Missouri River Riparian Fence and Livestock Water on the Sterling Ranch near Craig, Montana

PPL-Montana MOTAC project 756-11, 756-12,

Submitted to

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In 2011 and 2012 PPL Montana awarded $38,000 and $24,860, respectively, for the Missouri River Riparian Fencing and Livestock Water Project on the Sterling Ranch near Craig, Montana. This project was funded by PPL-Montana as part of FERC license 2188.

Introduction

This project lies within a 7.2 mile long reach of the Missouri River between the Wolf Creek Bridge and the Jackson Rock area just downstream of the town of Craig (Figure 1). The Sterling Ranch owns the majority of the property on the east side of the Missouri River from Holter Dam to Rocky Point Road (10.5 miles) and has a longstanding history of balancing high public use while maintaining a viable ranching operation.

In late 2010 the Sterling Ranch instituted changes in their cattle ranching operation which involved converting five hay fields and seasonal pastures along the Missouri River to cattle grazing pastures. The new land management program is based on the Management Intensive Grazing (MiG) Cell Irrigated Pasture method developed by American Grazing Lands Services LLC, May, Idaho. Hay fields previously irrigated by wheel line and center pivot systems would be fenced and divided into paddocks where cattle graze for scheduled periods then are moved to a new paddock. During rest periods, paddocks are sprinkler irrigated to regrow vegetation on more frequent intervals than traditional methods. This system offers cost savings to livestock producers by eliminating the traditional method of irrigating, swathing, baling, hauling, storing and feeding hay. The K-line stock water/irrigation method involves installing water lines through each paddock. Risers on the water lines in each paddock are used for stock water and sprinkler irrigation. This method allows for maximum production in irregular shaped paddocks and provides livestock grazing/watering away from riparian areas. A modified MiG program is proposed for the existing two pastures where rest rotation grazing would occur in paddocks without irrigation. Water gaps would be installed between paddocks to allow for livestock watering.

The five pastures/fields involved with this project that were proposed to be converted from hay production to MiG cattle grazing were 1) South Pivot, which is a 137. 7 acre hay field that has 1.3 miles of Missouri River frontage, 2) Bross pasture, which is a 27.1 acre pasture that has 0.56 mile of Missouri River frontage, 3) Rumney pasture, which is a 43.9 acre pasture that has 0.78 mile of Missouri River frontage, 4) Craig, which is a 137.8 acre hay filed (including Sterling Slough Island) that has 2.29 miles of Missouri River frontage that includes the Sterling Slough Island and, 5) North Pivot, which is a 118.1 acre hay field that has 1.66 miles of Missouri River frontage (Figure 2). These pastures total 6.59 miles of Missouri River riparian habitat. There is also 0.14 mile of Wegner Creek that was fenced. Wegner Creek is an important spawning and rearing stream for rainbow trout and is one of the few streams in this area not infected with the parasite that causes whirling disease in rainbow trout. The total amount of river/stream riparian habitat protected by this fencing project is 6.71 miles.

The North Pivot, Craig and South Pivot fields would be fenced with permanent single strand electric high tensile steel wire. Some of these fences tied into segments of existing

barbed wire fences along the Craig frontage road. Permanent wood posts were to be spaced on 30-50 foot intervals depending on the terrain features at each site. Temporary electric fences would partition paddocks within each pasture. Sterling Ranch presently uses about 7 miles of single strand high tensile electric fence to contain cattle on other parts of the ranch. Sterling Ranch uses high quality chargers generating about 9000 v per unit.

The MiG and K-line strategy was proposed for the North Pivot (Figure 3), Craig (Figure 4) and South Pivot (Figure 5) sites. The two remaining pastures, Rumney (Figure 6) and Bross (Figure 7), would be changed by installing a permanent single strand high tensile steel wire electric fence along the Missouri River. Up to 6 paddocks were proposed for the Bross pasture which would be managed using the rest rotation method. Three water gaps would be installed in the Bross pasture where cattle could get water from the Missouri River. Use of the Rumney pasture would be similar to the Bross pasture with 10 paddocks and 4 water gaps. Water gaps at these two fields would be narrow to prevent cattle from loafing on the river bank or seeking refuge in the river during hot weather. High voltage electric fence prevents cattle from herding at water gaps.

The riparian zone in this reach river was considered stable and high quality before the changes in the Sterling Ranch livestock operation. Safeguarding the riparian zone thus became a high priority for Montana Fish Wildlife & Parks. Over a 2 year period, FWP arranged funding from Sterling Ranch, PPL-Montana, Montana Fish, Wildlife & Parks, Missouri River Flyfishers, Montana Trout Foundation and two private donors. During the latter part of 2011, MFWP worked to secure the balance of funding necessary to implement the project. Portions of the watering system cost were underestimated by the landowners consultant, which delayed implementation until these funds could be secured. Table 3 summarizes the funding sources and amounts for the project:

Table 3. Funding sources for the Missouri River Riparian Fence and Livestock Water project, Sterling Ranch, Craig, Montana.

