Bonaparte Watershed Restoration Project: As-Built Summary, April, 2011

Project Overview

This as built summary describes 12 high priority streambank restoration projects recently completed on the Bonaparte River as part of a habitat restoration project undertaken in partnership with FSWP, the BWSS, landowners and CN. The 12 sites (see Table 1 below) are located in areas of the Bonaparte River that are important Coho and Chinook spawning and rearing habitat. Rainbow trout including Steelhead also use the river system.¹ At a watershed scale the capacity for supporting these species is at risk, partially due to habitat degradation over the length of the River. Instream values at the candidate sites were relatively low due to lost instream complexity, sediment loading, lack of riparian vegetation and unstable bedload in adjacent areas. Incremental loss of habitat quality and complexity had reduced the capacity of the system to support these and other aquatic species.

The restoration sites represented opportunities for habitat improvement using standard bioengineering methods to improve streambank stability, instream fish and aquatic habitat features. Similar bioengineering practices have been effective at other locations along the Bonaparte River.

Planning for the sites began last summer with landowner meetings and discussions. Materials procurement such as cutting collection wood and rock materials and permitting were organize and site construction activity was completed during February- March 201. It is expected that as the sites mature the plantings and installed wood, rock and other structures will contribute to improved habitat complexity providing benefits in terms of sediment source control, instream fish habitat, livestock access management and improved riparian vegetation for fish and other aquatic values.

The following 12 site reports provide a review of key as-built features such as site location, site length, incorporated wood, rock and other structures and comparative photos documenting pre-construction and as-built site conditions. The location of each site is also shown in Figure 1. FSWP funding was levered 2:1 with other funds to complete a larger set more complex sites than had been planned under the original FSWP application. These are the first sites that the BWSS has been able to organize and undertake in the upper Bonaparte watershed since it began doing streambank restoration work 9 years ago. Building rapport with upper watershed landowners occurred through local meetings in the upper watershed, which have increased awareness of the value of fish and fish habitat on the upper Bonaparte system and has also developed

¹ As well as Pink salmon, Kokanee and other species

opportunities to continue working on improved water management practices as well as continuing with streambank restoration partnerships.

A total 81 loads of rock, 160 pcs large wood materials and over 4700 cuttings were incorporated into a total streambank length of 819 m at the 12 sites including the installation of 70 wood rock spurs, three limited access livestock watering site upgrades and installation of one off channel watering location. Individual site summaries follow.

Table 1: Summary of 2011 Bonaparte River FSWP/CN Streambank Restoration Project Sites 1-12

Site #	GPS Location		Length (m)
1	652810	5688955	52
2	652783	5688924	10
3	652775	5688901	74
4	652759	5688872	15
5	652742	5688872	30
6	652679	5688872	83
7	652644	5688859	103
8	652634	5688795	130
9	653081	5689257	68
10	652873	5689165	139
11	652555	5688876	105
12	652523	5688675	10
Total			819

2010 Bonaparte River FSWP/CN Streambank Restoration Sites, As-Built

Site 1 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 652810 5688955). A series of 5 wood rock spurs were combination with a rock toe, large wood debris secured to ballast rock and brush layer cuttings to stabilize the toe of the 52 m eroding site.

The expected result will be a reduction in bank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish and improve the productivity of micro biotic and invertebrate food sources.



Pre-construction Photo Site 1:

As Built Photo Site 1:



Site 2:

Site 2 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 652783 5688924). A limited access watering site was upgraded using geogrid materials to improve bank stabilization, control livestock access and improve fish habitat values at this 10m long site.

The result will be a reduction in streambank erosion, reduced sedimentation, improved near bank habitat improved control over livestock access and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish and improve the productivity of micro biotic and invertebrate food sources.



Pre-Construction Photo Site 2:

As-Built Photo Site 2:



Site 3 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 562775 5688901). A series of 8 wood rock spurs were installed in combination with a rock toe and large wood debris secured to ballast rock and brush layer cuttings to stabilize the toe of the eroding 74 m long site.

The expected result will be a reduction in streambank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish and improve the productivity of micro biotic and invertebrate food sources.



