

Wolf Lodge Creek Watershed Restoration

Presented to the 2023 Spokane River Forum

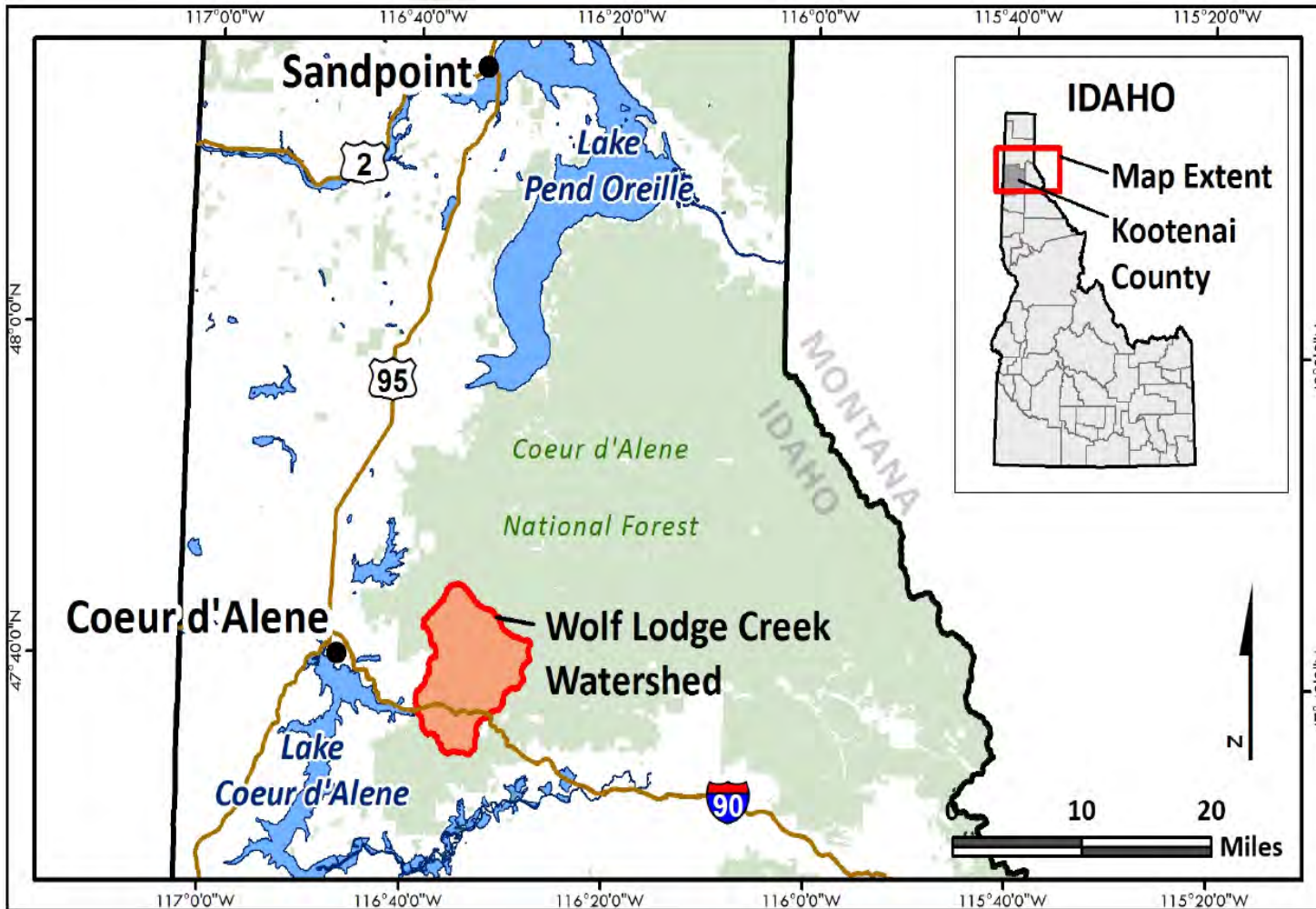
Idaho Department of Environmental Quality
and

Kootenai-Shoshone Soil and Water Conservation District



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Kristin Lowell
Senior Water Quality Analyst



Wolf Lodge Creek

Historically provided dozens of miles of spawning and rearing habitat for adfluvial westslope cutthroat trout in the Coeur d'Alene system.