Fence and water		
Sterling Ranch	92,532	
2011-PPL Montana	38,000	
2012-PPL Montana	24,860	
Montana FWP Future Fisheries	24,204	
Missouri River Flyfishers	5,000	
Montana Trout Foundation	4,000	
ACOE-Kuka mitigation	3,876	
sub total		192,472

Project area

Both angler use and economic statistics for this reach of river demonstrate it is an important fishery to Montana's public. The project lies within a reach of the Missouri River referred to by MFWP as section 9 which is a 30 mile reach spanning from Holter Dam to the Cascade Bridge. The most recent angler use estimates from 2011show this section received an estimated 105,989 angler days (Table 2). This section was the number one fishery in the region and ranked number two statewide. Average angler days for this section of river over the past 18 years was 98,810 angler days.

Table 2. Estimated angler days and statewide rank for the Missouri River section 9, and the number one fishery in Montana, 1995-2011.

Year	Angler days	State rank	Reg rank	No. 1 fishery	Angler days
1995	75,201	2	1	Canyon Ferry Res.	94,731
1997	88,576	4	1	Fort Peck Res.	108,562
1999	111,203	3	1	Canyon Ferry Res.	119,886
2001	123,427	1	1	---	---
2003	106,447	2	1	Madison R. (S2)	115,342
2005	93,229	2	1	Madison R. (S2)	116,345
2007	78,468	4	2	Madison R. (S2)	106,330
2009	106,746	4	2	Canyon Ferry Res.	133,220
2011	105,989	2	1	Bighorn R. (S3)	126,200

Economic statistics

Economic statistics are compiled by MFWP to determine the contribution of statewide fisheries on the economy of Montana. The methodology for determining the economic value of angling to the state's economy has been described by Grisak et al. (2012). In 2011 section 9 of the Missouri River generated an estimated $14 million in revenue (Table 3).

In March 2011, a cultural survey of the area was conducted by Legacy Consulting and GCM and no resources of cultural or historical significance were identified that would likely be impacted by the proposed project. In April 2011, the Montana State Historical Preservation Office reviewed the survey results, considered the nature of the proposed fencing and water system infrastructure, and concurred with the findings of Legacy Consulting and GCM.

Table 3. Angler economic statistics from Missouri River section 9, 1995-2011.

	Resident value ($)	Non-res Value ($)	Total Angler days	Resident Angler days	Non-resident Angler days	total
1995	32.34	168.78	75,201	56,613	18,588	$4,968,147.06
1997	33.23	173.44	88,576	66,179	22,397	$6,083,663.85
1999	34.57	180.42	111,203	87,768	23,435	$7,262,282.46
2001	36.8	192.06	123,472	84,860	38,612	$10,538,668.72
2003	38.13	199.04	106,447	64,854	41,593	$10,751,553.74
2005	40.43	211.03	93,229	59,762	33,467	$9,478,718.67
2007	43.04	224.65	78,468	53,604	24,864	$7,892,813.76
2009	44.55	232.53	106,746	67,266	39,480	$12,176,984.70
2011	46.83	244.44	105,989	57,825	48,164	$14,481,152.91
Average			98,815	66,526	32,289	$9,292,665.10

In 2012, the perimeter fences, paddock fences and water main lines with risers were installed at the North Pivot, Craig, and South Pivot fields (pictures, Figures 8-15). Problems arose with rupturing on the water mainline in the Craig pasture approximately 200 yards past the pump station. The line had to be excavated and replaced due to improper installation. By fall 2012 all three of these pastures functioned properly including providing MiG grazing for cattle and sheep and raising surplus hay.

During the survey for the alignment layout of riparian fences at the Bross and Rumney pastures, the landowner discovered three areas of bank erosion (Figure 16). The landowner recommended repairing these sites before installing the fences, so the fences would not be compromised by further erosion. Montana FWP was able to secure funding for the bank repair. Due to drought conditions and high risk of fire in the summer and fall of 2012, the bank repair and fencing at the Bross and Rumney pastures was temporarily suspended. It wasn't until the second week of October that sufficient rainfall occurred in this area which eliminated the fire risk. During the months of January and February 2013, the contracting firm Stream Works implemented bank restoration at two sites (Figure 17, 18, 19, 20). The intermediate site between Bross and Rumney (Figure 21) will be implemented in early 2013. The remaining perimeter fences and paddock fences will be installed in the Bross and Rumney pastures after the bank restoration is complete.