Pre-Construction Photo Site 3:

As-Built Photo Site 3



Site 4 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 652759 5688872). One large wood rock spur was installed in combination with a rock toe and large wood debris secured to ballast rock and brush layer cuttings to stabilize the toe of the eroding 15 m long site.

The expected result will be a reduction in streambank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish and improve the productivity of micro biotic and invertebrate food sources.



Pre-Construction Photo Site 4:

As-Built Photo Site 4:



Site 5 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 652742 5688872). A series of 4 wood rock spurs were installed in combination with a rock toe and large wood debris secured to ballast rock and brush layer cuttings to stabilize the toe of the 30 m long site.

The expected result will be a reduction in streambank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish and improve the productivity of micro biotic and invertebrate food sources.



Pre-Construction Photo Site 5:

As-Built Photo Site 5:



Site 6 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (652679 5688872). A series of 8 wood rock spurs were installed in combination with a rock toe and large wood debris secured to ballast rock and brush layer cuttings to stabilize the toe of the eroding 83 m long streambank.

The expected result will be a reduction in streambank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish and improve the productivity of micro biotic and invertebrate food sources.



Pre-Construction Photo Site 6:

As-Built Photo Site 6:



Site 7 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 652644 5688859). A series of 8 wood rock spurs were installed in combination with a rock toe and large wood debris secured to ballast rock and brush layer cuttings to stabilize the toe of the eroding 103 m long site.

The expected result will be a reduction in right bank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish utilizing the site and improve the productivity of micro biotic and invertebrate food sources.



Pre-Construction Photo Site 7:

As-Built Photo Site 7:



Site 8 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 652634 5688795). A series of 8 recessed wood rock spurs were installed at this lower gradient location in combination with a rock toe and large wood debris secured to ballast rock and brush layer cuttings to stabilize the toe of the eroding 130 m long right bank site.

The expected result will be a reduction in streambank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish and improve the productivity of micro biotic and invertebrate food sources.

Pre-Construction Photo Site 8:



As-Built Photo Site 8:



Site 9 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 653081 5689257). A series of 10 wood rock spurs were installed in combination with a rock toe and large wood debris secured to ballast rock and brush layer cuttings and an improved limited livestock access to stabilize the toe of the eroding 68 m long streambank site.

The expected result will be a reduction in streambank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish utilizing the site and improve the productivity of micro biotic and invertebrate food sources.



Pre Construction Photo Site 9:

As-Built Photo Site 9:



Site 10 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 652873 5689165). A series of 9 wood rock spurs were installed in combination with a rock toe and large wood debris secured to ballast rock and brush layer cuttings and an improved limited livestock access to stabilize the toe of the eroding 139 m long streambank site.

The expected result will be a reduction in streamank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish and improve the productivity of micro biotic and invertebrate food sources.



Pre-Construction Photo Site 10:

As Built Photo Site 10:



Site 11 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 652555 5688876). A series of 9 wood rock spurs were installed in combination with a rock toe and large wood debris secured to ballast rock, brush layer cuttings and an off channel livestock watering site to stabilize the toe of the eroding 105 m long left bank site.

The expected result will be a reduction in streambank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality, provide cover, and hydraulic refugia year round to juvenile and adult fish and improve the productivity of micro biotic and invertebrate food sources.



Pre Construction Photo Site11:

As Built Photo Site 11:



Site 12 is located on the Bonaparte River near Eagan Sharpe Lake Road east of 70 Mile House BC (10U 652523 5688675 (immediately upstream from the farm bridge on the right bank). The site has been frequented by livestock as a stream crossing location and damage to the riparian vegetation and riverbank had occurred. The landowner requested that cattle access be eliminated using rock barriers, rather than upgrading the site as a limited access watering location, to discourage livestock access.

The expected result will be a reduction in right bank erosion, reduced sedimentation, improved near bank habitat and the reestablishment of a riparian vegetative buffer which will help to moderate summer water temperature, improve water quality.

Pre-Construction Photo Site 12



As-Built Photo Site 12:

