

# Engineering With Nature

## Project Fact Sheet



### Large Wood Nourishment Pilot Project at Libby Dam for Improved Kootenai River Functionality

#### Background

The Corps' Libby Dam disrupts the flow of water, sediment, nutrients, and wood, impacting more than 200 miles of the Kootenai River downstream of the dam in Montana, Idaho, and British Columbia, Canada. Consistent with management practices at most dams, wood entering the reservoir is managed as a nuisance (cordoned off or disposed of as firewood) and no wood is being used for environmental benefits. In years when debris loading is high, this places a burden on operations staff at the dam. Large wood nourishment (placement of loose unanchored wood in the river) has been demonstrated to sustainably improve ecosystem health with relatively small investments of time and capital. If conducted below dams that trap large wood, the cost for a large wood nourishment program is low as the raw materials (large wood) are readily available. The Kootenai River ecosystem has been substantially degraded for over a century, has been a focus area for major investments in large wood Natural and Nature Based Features (NNBFs), and would therefore serve as a suitable study location for a large wood nourishment pilot project.

#### Objectives

The primary objective of the project is to create a permanent wood management program at Libby Dam, providing a template for initiating a successful, ecologically sound, economical, legal, and politically acceptable large wood nourishment program that can be used by other Corps Districts and outside agencies. This project leverages NNBFs, emerging technologies, and existing expertise to improve the Corps stewardship mission and relationships with stakeholders. We will demonstrate that natural, process-based approaches should be considered when conducting restoration activities, as they can often result in more cost-effective solutions compared to projects that seek primarily to emulate natural features through more engineered means. Our guidance documentation will be available to the public through the EWN® website and ArcGIS story maps, to scale the benefits of our pilot project beyond the region.

#### Approach

Our project will initially be modeled after the ongoing Howard Hanson Dam Green River wood nourishment project, with an R&D component to increase value for the EWN® community of practice. Specifically, the state of practice for large wood management will be documented to identify lessons learned, challenges, and opportunities that ensure the wood management pilot project at Libby Dam has maximum chance for success. Public outreach (fisherman and boater interviews) will be conducted to understand public knowledge and risk tolerances related to large wood. In addition, monitoring data will be used to develop a new computer model for predicting the fate of large wood loaded downriver of the dam, to help the public understand the risks of wood nourishment.

#### Outcomes

This project directly addresses the present lack of resources and technical capacity to plan, implement, and monitor large wood nourishment projects. The project is a unique opportunity to transition 15+ years of local knowledge and deep modeling expertise in implementing large wood nourishment to the broader Corps community nationwide. The pilot project will demonstrate how large wood nourishment can improve an existing ecosystem with minimal capital and resources and be a cost-effective and simpler alternative to form based NNBFs such as engineered logjams and woody revetments. The pilot project process can also serve as a template for others who want to establish a wood nourishment program, extending benefits across thousands of river miles within the United States and elsewhere.



Green River NNBF created from large wood nourishment project  
(credit: Kleinschmidt Associates-R2 Resource Consultants, Inc.)

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