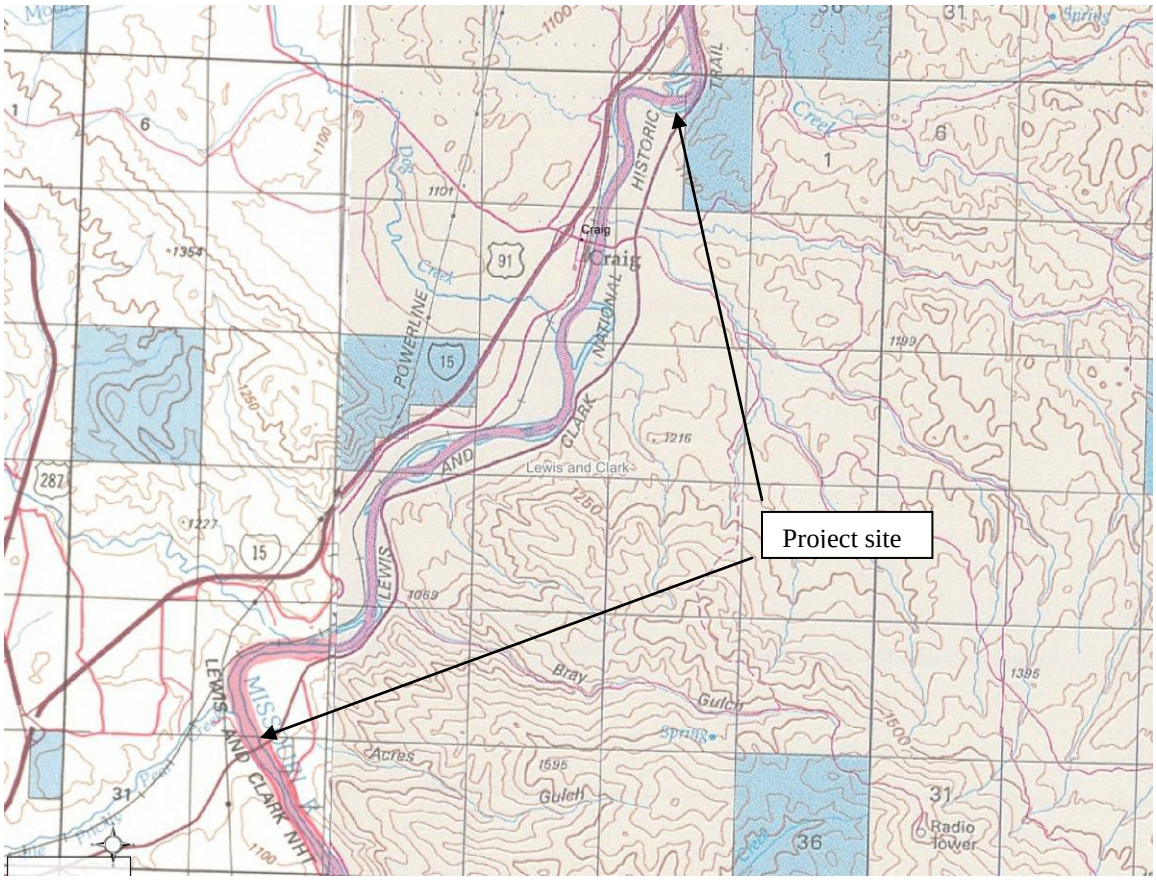

Figure 1. Map of Missouri River fence and water project on the Sterling Ranch near Craig, Montana.

