319 Nonpoint Source Final Application

FY2017 Final Applications are due Monday, September 26, 2016 by 2:00 pm

Section I: General Information

Project Title: Riparian Fencing + Grazing Management = Temperature + Sediment Reduction on the East Fork

Project Sponsor Information

Sponsor Name: Bitter Root Water Forum

Registered with the Secretary of State? Yes

Registered with SAM? Yes

County: Ravalli

Website: www.brwaterforum.org

Tax Identification #: 43-2000515

DUNS #: 148485423

Primary Contact: Heather Barber
Title: Executive Director
Address: PO Box 1247
City: Hamilton State: Montana Zip Code: 59840
Phone Number: 406-375-2272
Fax Number: na
E-mail Address: heather@brwaterforum.org
Signature: Heather Barber

Signatory: Ed Snook
Title: Board Member
Address: PO Box 1247
City: Hamilton State: Montana Zip Code: 59840
Phone Number: 406-375-2272
Fax Number: na
E-mail Address: brwaterforum@bitterroot.net
Signature: Edward M. Snook

Project Location

12 Digit HUC #(s): 17010205

(1) Waterbody Name from 2016 List of Impaired Waters: East Fork Bitterroot River

(1) Probable cause(s) of impairment to be addressed (ex. metals): Alteration in stream-side or littoral vegetative covers, Temp, Sed/Sil

(2) Waterbody Name from 2016 List of Impaired Waters:

(2) Probable cause(s) of impairment to be addressed (ex. metals):

(3) Waterbody Name from 2016 List of Impaired Waters:

(3) Probable cause(s) of impairment to be addressed (ex. metals):

Activity 1 Name: Riparian Fencing	Latitude (1): 45.8448°N	Longitude (1): 113.9466°W
Activity 2 Name: Riparian Planting	Latitude (2): 45.8448°N	Longitude (2): 113.9466°W
Activity 3 Name: Riparian plant protection	Latitude (3): 45.8448°N	Longitude (3): 113.9466°W

Nonpoint Source (NPS) Information

Which WRP does the project implement? Bitterroot WRP

What is the WRP status? DEQ-Accepted

Does the project address impairments identified in a TMDL? Yes

Waterbody Type: River/Stream

Functional Category: Riparian Projects

1st Pollution Category	Agriculture (Grazing Related Sources)	Percent of Total (%): 60
2nd Pollution Category	Hydromodification (Channel Erosion/Incision)	Percent of Total (%): 20
3rd Pollution Category	Hydromodification (Removal of Riparian Vegetation)	Percent of Total (%): 20
4th Pollution Category		Percent of Total (%):

Project Funding

319 Funds Requested	$30,000.00	Does the project sponsor have any open 319 contracts?	Yes
Matching Funds		Project Title	Watershed Improvement through Sediment Redu
State Cash Match	$8,150.00	DEQ Contract Number	216008
Local Cash Match	$3,000.00	319 Award	$105,000.00
In-Kind Match	$10,930.00	Projected Closing Date	June 30, 2017
Total Match	$22,080.00	Project Title	
Other Federal Funds	$0.00	DEQ Contract Number	
Total Project Budget	$52,080.00	319 Award	
Administrative Fee	$3,000.00	Projected Closing Date	

Section II: Project Description

Goal and Objectives: Describe the overall goal and specific objectives for this project.

GOAL: Reduce and prevent nonpoint source pollution, specifically thermal and sediment loading, to the East Fork of the Bitterroot River and ultimately the mainstem of the Bitterroot River, moving the East Fork a step closer to fully supporting it's beneficial uses.
OBJECTIVES: Install 4,050 linear feet of riparian fencing to protect 2,000 feet of the East Fork Bitterroot River from cattle and other browse, immediately preventing further degradation of the riparian area; install 460 nursery plants and 150 live shrub transplants to enhance and repair the riparian area, providing shade to the temperature impaired stream, and creating woody vegetation along the banks that will reduce the current amount of excessive sediment delivery to the stream; provide E+O to other streamside landowners.

Methods: Describe the approach selected to address/correct the problem(s), e.g. types of BMPs to be installed, and other important activities.

