

**319 Grant**

**Mica Creek Sediment and Nutrition Reduction**

**FINAL REPORT**

**CR0180037**

**State General Fund Agricultural BMP SFY2018**

**2017-2018**

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### Executive Summary

October 2017-June 2018. Landowner Larry Mundt, continued work on Mica Creek

This project is a continuation of sediment and nutrient reduction on Mica Creek in Kootenai County, HUC 17010303. Mica Bay has a history of rapid and relatively recent eutrophication due in large part to severely eroding streambanks. Much of this has occurred over the last twenty years, irrespective of historical stream straightening and farming practices nearby.

Mica Creek suffered profound injuries during the late 1990s. Large timber harvests occurred in the upper watershed, and for the next several years, the lower watershed strained under the increased sudden spring runoffs. Additionally, severe freeze-ups gouged great amounts of banks during spring ice breakup. The ice floes scoured the banks and undermined the existing alder communities.

Work on Mica Creek is to prevent more erosion and sediment loss, and to prevent damage from high water events, spring runoff and freezing conditions. With the stabilization work taking place, the streambank should stand up to high water events and freezing conditions. Spring runoff will have no effect to work done throughout this timeframe. The rock armor will prevent any possible erosion. Without the effects of high water and freezing, sediment will not be allowed into the stream from runoff where it would go into mica bay effecting the look and quality of the water for the bay itself and the people living nearby.

### Project Goals

Goals of this project were to rebuild the eroding creek bank and to prevent sediment from running downstream into Mica Bay as well as to prevent any possible further erosion to the creek banks. To do this, the banks have to be stabilized with vegetative management, rock armor and planting of willows and alders.

### Objectives and Activities

Activities consisted of: Removal of existing fencing and replace with temporary fencing, 360 feet completed. Removal of the collapsed vegetation at the work site upstream and downstream, 600 feet completed. Instillation of coffer dam and pump hoses at work sites, 360 feet completed. Removal of root wads at work site and disposal of materials upland, 360 feet completed. Complete bank shaping and removal of spoils to upland disposal site, 360 feet completed. Rock armor work sites with rip-rap basalt 6"-24", 360 feet completed. Alder and

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Willow planting at work sites, 360 feet completed. Removal of coffer pumps and hoses from work area, 360 feet completed. Mulch Exposed and distributed to areas, 360 feet completed. Removal of temporary fencing and replace riparian exclusion fencing, 360 feet completed. 90 feet of additional rock armor completed making 450 feet complete. Additional vegetation management completed 1000 feet of 1600 feet. These activities were all completed using best management practices such as the planting of alders and willows, the use of rock armor and mulching. Resulting in total of \$22,489 used to complete these activities.

Evaluation of Goal Achievement- Bank is stabilized, vegetative management is used, riparian fencing is put in place all of which are doing their job to keep the stream bank stabilized.

### Monitoring Plan

Long term monitoring was done with regular photo monitoring, which can be seen at the end of this report. The photos taken are of the selected project areas.

The monitoring was recorded by the landowner (Larry Mundt) who worked on the project. The Kootenai-Shoshone Soil & Water Conservation District had the primary responsibility in monitoring and the Idaho Soil & Water Conservation Commission assisted the district as needed.

The project was funded through both NPS/319 Grant funds and Mica Bay Property Owners Association match funds.

### Best Management Practices Applied or Developed

BMP Effectiveness- Revegetated planting and mulching, willows and alders staying in place. Turbidity control-Cofferdam installation and removal worked well. Livestock fence management, some fencing had to be placed back differently than original because of the erosion that took place before the start of this project. The vegetative management and mulching is settling into new streambank effectively.

There are noticeable surface and ground water improvements, the water is clear and clean and free of debris Water is able to run though without any blockages. There will be no sediment loss and the banks will be stabilized.

Below are the tasks and prices:

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**Task 1:** Site Preparation- October 2017-June 2018

319 Money- \$2,016.00 Match Money- \$1,344.00 Total- \$3,360.00

Removed existing riparian exclusion fencing to allow equipment access to repair sites. Installed temporary fencing with gates and panels around work areas.

**Task 2:** Vegetation Management- October 2017- June 2018

319 Money- \$4,032 Match Money- \$ 2,688.00 Total- \$6,720.00

Removed collapsed and over hanging vegetation from areas. Loaded and hauled debris to upland site for fall burning.