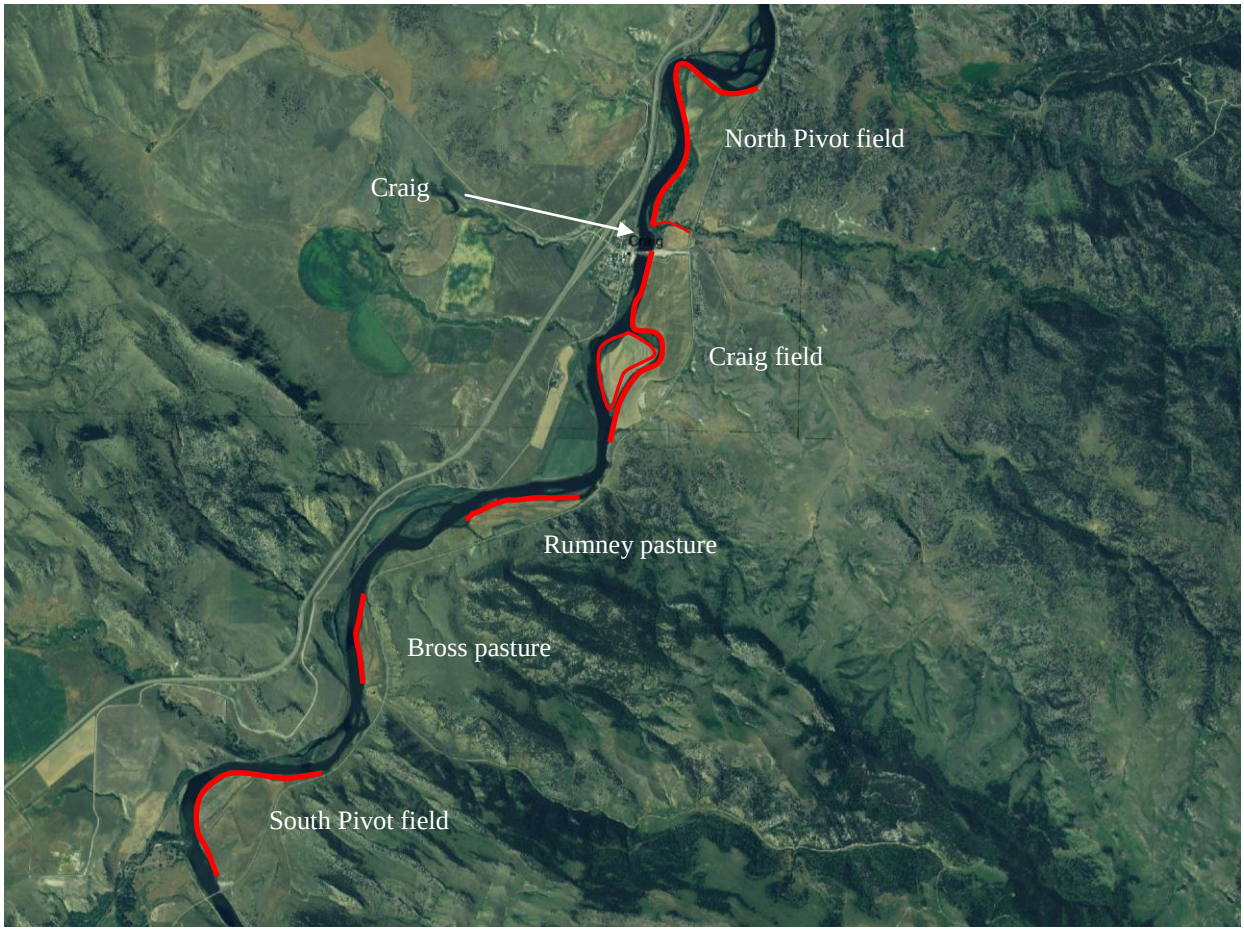

Figure 2. Map of the five pastures associated with the Missouri River fence and water project on the Sterling Ranch near Craig, Montana. Red lines depict riparian fence lines.

Figure 3. North Pivot pasture with proposed grazing paddocks and stock water system. Sterling Ranch, Craig, Montana.

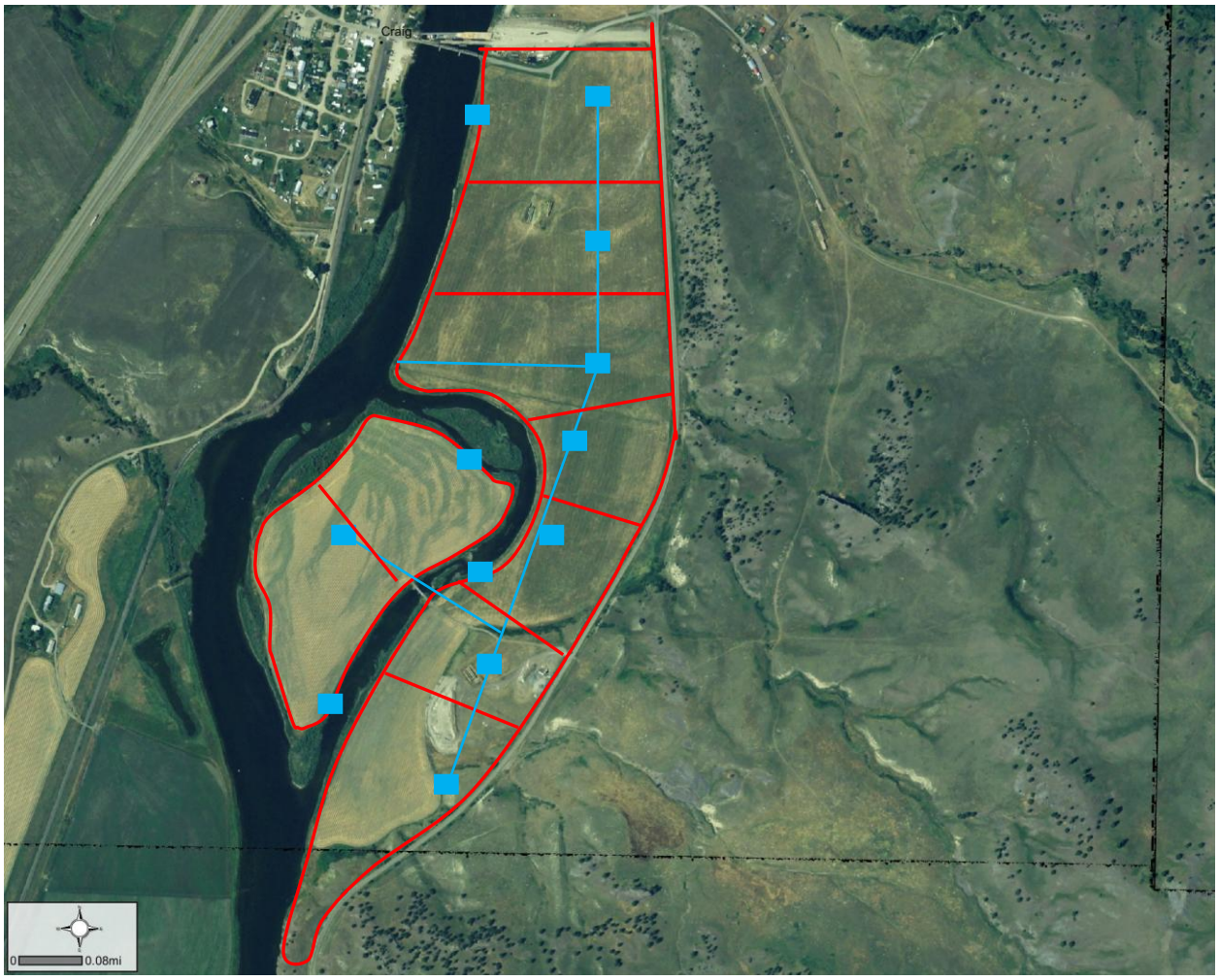

Figure 4. Craig pasture with proposed grazing paddocks and stock water system. Sterling Ranch, Craig, Montana.