METHODS:
-Install 4,050 feet of linear fencing, protecting 2,000 feet of the East Fork Bitterroot from browse by cattle and other wildlife.
-Install 460 nursery plants to revegetate the riparian area within the fencing.
-Individually protect 100 existing plants and 50% of the nursery plants with individual browse protectors to prevent wildlife browse.
-Install 150 live shrub transplants along specific banks to provide immediate shade to the stream and woody root systems to the banks
-Seed 2 acres of disturbed area within the fencing.
-Target depositional point bar features where riparian vegetation can establish and allow features to form naturally + promote sinuosity
-Educate 100+ citizens, including all streamside landowners along the East Fork, through targeted mailings highlighting the project, a presentation at the Sula Clubhouse (the most prominent meeting place in Sula, within eyesight of the project area), newsletters, emails, and press releases.

Summary: Provide a brief summary of the project.

The East Fork Bitterroot River flowing through the Lazy J Cross property has been identified as a corridor with high potential for restoration. A lack of woody riparian vegetation and past channelization contributes to sediment and thermal loading in this reach (Montana DEQ 2005). The western half of the river corridor on the Lazy J Cross property, downstream from a private bridge, has been identified as the project area. This project will reduce sediment and thermal pollution by increasing woody riparian vegetation along river banks. This section of the river was channelized in the past; however, this reach is beginning to develop meanders via lateral cutting, and point bars are developing as sediment deposits. Some newly developed point bars are protected from grazing and support young willows and cottonwoods. Other point bars have the potential for willow and cottonwood establishment, and therefore provide locations to actively create vegetative communities through planting and seeding. As these point bars have developed, the river has created a small inset floodplain that provides some energy dissipation during high flows. The resulting reduction in shear stress provides an opportunity to revegetate portions of the river bank. The reach has high potential to support woody riparian vegetation, but it will be necessary to protect point bars and river banks by creating a riparian pasture where livestock can be excluded while vegetation has a chance to establish.

Section III: Background Information

Statement of Project Need and Intent

The need for this project is clear: the East Fork of the Bitterroot River, headwaters of the mighty Bitterroot, is listed as impaired by DEQ for both sediment and temperature. These conditions are the reflection of land use practices and natural conditions including a lack of vegetation along the stream due to overgrazing, fire damage, and bank erosion. The opportunity to work on a property like this --which contains a mile of the East Fork --is incredibly rare, especially in the Bitterroot. In addition, the landowners are incredibly dedicated to this property; in 2015 they completed a conservation easement preserving the property in perpetuity. Working on a restoration project on a property/reach this scale will be the most effective action we can take to combat sediment and temperature impairments on the East Fork of the Bitterroot River. Our intent is to reduce stream temperatures, subsequently reducing sediment delivery, through native planting and fencing.

Describe the pre-project planning that has already occurred.

Since the landowners recently completed a conservation easement, working for years with the Bitter Root Land Trust (BRLT), we knew they were committed to the ranch and it's conservation value. We thought they may be interested in enhancing the property through riparian planting and fencing. With assistance from BRLT we reached out to landowners and the ranch manager (Jill and Bob) to begin conversations about the potential for a restoration project. That kicked off a long and fruitful process of building a better relationship with the Jill and Bob to ensure that we truly understood their needs and interests so we didn't plan on a project that would never get off the ground. In April, BRWF applied for and received funding from the Ravalli County Resource Advisory Committee (RAC) to complete a design on the Lazy J Cross. This was a huge step as we understood that to ultimately complete a successful restoration project we would first need to complete a comprehensive design. Many walks, talks, and ATV rides were then taken to ensure that we were able to suggest a project of significant benefit to the stream while respecting their values and enhancing their property. Working with Geum Environmental Consulting, we drafted concepts to share with the Jill and Bob so they could see what options were available to them and determine what would work best for their current operations and vision for the future. In September, after talking with all of the landowner members of the Wetzsteon family, they chose the option to work on 50% of the stream adjacent property, implementing nearly all of the recommendations from Geum along a significant portion of their property.

Collaborative Effort: Describe the collaborative effort you have engaged in to ensure support from all appropriate partners.

Based on the nature of the property being in conservation easement, we have worked with the Bitter Root Land Trust from the beginning. They were integral to helping us connect with the landowners and better understand the property. Because of their commitment to stewardship they are interested in the successful implementation of the project and will reach out to their supporters to help solicit volunteers for workdays and maintenance. Geum, the local environmental consultants we worked with to develop the design, have also been partners from the beginning. They too have developed relationships with the landowners and have reached out to the Army Corps of Engineers about the project and in regards to specific permitting requirements.

Partners and Roles: Identify the project partners and their roles.