**Task 3:** Install Cofferdam – October 2017- June 2018

319 Money- \$4,032.00 Match Money-\$2,688.00 Total- \$6,720.00

Installed floating cofferdam around construction areas, reinforced plastic with sandbags. Installed and operated pumps to maintain negative pressure on cofferdam by pumping turbid water to adjacent hayfields.

**Task 4:** Complete Vegetative Management- October 2017- June 2018

319 Money- \$1,210.00 Match Money- \$806.00 Total- \$ 2,016.00

Removed collapsed alder root wads. Loaded and hauled to upland disposal site for fall burning.

**Task 5:** Shape Banks- October 2017- June 2018

319 Money- \$8,064.0 Match-\$5,376.00 Total- \$13,440.00

Shaped banks to required slope and excavated toe area. Loaded and hauled excavated materials to a designated upland site.

**Task 6:** Rock Armor- October 2017- June 2018

319 Money- \$ 10,080.00 Match Money- \$ 6,720.00 Total- \$16,800.00

Installed rip-rap rock armor per the specifications and installed large stones in toe to support and protect retained vegetation.

**Task 7:** Alder and Willow Planting- October 2017- June 2018

319 Money- \$ 6,048.00 Match Money- \$4,032.00 Total- \$ 10,080.00

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Using a waterjet stinger, planted willow cuttings on a multi-tier spacing throughout the rock armor.

**Task 8:** Remove Cofferdam- October 2017-June 2018

319 Money- \$ 2,016.00 Match Money-\$1,344.00 Total- \$ 3,360.0

Removed cofferdam materials and all sand bags from work area.

**Task 9:** Mulch Exposed and Disturbed Areas- October 2017- June 2018

319 Money- \$403.00 Match Money-\$269.00 Total-\$ 672.00

Mulch disturbed areas above the armor to prevent erosion and accelerate vegetative growth.

**Task 10:** Remove Temporary Fencing October 2017-June 2018

319 Money- \$ 2,419.00 Match Money- \$1,613.00 Total-\$ 4,032.00

Removed temporary fencing from job sites. Replaced permanent riparian exclusion fencing.

**Task 11:** Job Site Flagging and Inspection October 2017- June 2018

319 Money- \$ 1,440.00 Match Money- \$960.00 Total-\$ 2,400.00

Performed by KSSWCD, Surveyed and flagged job sites for construction, inspected work for adherence to specifications and material quality.

**Task 12:** Reporting and Monitoring October 2017-June 2018

319 Money- \$1,800.00 Match Money- \$1,200.00 Total- \$ 3,000.0

Established monitoring points for future reference. Compiled data and references for regular reports to IDEQ, MBPOA, and agency partners.

**Task 13:** Financial Accounting October 2017- June 2018

319 Money- \$720.00 Match Money- \$480.00 Total-\$1,200.00

Performed by KSSWCD. Gathered financial information and prepared reports.

**Task 14:** Travel to Jobsite October 2017- June 2018

319 Money- \$80.00 Match Money- \$40.00 Total-\$100.00

Travel to and from jobsite by KSSWCD as needed.

#### Project Outcomes-Load Reduction Estimate

Vegetation management is necessary step to take in bank stabilization. The collapse of existing vegetation is the root cause of erosion in the lower portions of Mica Creek. Vegetation management is essential for the work that was completed that will prevent erosion in the future. Preventing each single rolling over collapse is estimated to prevent the delivery of 4.5-5.5 tons of sediment, which would only continue to erode and deliver more sediment annually.

Streambank Protection is also a necessary step and is taken care of though the vegetative management. Eroding sediments are estimated to be 44 tons annually, under the assumption of an eroding bank height of 6 feet. After vegetative establishment it is estimated to be a 90% reduction in soil loss.

