significant results of this restoration would be the change in habitat characteristics of the impoundment, volunteers used underwater photography to document changes in habitat at the four sites. Team members constructed a simple device to aid in underwater photography and to standardize photographs in the field. Presentation will include lessons learned and technical challenges surmounted, and using underwater photography for tracking changes pre and post dam removal will be discussed. Data and examples of underwater images will be presented.

0147
I6-3

Dillon Dam – To Pipe or not to Pipe? Evaluation of a Umatilla River Irrigation Diversion Structure

Greg Silbernagel

Umatilla Basin Watershed Council, Pendleton, Oreg., USA

Analyzing the effects to water quality during a dam removal should be the first phase of any Natural Resource agency planning to tackle such an undertaking. The Dillon Dam is a fish passage barrier on the mainstem Umatilla River. It directly contributes to increased water temperatures and invasive aquatic species growth, which in turn, alter pH levels. The channelization by local railroad levees and constant bed load movement directly contribute to lack of riparian continuity, also a factor contributing to water quality pollution listed in the Umatilla Basin Total Maximum Daily Load.

The only way to remove the dam is to retire it as an active irrigation diversion structure. Landowners do not wish to sell their water rights. The next option is to change the point of diversion upstream two miles to the Westland Irrigation Dam, place the Dillon water into the Westland Canal and pipe the water two miles to its current point of use. Flood irrigation is practiced in this reach and will

continue to contribute to return flows which are a benefit to water quality through cooling of temperatures while sub surface.

The largest concern is consideration of “inefficient” irrigation ditches contributing to return flow. This has lead to considerable debate regarding return flows to the Umatilla River. Is it better for the environment if irrigators divert more water from the stream than necessary to fulfill their irrigation water right due to inefficient irrigation ditches? Is it better for a pipeline system to be as efficient as possible, allow irrigators to take only what they need, and leave the rest in stream?

The landowners have historically been great stewards of the land. They believe the pipeline would benefit their agricultural practices and the dam removal would increase water quality and fish passage concerns. This project is currently in its planning phase attempting to answer the questions mentioned.

0184
I6-4

Monitoring and Assessing Water Quality Issues for the Martis Creek Lake Dam Project

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Martis Creek Lake is located in the Sierra Nevada Mountains near Lake Tahoe, 6 miles southeast of Truckee, California. Recently Martis Creek Dam was classified as a Dam Safety Action Classification (DSAC) level 1 project and subsequently considered unsafe. The unsafe rating was due mainly to seismic and seepage issues that have been found at the dam. Water quality issues are a major concern in the Lake Tahoe region. The United States Army Corps of Engineers (USACE) will be evaluating how to minimize impacts on water quality while examining alternatives to reduce the overall dam risk.

Water quality monitoring activities suggest multiple areas of concern that may be exacerbated by dam remediation activities. The main areas of concern include compliance with strict local, State, and Federal water quality goals, dominance of Eurasian milfoil in the lake, nutrient loading downstream, and impacts of construction activities in and around a shallow well mixed reservoir.

A monitoring program was implemented in June 2010 to capturing parameters hourly for the outflow of the dam, with grab samples once a month for the inflows and lake, and wet samples at least quarterly. A new phase of monitoring was implemented in July 2011 that uses a telemetry system and captures hourly readings within the lake. The new data will build a water quality parameter baseline that will then be closely observed during any remediation activities. The collected data and subsequent evaluation will be incorporated into the pending Environmental Impact Statement scheduled for next year.