Partner	Role
Landowners	Oversight and guidance. Providing in-kind support through volunteer workdays.
Bitter Root Land Trust	Assistance with determining how our actions fit into and compliment the conservation easement. Volunteer recruitment. Stewardship.
Ranch Manager	Oversight and guidance. Providing in-kind support through volunteer workdays.
Local Volunteers	Providing a significant amount of the workload for plant installation, including browse protector installation.

Technical and Administrative Qualifications

BRWF works in partnership with local environmental consultants, and relies on recommendations and technical support from our Projects Committee, which includes board and community members with backgrounds in agriculture, hydrology, fisheries biology, and land management.

BRWF has successfully managed six DEQ contracts during my tenure as ED. We have consistently received good feedback from Project Managers about our contract management ability.

Past and Current Projects

Funding Organization	Award Amount	Project Description	Project Status	Contact Information
RAC	$16,500.00	Working closely with landowners, complete a comprehensive design for a project that will reduce thermal and sediment loading to the East Fork of the Bitterroot River.	Nearly Complete	Matt Gordon, 406.363.7140
Future Fisheries	$47500.00	Reduce chronic sediment and improve watershed and stream health in Sleeping Child and Rye Creeks --resulting in beneficial impacts to the Bitterroot River --by decommissioning a minimum of 20 miles of roads in the Sleeping Child and Rye Creek drainages	Complete	Michelle McGree, 406.444.2432
Bitterroot National Forest	$315,000.00	Reduce chronic sediment and improve watershed and stream health in Sleeping Child and Rye Creeks by decommissioning a minimum of 20 miles of roads in the Sleeping Child and Rye Creek drainages. This Stewardship Agreement is still open; we secured funds to do additional work with BNF as opportunities become available.	Phase 1 complete	Cole Mayn, 406.363.7155
WNTI	$3000.00	Temperature and Sediment Reduction to Improve Stream Health and Fish Habitat - a grant award for this project, "Riparian Fencing + Grazing Management = Temperature + Sediment Reduction on the East Fork"	Just beginning	Therese Thompson, 303.236.4402
DEQ	105,000	Reduce chronic sediment and improve watershed and stream health in Sleeping Child and Rye Creeks --resulting in beneficial impacts to the Bitterroot River --by decommissioning a minimum of 20 miles of roads in the Sleeping Child and Rye Creek drainages	Road work complete; tasks left for E +O and monitoring. Contract expires 6/30/17	Katie Steele,

Section IV: Scope of Work

Task 1 Title Riparian Fencing

Description

To allow vegetation to establish, a riparian pasture will be delineated and fenced (by a local contractor) to create a distinct area with different management objectives than adjacent pastures. The fence will be a 4 strand barbed wire livestock fence built with a minimum 30-foot buffer from the channel, 10-foot buffer from the outer edge of point bar features, and a 50-foot buffer from actively eroding banks. The riparian pasture will effectively delineate a channel migration zone which will allow river processes and associated movement to occur within a defined corridor over the long term.

Deliverables

1) 4,000 feet of riparian fencin

Task 1 Funding

319 Funds	$1,000.00
Non-Federal Match	$11,150.00
Other Federal Funds	
Total Cost	$12,150.00
Is Match Secured?	No

Timeline Spring/Summer 2017

Match Source Future Fisheries, BRTU, and WNTI (WNTI=Secured)

Task 2 Title Riparian Planting, Plant + Point Bar Protection and Bank Revegetation

Description

1.Install 460 nursery-grown plants, including black cottonwood, several native willow species red-osier dogwood, gray alder, black hawthorne and water birch. Smaller shrubs will include snowberry, woods rose, and currant/gooseberry, all grown from appropriate western Montana seed sources. 2.Install 230 individual cages around nursery plants, and up to 100 individual cages to protect existing trees and shrubs, and these will remain on plants until they grow tall enough to resist browse (approximately nine feet). Each individual cage is made from 5 foot tall, graduated woven wire fencing formed into a 3 foot diameter enclosure around three steel t-posts. 3. Seed areas where ground is disturbed as a result of the project using a seed mix developed in coordination with the landowner. 4. Bank Revegetation: Excavate a six- to ten- foot bench behind the river bank during low flow, sloped down away from the river to base flow elevation. A combination of mature transplants, willow cuttings and dead brush will be placed on the bench, oriented so live transplant roots and the base of willow cuttings are at the back, low end of the bench, and live branches extend over the river channel. Backfill the bench to original elevation.