Sustainability of this species is dependent upon:

- Cold water
- Clean substrates
- Complex habitats
- Connectivity



Wolf Lodge Creek

Wolf Lodge Creek ranks high for loading of total phosphorus and sediment to Coeur d'Alene Lake .

2010 DEQ monitoring project on 11 tributaries to Coeur d'Alene Lake



Watershed Planning Since 2010

- Through a collaborative Watershed Advisory Group that includes:
 - Coeur d'Alene Lake Tributaries Watershed Advisory Group
 - Kootenai-Shoshone Soil and Water Conservation District
 - Federal and State Agencies
 - The Coeur d'Alene Lake Management Program
 - The University of Idaho
 - The Coeur d'Alene Tribe

Upland Restoration Planning

Northeast Lake Coeur d'Alene Landscape Scale Restoration Watershed Action Plan

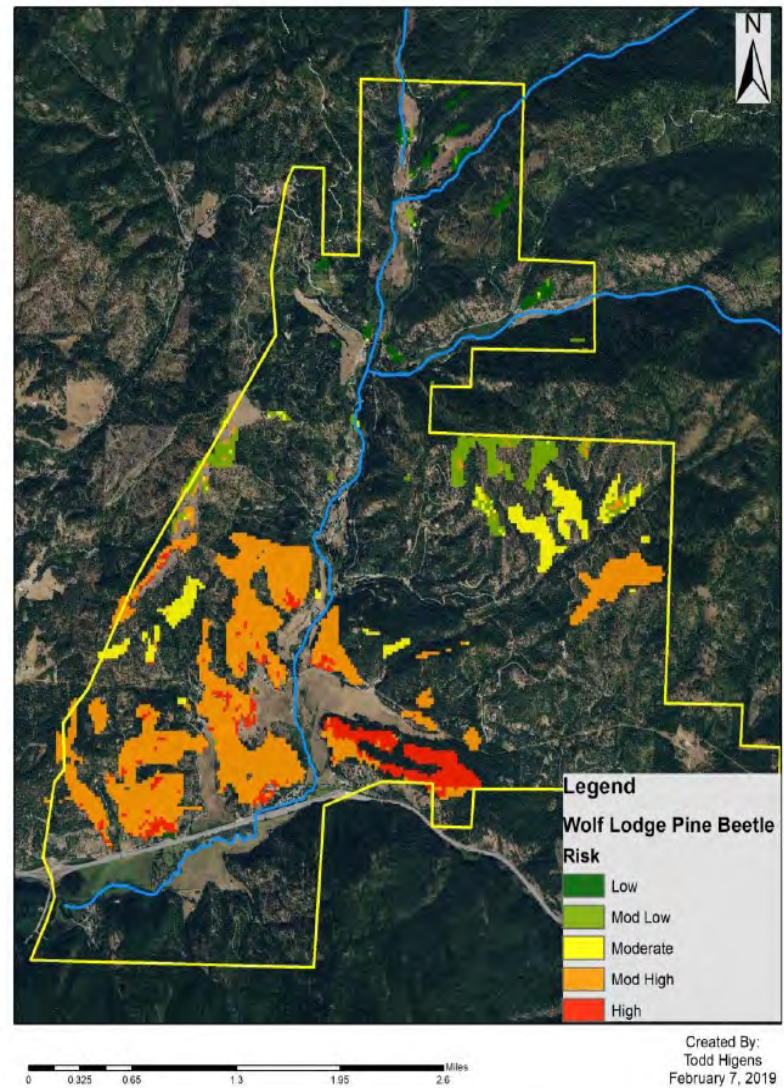
- Sponsored by Kootenai-Shoshone Soil and Water Conservation District - \$208,200 grant from US Forest Service
- Goals under the plan are healthy, resilient forests in the Wolf Lodge, Blue and Fernan Creek watersheds
- The Watershed Action Plan was developed from LIDAR remote sensing technology and upland field surveys