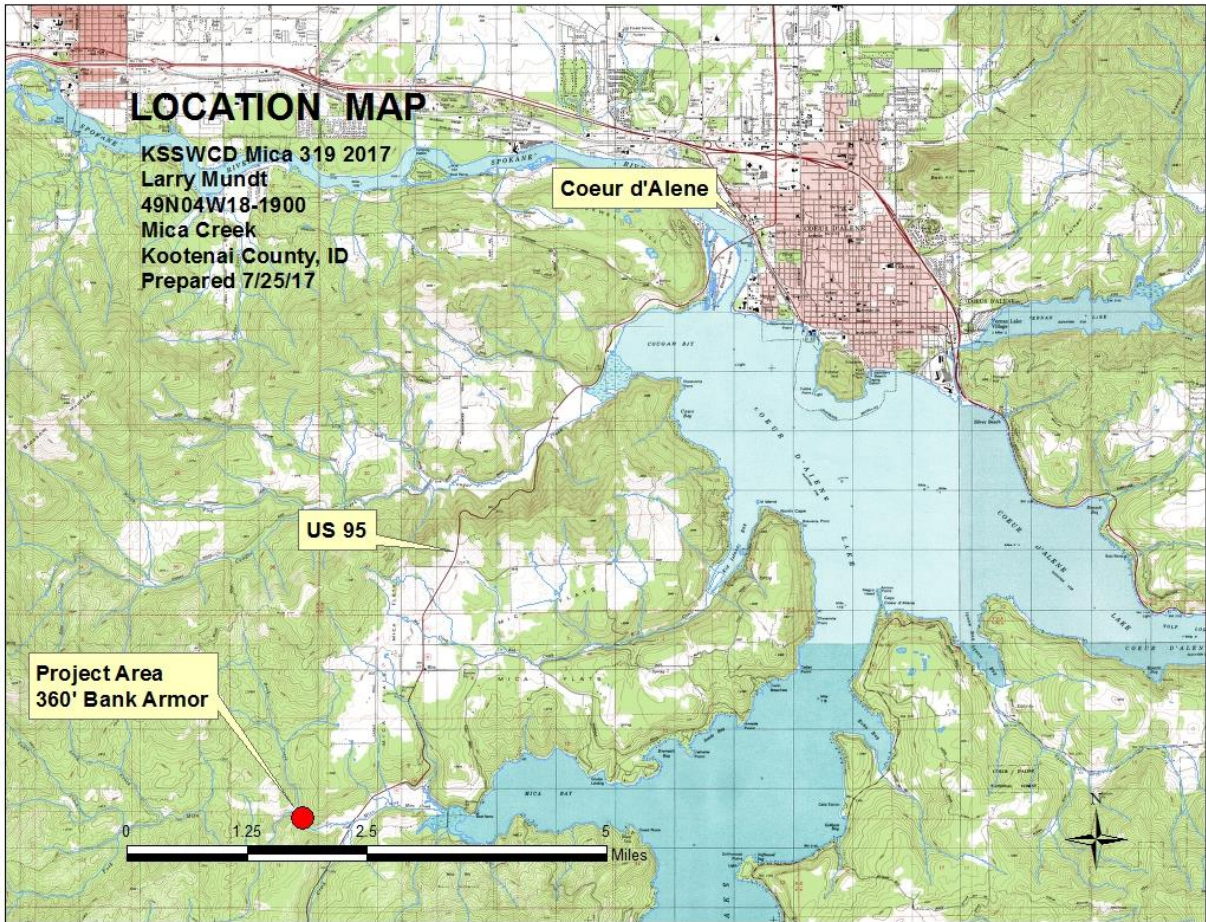
#### Difficult Aspects of Project

Finding rock and spring weather conditions. At times the field was wet which made it hard to get equipment to the necessary areas of the stream bank.

#### Future Activity Recommendations

Future activity recommendations are to continue with the same work for rest of Mica Creek. The work done thus far has shown to be effective. In order to prevent any other possible erosion or sediment loss it would be a good recommendation to complete this same type of work on the entire creek.

List of Figures



**Figure 1.** Location Map for Mica Creek



**Figure 2.** Site 1 Before Work Started



**Figure 3.** Site 1 Before Work Started





**Figure 4.** Site 1 After Completed Work



**Figure 2.** Site 1 After Completed Work



**Figure 3.** Site 1 After Completed Work



**Figure 4.** Site 1 After Completed Work



**Figure 5.** Site 2 Before Work Started



**Figure 6.** Site 2 After Work Completed



**Figure 7. Site 2 After Work Completed**



**Figure 8. Site 3 Before Work Completed**



**Figure 9.** Site 3 Before Work Completed



**Figure 10.** Site 3 After Work Completed



**Figure 11.** Site 3 After Work Completed



**Figure 12.** Site 3 After Work Completed



**Figure 13.** Site 4 Before Work Completed



**Figure 14.** Site 4 After Work Completed



**Figure 15.** Site 4 After Work Completed



**Figure 16.** Site 4 After Work Completed





**Figure 17.** Site 5 Before Work Started



**Figure 18.** Site 5 Before Work Started



**Figure 19.** Site 5 After Work Completed



**Figure 20.** Site 5 After Work Completed



**Figure 21.** Site 5 After Work Completed



**Figure 22.** Site 5 After Work Completed. Willows planted