Deliverables

1) Plant 460 nursery plants
2) Install 330 browse protectors, including on developing point bars
3) Seed two acres of disturbed areas
4) Bank revegetation treatment

Task 2 Funding

319 Funds	$18,250.00
Non-Federal Match	$9,180.00
Other Federal Funds	
Total Cost	$27,430.00
Is Match Secured?	Yes

Timeline Summer/Fall 2017

Match Source *Match will be secured=in-kind support from volunteers

Task 3 Title Education and Outreach

Description

Our intent is to reach the community, especially streamside landowners, about NPS pollution and solutions.

To educate adults, we will update our e-news (which reaches a list of 450 people and growing), send information in our newsletter*, and invite participants to play an active role in the restoration process through volunteer days where citizens will be able to experience NPS pollution solutions in action. *Beyond our typical mailing list, we will also mail to all landowners who have property along the East Fork.

We will engage dozens of volunteers in active restoration days, giving them a real sense of improvements that can be made in our watershed and how they can make a difference. We will be sure to invite East Fork residents with a special invitation to learn + participate.

BRWF will also use presentations to local service groups and clubs, like the Sula Club, reaching 30+ people; to educate citizens about NPS pollution and solutions, using specific examples of work being done in their neighborhood, and inviting people to get involved directly through volunteer days, taking a hands on approach to restoration.

Deliverables

1) a minimum of three e-news reports on NPS issues and solutions, including calls to action
2) a minimum of two newsletter addressing NPS issues and solution, including calls to action
3) a minimum of six volunteer days to engage citizens in active restoration through planting, seeding, and plant protection
4) a minimum of one presentations to educate citizens about NPS issues and provide a call to action

Task 3 Funding

319 Funds	$3,000.00
Non-Federal Match	$1,250.00
Other Federal Funds	
Total Cost	$4,250.00
Is Match Secured?	Yes

Timeline Duration of Contract

Match Source *Recipients of education

Task 4 Title Operation and Maintenance Plan

Description

Develop a plan for the operation and maintenance of the project.
This plan will include:
1) The reasonable, expected life span for both the operation and maintenance obligations for both fencing and plant care. The lifespan will be determined by mutual agreement and definition between BRWF and DEQ, and shall be based on similar projects and programs.
2) A description of how the fencing and plantings will be operated and/or maintained to ensure that they remain functional for the duration of their intended lifespan.
3) A procedure for obtaining access to the project site for the purposes of project planning, implementation, operation and maintenance, and post-implementation monitoring, by BRWF.
4) Landowner agreement defining the above actions and the role of BRWF and the landowners in the process.
5) Develop a monitoring plan for sediment loading, working with DEQ to choose the most appropriate method from DEQ's Load Reduction Estimation Guide

Deliverables

1) Operation and Maintenance plan, developed with input from DEQ project manager, including plan for sediment load monitoring
2) Landowner agreement

Task 4 Funding

319 Funds	$1,500.00
Non-Federal Match	$250.00
Other Federal Funds	
Total Cost	$1,750.00
Is Match Secured?	

Timeline Spring/Summer 2017

Match Source BRWF + landowner time

Task 5 Title Execution of Operation + Maintenance Plan and Monitoring

Description

This task will involve the execution of the O+M Plan developed in conjunction with DEQ Project Manager.

This task will likely include:
1) Maintaining fence throughout the the lifespan determined by DEQ, understanding that funding will only be available from DEQ during the duration of this contract*
2) Maintaining plants through watering and inspection and modifications of browse protectors
3) Complete sediment load reduction monitoring using DEQ specified method from the Load Reduction Estimation Guide
4) Monitoring plants with counts and photo-points

*BRWF is dedicated to the long-term success of the project and will provide plant monitoring and maintenance for at least three years after the project is implemented. We will use community donations, additional grant support from other sources, and our cash reserves to make this possible.

Deliverables

1) Annual update on operation and maintenance actions
2) Sediment load reduction estimates

Task 5 Funding

319 Funds	$3,250.00
Non-Federal Match	$250.00
Other Federal Funds	
Total Cost	$3,500.00
Is Match Secured?	Yes

Timeline Fall 2017-End of contract

Match Source BRWF

Task 6 Title Administration

Description

Contractor shall oversee and administrate the open contract and act as a liaison between BRWF and DEQ. Contractor shall prepare and submit requests for reimbursement, match, status reports, annual reports, and a final report as needed by DEQ.