Watershed Action Plan Objectives

- Develop Forest Stewardship Plans on the highest-priority property within the watersheds
- Identify and treat chronic sediment (and phosphorus)-producing forestland/roads
- Educate landowners on creating healthy resilient forests
- Provide technical and cost-share assistance to lands to improve forest health and reduce fuels

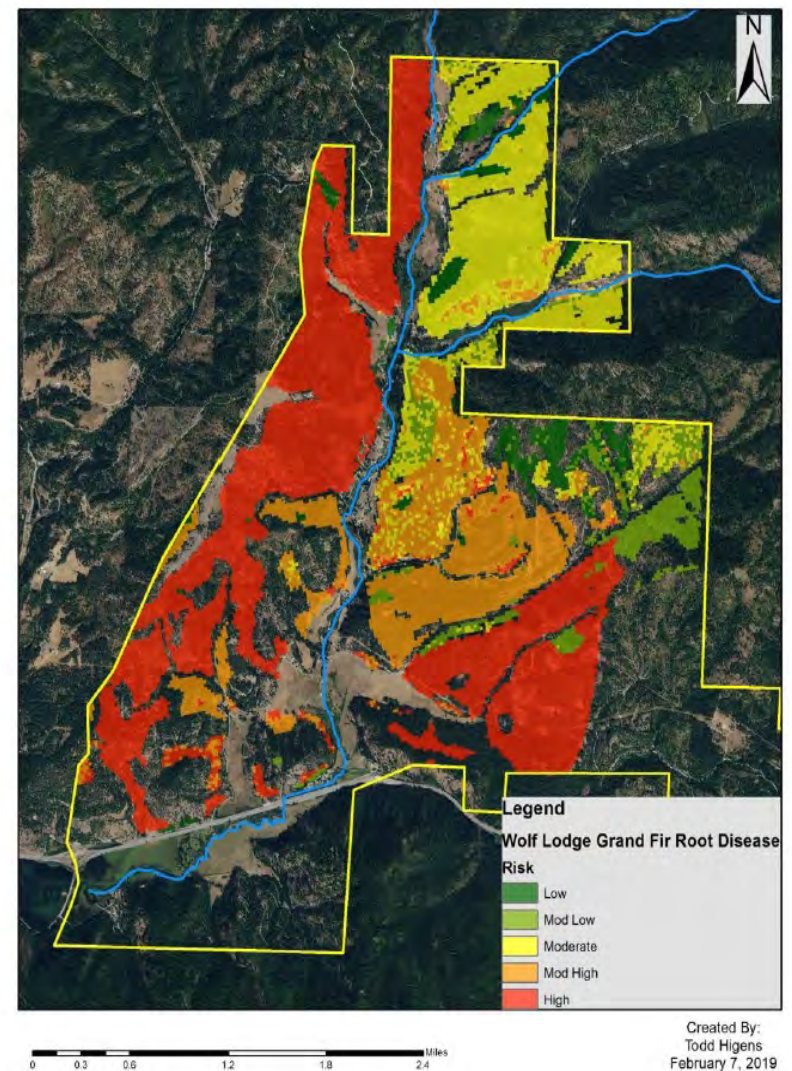
Pine Beetle Risk

Based on Ponderosa Pine community and canopy density



Root Disease Risk

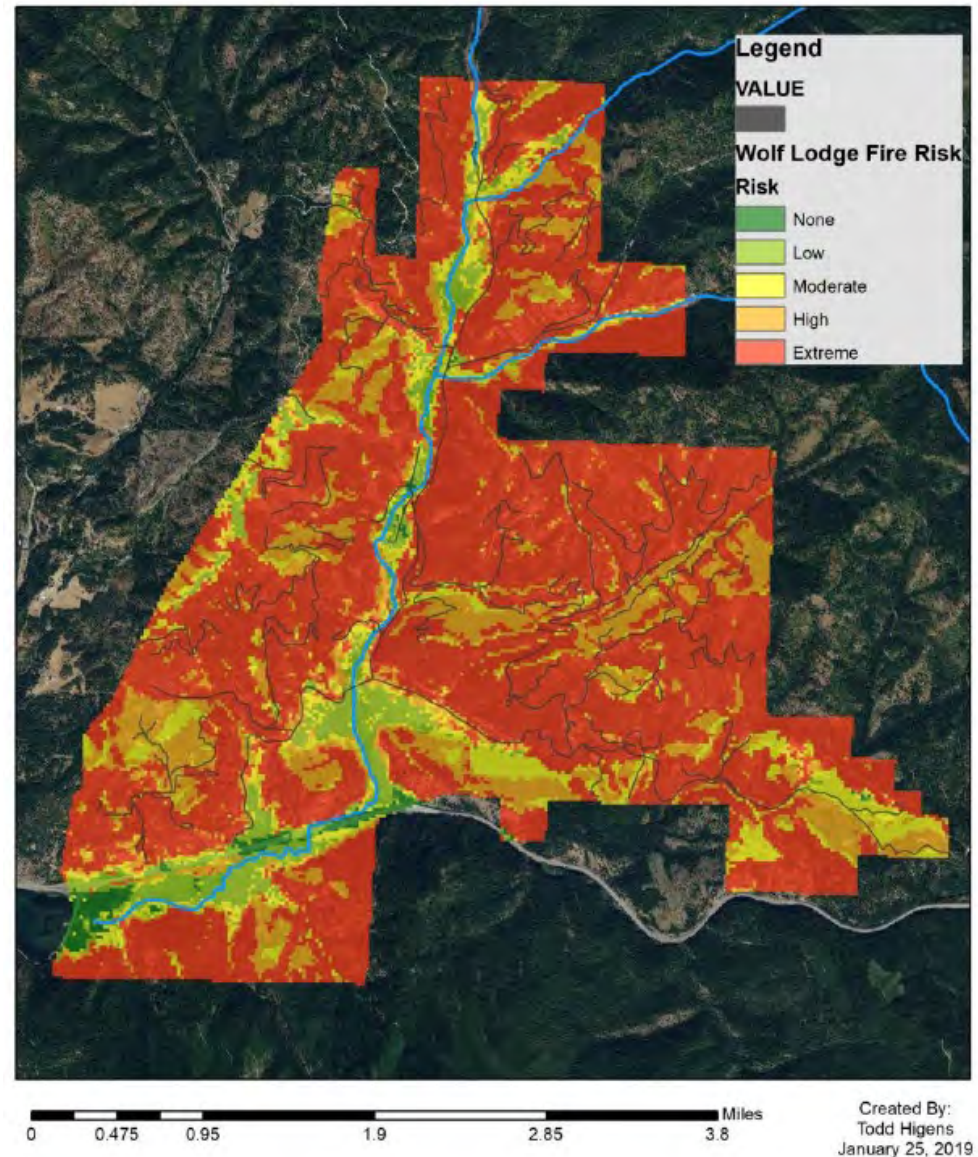
Based on Grand/Doug
fir community, canopy
density and canopy
height