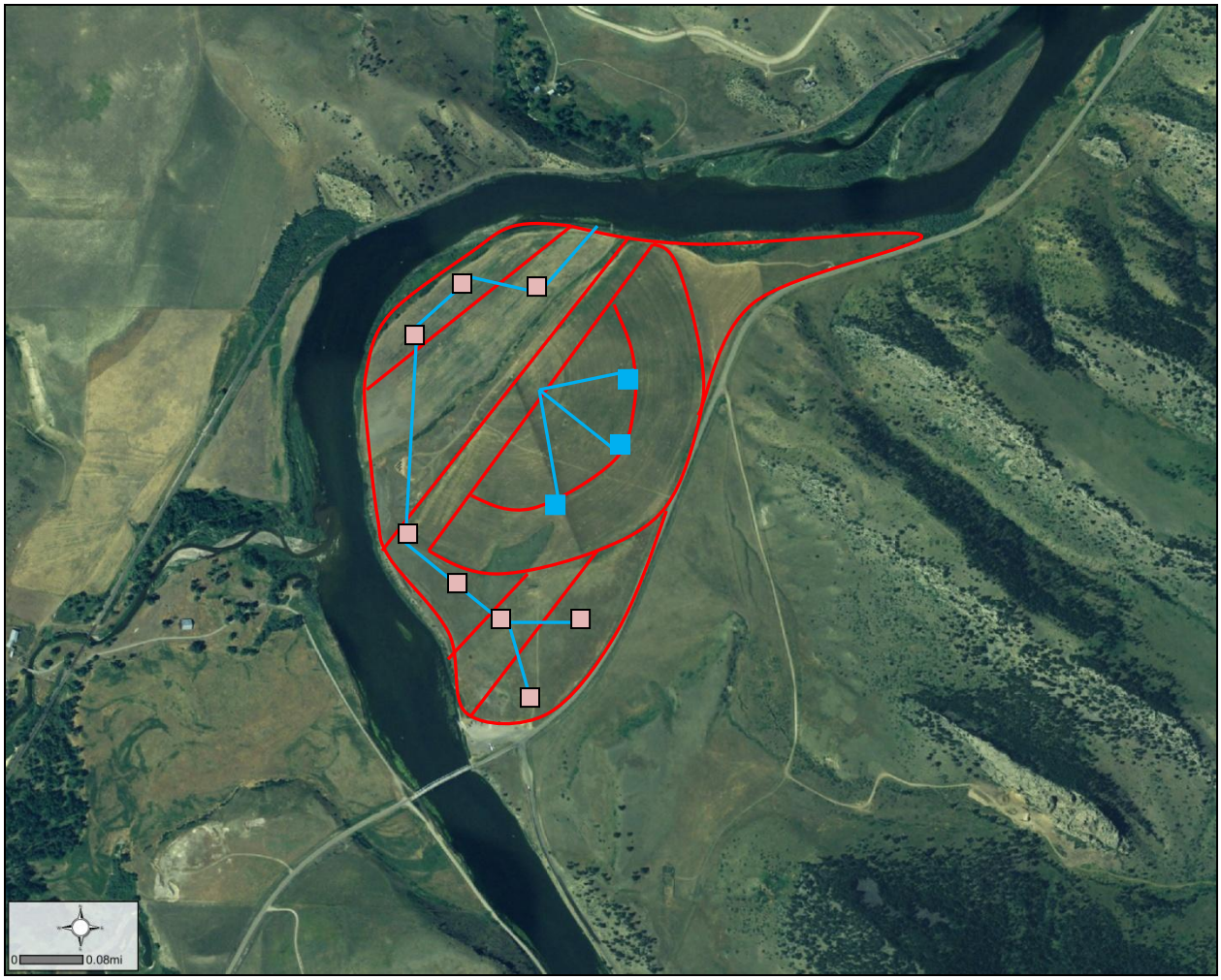

Figure 5. South Pivot pasture with proposed grazing paddocks and stock water system. Sterling Ranch, Craig, Montana.

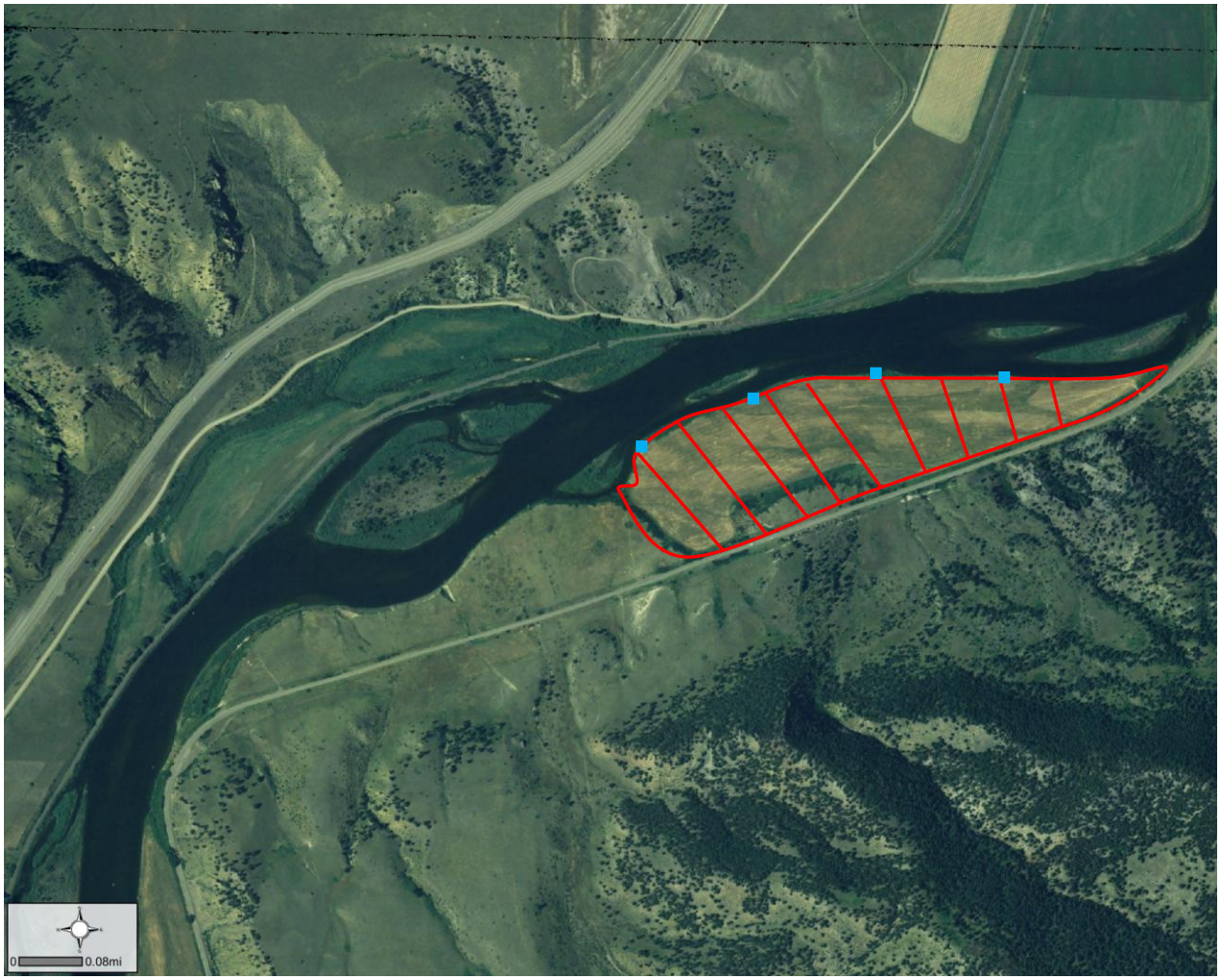

Figure 6. Rumney pastures with proposed grazing paddocks. Sterling Ranch, Craig, Montana.