Deliverables

1) Status Reports and Billing
2) Annual Reports and Billing
3) Final Report and Billing

Task 6 Funding

319 Funds	$3,000.00
Non-Federal Match	
Other Federal Funds	
Total Cost	$3,000.00
Is Match Secured?	

Timeline Duration of the contract

Match Source

Section V: Supporting Documents

Detailed Project Budget

Task Number and Specific Action	319 Funds	State Cash Match	Local Cash Match	In-Kind Match	Federal Funds	Total Costs
1) Riparian Fencing purchase + installation	$1,000	$8,150	$3,000			$12,150
2) Plant purchasing + planting	$4,500			$3,680		$8,180
2) Plant + Point bar protection	$7,000			$5,500		$12,500
2) Bank revegetation	$6,750					$6,750
3) e-news	$500			$500		$1,000
3) two newsletters	$1,000			$500		$1,500
3) six "NPS pollution solution" volunteer days	$1,250					$1,250
3) Sula community presentation	$250			$250		$500
4) Operation + Maintenance Plan development	$1,500					$1,500
4) Landowner agreement				$250		$250
5) Fencing maintenance	$750					$750
5) Plant + protector maintenance	$750					$750
5) Plant + point bar monitoring	$1,250					$1,250
5) Update DEQ on progress				$250		$250
5) Sediment load reduction estimates	$500					$500
6) Administration	$3,000					$3,000
TOTAL	$30,000	$8,150	$3,000	$10,930		$52,080

Project Milestone Table: Complete the following Project Milestone Table by entering task numbers and titles in the left hand column, then check the box(es) for the appropriate quarter(s) and years(s) in which you will be working on the task.

Milestone	Spring 2017	Summer 2017	Fall 2017	Winter 2017	Spring 2018	Summer 2018	Fall 2018	Winter 2018	Spring 2019	Summer 2019	Fall 2019
Task 1: Riparian Fencing	■	■	☐	☐	☐	☐	☐	☐	☐	☐	☐
Task 2: Riparian Planting + Plant Protection	■	■	■	☐	☐	☐	☐	☐	☐	☐	☐
Task 3: Education and Outreach	■	■	■	■	■	■	☐	☐	☐	☐	☐
Task 4: Operation + Maintenance Plan	☐	■	■	■	☐	☐	☐	☐	☐	☐	☐
Task 5: Operation and Maintenance Plan Execution	☐	☐	☐	■	■	■	☐	☐	☐	☐	☐
Task 6: Administration	■	■	■	■	■	■	☐	☐	☐	☐	☐
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Submit **project map(s)** and **letters of support (at least 3)** along with the Final Project Proposal form. If your organization is not the author of the WRP you hope to implement, you must request a letter of support from the original authoring entity. If the authoring entity refuses to provide a letter of support, use the additional space at the end of the application to describe their response. If design drawings are available, provide those as well. For on-the-ground work, include copies of applicable permits if available.

- ☒ Project Map
- ☒ Letters of Support
- ☐ Design Drawings
- ☐ Applicable Permits
- ☐ Draft of amended WRP (if applicable)
- ☒ Photos
- ☐ Landowner Agreements

Use the space provided for any additional information that may not have been captured elsewhere in this Final Project Proposal

The Wetzsteon Family--the owners of the Lazy J Cross, where this project will be completed--are long time landowners and are well respected in the Sula community. Whereas other projects that we have done in the area have been with out of state landowners, a project like this will help BRWF create relationships with other true-blue Bitterrooters.

This project implements specific activities, goals, and objectives recommended in the Bitterroot WRP and the 2012 MT NPS Mgmt Plan.

The specific designs for individual point bars, which include setting back a bank revegetation treatment on the opposite bank in anticipation of future lateral bank movement, preserving existing shrubs within the riparian pasture and allow for natural recruitment of cottonwoods and willows over time, will allow these feature to naturally form, promote additional sinuosity, and support developing meander patterns, promoting self-maintaining and natural ecological processes.

The timeline for this project is somewhat flexible. Depending on when funding is made available from DEQ,- on the offhand chance that contracting begins sooner that is usually has in July - we may start the majority of the project in spring. It would be ideal to complete fencing and plantings in the spring, and regardless of the DEQ timeframe we can do so with supplemental funding from Future Fisheries and Trout Unlimited.