Data Sources: WCG LiDAR, LANDFIRE

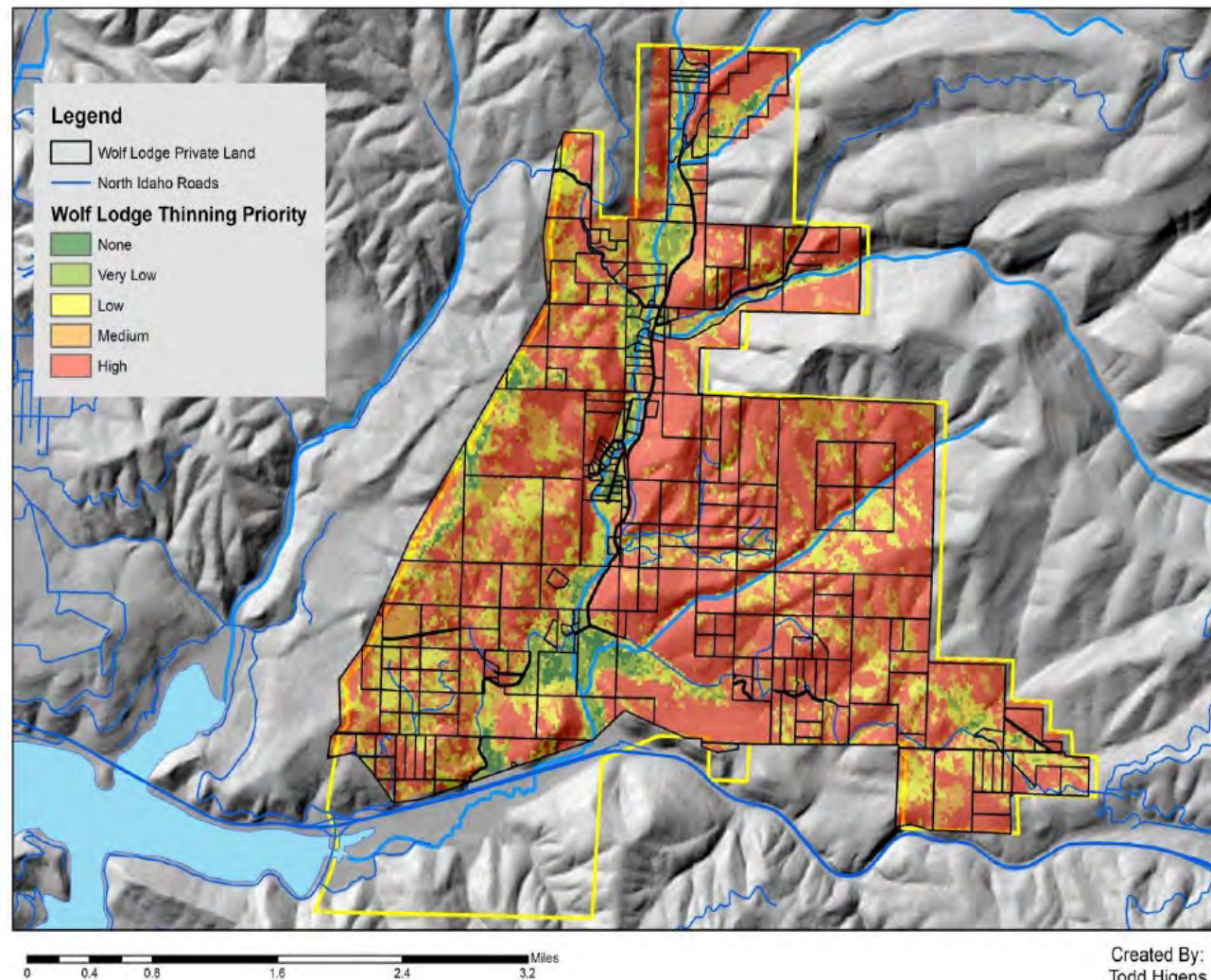
Fire Risk

Based on LiDAR, IDL,
USFS, and LANDFIRE
Data Sources



Priorities

Pre-commercial
thinning



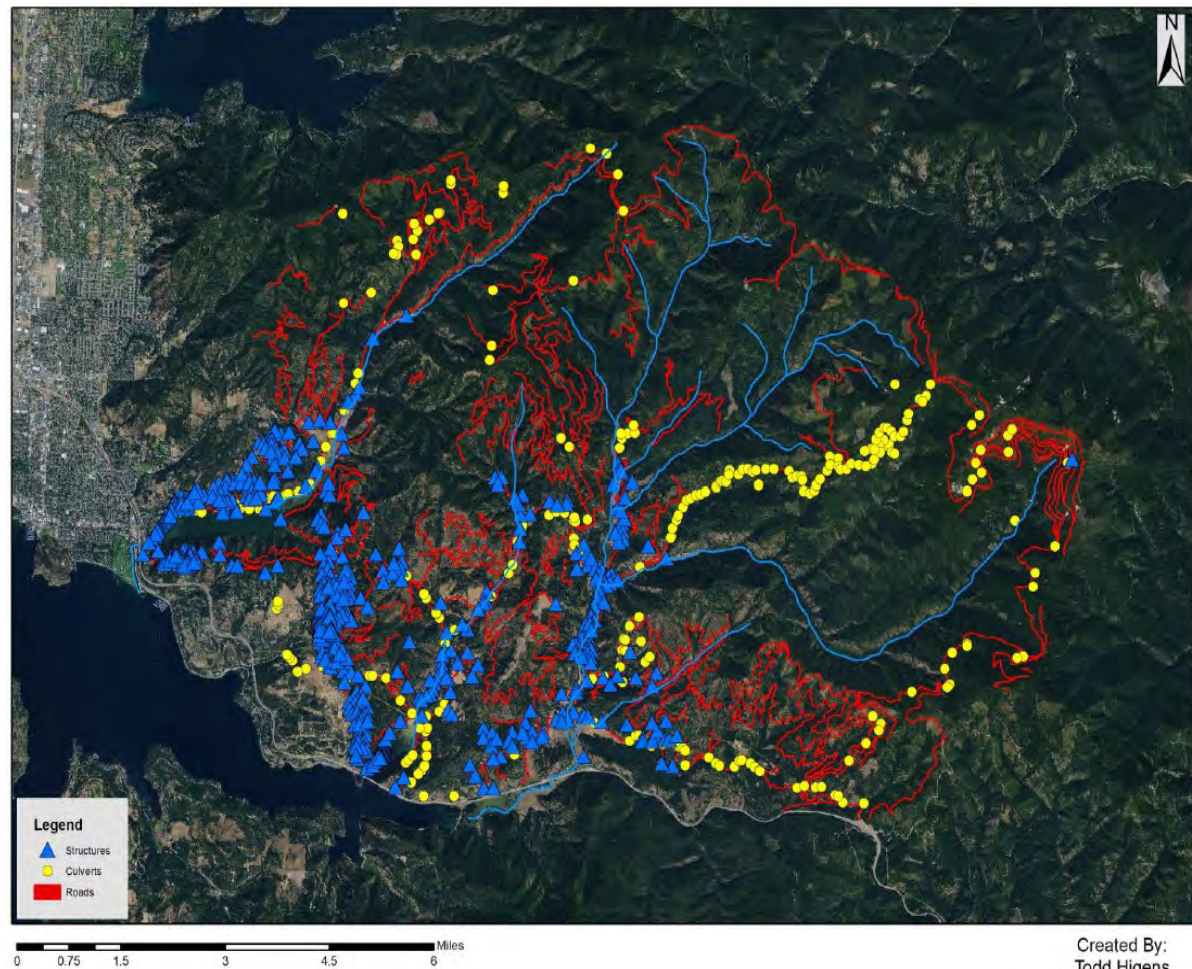
Created By:
Todd Higen
April 6, 2019

Roads Culverts & Structures

298 culverts

165 need some form
of maintenance

52 only need to be
cleaned



Watershed Action Plan Implementation

Seed money from the USFS grant and funds later obtained from the Regional Conservation Partnership Program (RCPP) (administrated by the NRCS) have helped implement the Watershed Action Plan.

Treatments completed: Forest management plans, fuelbreaks, slash treatment, pre-commercial thinning, weed control, tree planting, exclusion fencing

Stream Restoration Planning

Address Key Questions

- What are the limiting factors for aquatic habitat?
- Where is the sediment (and nutrients) coming from?
- What are the main drivers of channel instability?
- Where are the priority restoration opportunities?

Wolf Lodge Creek Watershed Assessment and Restoration Prioritization Plan

Near Coeur d'Alene, Idaho



Submitted To:
Idaho Department of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

December 2016



www.riverdesigngroup.com

Limiting Factors

- Channel entrenchment and lack of floodplain connection
- Lack of channel complexity
- Lack of in-stream large wood
- Lack of woody vegetation for stability and shade
- Bank instability and channel widening
- Excess bedload in lower reaches



Where is Sediment Coming from?

Bank erosion in valley bottom mostly on private property



Drivers for Channel Instability

Removal of vegetation

Dredging

Channelization

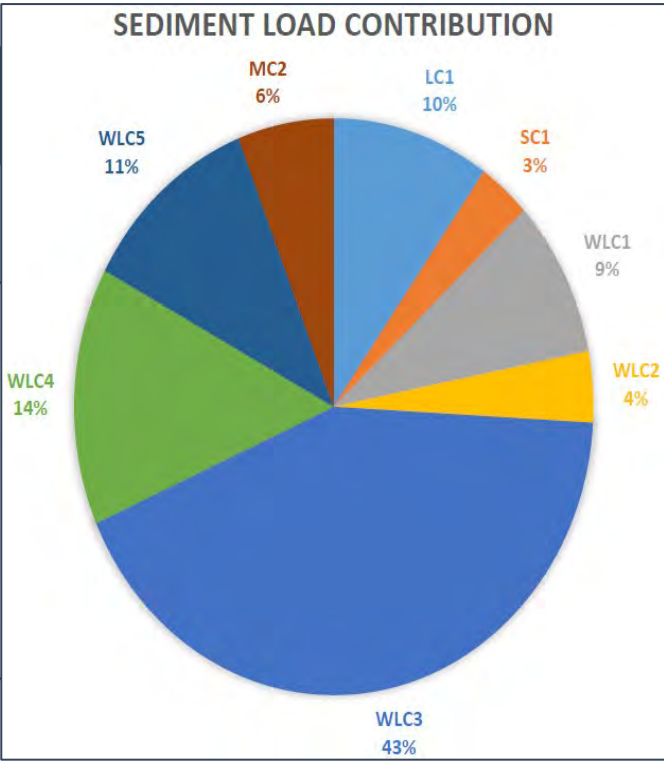
Increase peak flow



Sediment Load Analysis

Table 5-1. Overview of Bank Erosion Hazard Index quantification of sediment loading for each reach in the Wolf Lodge Creek watershed. Two densities were used to calculate weight from volumes. The average of these high and low values was used to report the sediment yield for each reach per year.

Reach	Sediment Volume (ft ³)	Sediment Volume (ft ³) (unit length)	Sediment Yield Tons/Yr (low)	Sediment Yield Tons/Yr (high)	Sediment Yield Tons/Yr (mean)
LC1	3,570	0.9	161	223	192
SC1	1,190	0.2	54	74.4	64
WLC1	3,200	0.5	144	200	172
WLC2	1,450	0.2	65	90	78
WLC3	15,440	1	695	965	830
WLC4	5,240	1	236	328	282
WLC5	4,070	0.3	183	254	219
MC2	2,170	0.6	98	136	117



Wolf Lodge Creek Reach 3 Restoration

Project Sponsor

Kootenai-Shoshone
Soil and Water
Conservation District

Funding Partners (\$391,608)

- Restoration Partnership
- Idaho DEQ §319 Grant Program
- Idaho DEQ Coeur d'Alene Lake Management Program
- AVISTA
- North Idaho FlyCasters
- Fly Fishers International
- TransCanada
- Natural Resources Conservation Service
- Steve and Janet Funk
- Mike Murphy

Project Objectives

- Incorporate 2000 feet of streambank stabilization that supports development of mature riparian vegetation
- Create complex aquatic habitat components that support wild trout and other aquatic organisms
- Reshape existing channel
- Coordinate with the landowners