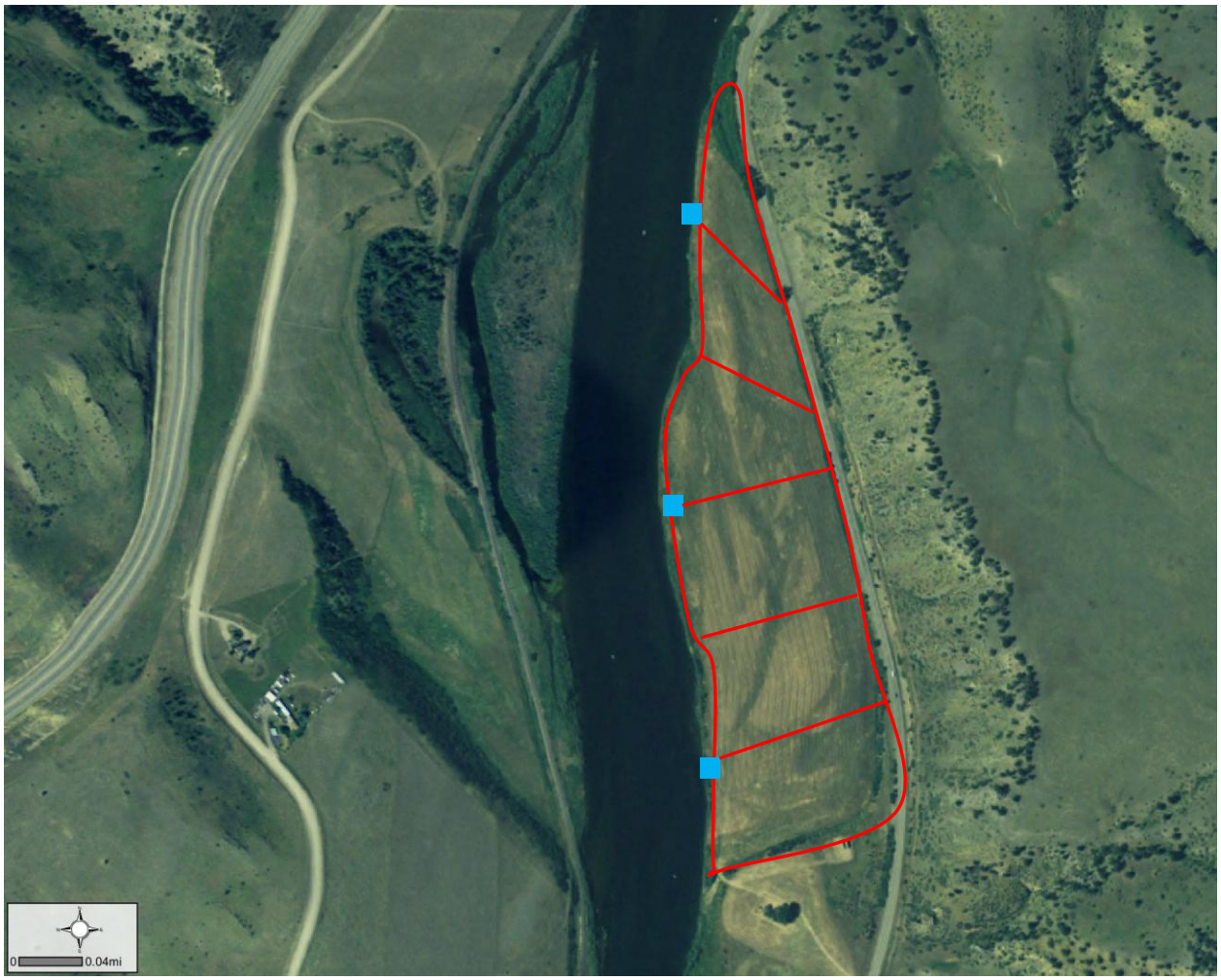

Figure 7. Bross pasture with proposed stock water gaps. Sterling Ranch, Craig, Montana.

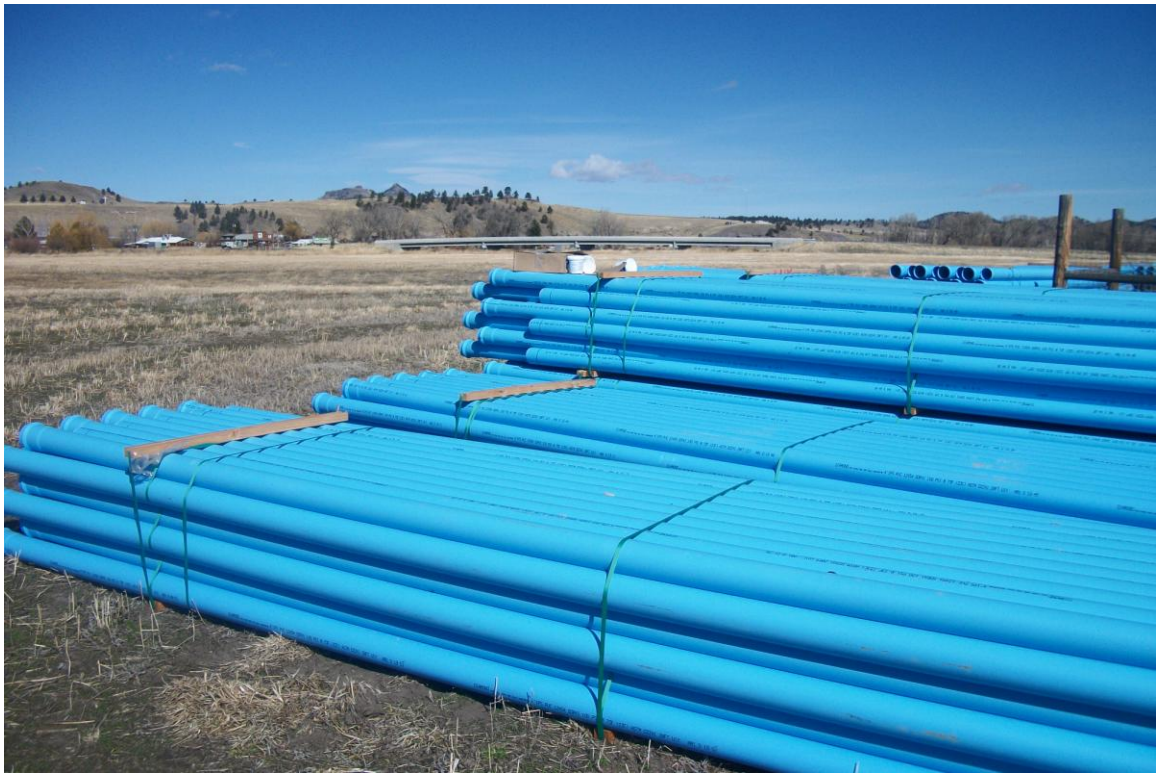

Figure 8. Mainline water pipe stockpiled at Craig field, Sterling Ranch, Craig Montana 2012.

Figure 9. Installing mainline water pipe at Craig field, Sterling Ranch, Craig Montana 2012.

Figure 10. Riser line for livestock water and irrigation at Craig field, Sterling Ranch, Craig Montana 2012.

Figure 11. High tensile steel electric fence at Craig field, Sterling Ranch, Craig Montana 2012.

Figure 12. Livestock in paddock at the South Pivot field, Sterling Ranch, Craig Montana 2012.

Figure 13. Livestock in paddock at the Craig field, Sterling Ranch, Craig Montana 2012.

Figure 14. K-line irrigation system in North Pivot field, Sterling Ranch, Craig Montana 2012.

Figure 15. K-line irrigation system stowed for winter in Craig field, Sterling Ranch, Craig Montana 2012.

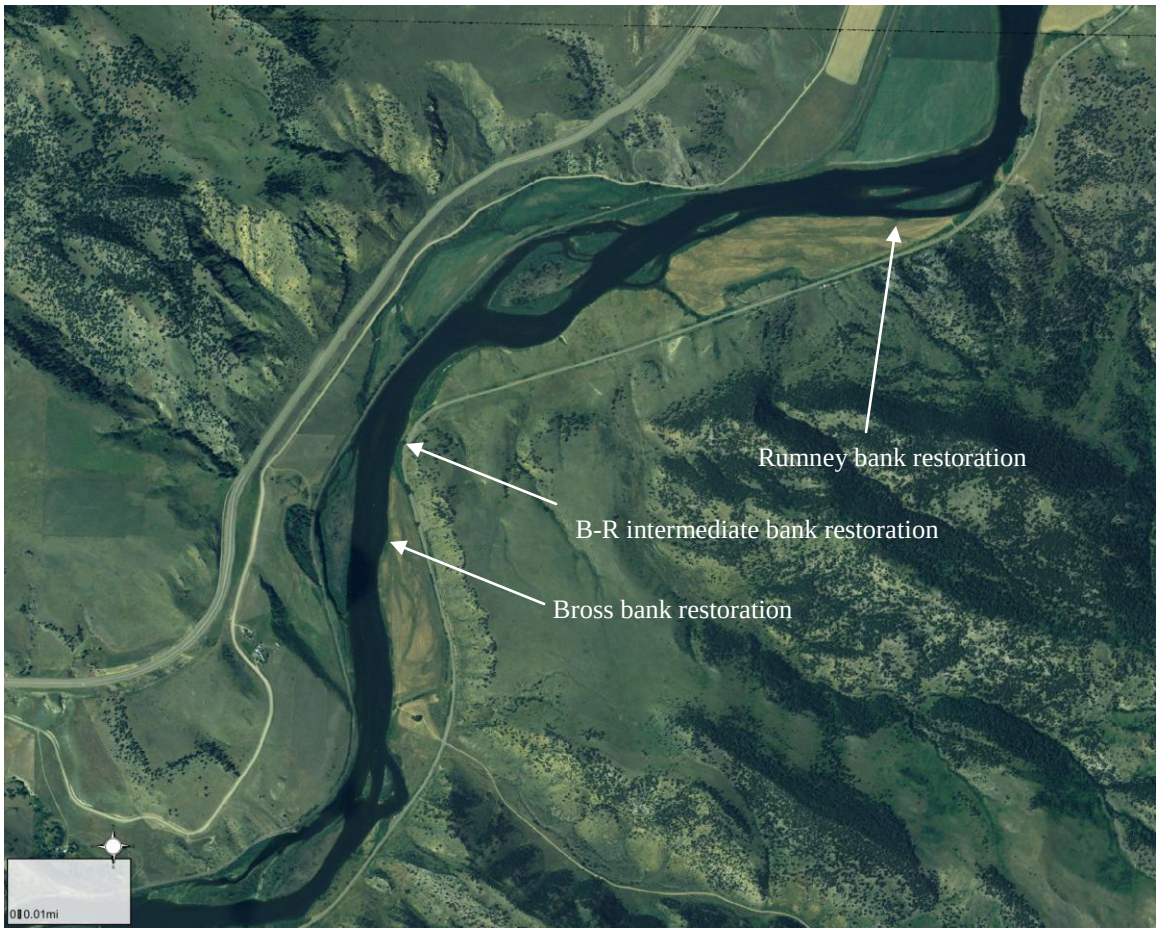

Figure 16. Missouri River bank restoration sites at Bross pasture, intermediate Bross-Rumney pasture and Rumney pasture. Sterling Ranch, Craig, Montana.

Figure 17. Missouri River bank erosion at Rumney pasture, Sterling Ranch, Craig, Montana, 2012.

Figure 18. Missouri River bank restoration at Rumney pasture, Sterling Ranch, Craig, Montana, 2013.

Figure 19. Missouri River bank erosion at Bross pasture, Sterling Ranch, Craig, Montana, 2012.

Figure 20. Missouri River bank restoration at Bross pasture, Sterling Ranch, Craig, Montana, 2013.

Figure 21. Missouri River bank erosion at intermediate site between Bross and Rumney pastures. Sterling Ranch, Craig, Montana, 2012.

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References

Grisak, G., B. Tribby and A. Strainer. 2012. An Evaluation of walleye in the Missouri River between Holter Dam and Great Falls, Montana. PPL-Montana MOTAC projects 771-09, 771-10, 759-11, 771-11 and Fisheries Bureau Federal Aid Job Progress Report Federal Aid Project Number F-113-R9, R10, R11, R12. Montana Statewide Fisheries Management. Great Falls.