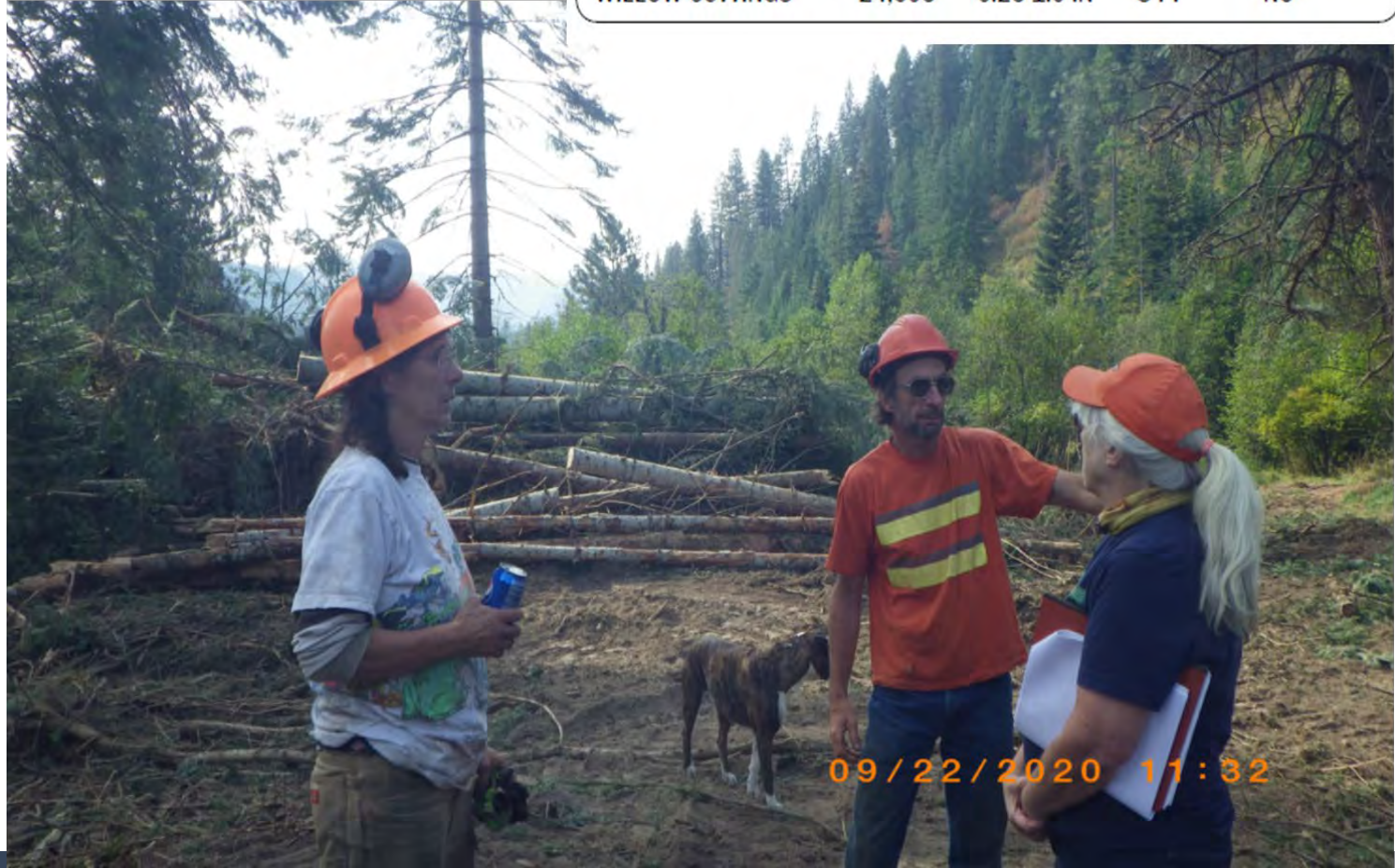
Photos by
Todd Higen



Bioengineering

TOTAL WOOD QUANTITIES

<u>ITEM</u>	<u>QUANTITY</u>	<u>DIAMETER</u>	<u>LENGTH</u>	<u>ROOTWAD</u>
CATEGORY 1 WOOD	80	12-18 IN	25 FT	YES
CATEGORY 2 WOOD	1,885	6-12 IN	20 FT	OPTIONAL
CATEGORY 3 WOOD	3,341	3-6 IN	10-12 FT	OPTIONAL
WILLOW CUTTINGS	24,605	0.25-1.0 IN	8 FT	NO









Questions?



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Kristin Lowell
Senior Water Quality Analyst

Channel Reconstruction





Bioengineered Bank Stabilization



Willow Planting



Constructed Riffle



Large Wood Habitat Structures



Floodplain Reconstruction

- floodplain swales
- large wood placement
- revegetation













Wolf Lodge Creek Reach 5 Restoration

Objectives

- Re-establish riparian vegetation to reduce rates of lateral streambank erosion, property loss, and sedimentation and re-establish important habitat for west slope cutthroat trout and aquatic organisms.
- Replace a rusted/blown out culvert
- Utilize stream stabilization techniques on the unnamed tributary to lower Wolf Lodge Creek to prevent streambank erosion and erosion from a road prism next to the creek.