Water Protection Bureau Department of Environmental Quality
Attn: Robert Ray
P.O. Box 200901
Helena, MT 59620-0901

September 16, 2016

Dear Robert,
My name is Paula Wetzsteon and my daughters and I are the proud landowner of the Lazy J Cross property in Sula, Montana. This property has been in our family for 150 years and means so very much to us. In 2015 , we officially entered into a Conservation Easement with the Bitter Root Land Trust to ensure that it will remain the gem that it is forever.
As a next step in our commitment to the conservation of this place, we have decided to enhance and restore riparian areas on the ranch. In partnership with the Bitter Root Water Forum, we will engage in the fencing and planting of nearly ½ mile of streambank, ideally leading to a thriving riparian area that will benefit stream health and improve the look and feel of our property.
With the money we have already invested in the Conservation Easement we do not have additional cash to contribute to the project at this time, but we will commit resources in terms of time and effort to ensure that this project is a success. Our family will work on the installation of fences and planting, and as he is able our ranch manager, Bob, will lend time and/or the use of heavy machinery to complete the project. Bob has already identified a nearby ditch in need of clearing that can be used as a source of transplants for use on the bank treatments.
We truly appreciate your consideration in the funding of this project. We recognize how special this place is to the Bitterroot Valley and are happy to be a part of something that will have a lasting legacy for the area and downstream.
Sincerely,

Paula M. Wetzsteon

Paula Wetzsteon

BITTER ROOT
LAND TRUST

September 19, 2016

Water Protection Bureau, Department of Environmental Quality
Attn: Robert Ray
P.O. Box 200901
Helena, MT 59620-0901

RE: Bitter Root Land Trust's (BRLT) Support for Stream Restoration on Lazy J Cross Ranch

Dear Mr. Ray,

I'm writing in support of the Bitter Root Water Forum's (BRWF) proposal to complete a stream restoration project on the Lazy J Cross Ranch in the Sula Basin. BRLT is committed to working proactively with landowners on voluntary conservation projects that insure the Bitterroot's water, wildlife, and working lands thrive for future generations. We worked closely with the Wetzsteon family for years to help them realize their conservation vision on the Lazy J Cross Ranch, which culminated in a conservation easement in June of 2015. As a result of these efforts, we are fortunate to have a strong working relationship with the Wetzsteon family, as well as a thorough understanding of the property. Based on our knowledge of the landscape and the landowners' dedication to the place, we strongly support BRWF's DEQ grant application to restore and enhance the East Fork of the Bitterroot River on the Lazy J Cross.

We began working with Sterling Wetzsteon in 2012 to help him conserve the Lazy J Cross Ranch, consolidate ownership, and pass it down to his heirs. Sterling's vision for the future of the Lazy J Cross inspired ten different funding partners to invest $950,000 to ensure the property is perpetually conserved and available for agriculture, fish, wildlife, and public hunting. BRWF's investment in stream restoration will further enhance the existing long-term investment in the Sula Basin and the East Fork of the Bitterroot River made by the Wetzsteon family and the local, state, national, and private funders who made the conservation easement possible.

Agriculture and fisheries enhancement are equally important conservation values of the Lazy J Cross Ranch. BRWF has been a responsive partner, creating a design that will improve the fishery and adjacent habitat, while developing a design that is consistent with the values and vision of the Wetzsteon family and works closely to respect Bob Wetzsteon's agricultural operation and management concerns.

BRLT is thrilled with this opportunity to build on the Wetzsteon family's strong land ethic. Fish, wildlife, hunters, anglers, and agriculture all stand to benefit from this great project. We are committed to continuing to play a partnership role in this project through our stewardship program and look forward to working closely with BRWF, the Wetzsteon family, Bob Wetzsteon, and other partners to insure this project's success. I strongly encourage DEQ's support for these restoration efforts. Please don't hesitate to call if you have any questions.

BOARD MEMBERS

Pete Seifert
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EXECUTIVE DIRECTOR

Gavin Ricklefs

FARM & RANCH ADVISOR

Rob Johnson, Ravalli County Extension Agent – *Retired*

PO Box 1806
Hamilton, MT 59840

406/375-0956 office
406/375-0925 fax

bitterrootlandtrust.org

Sincerely,

Gavin Ricklefs
Executive Director

Montana Fish, Wildlife & Parks

9/22/2016

Water Protection Bureau, DEQ

Attn. Robert Ray

P.O Box 200901

Helena, MT 59620-0901

Dear Robert:

I am writing to support a proposal from the Bitterroot Water Forum to obtain funding, to help complete a riparian restoration project on the Lazy J Cross Ranch near Sula, Montana. The project, which is supported by the landowner, should improve riparian habitat along the East Fork Bitterroot River. The East Fork Bitterroot still supports fluvial bull trout that require cold water temperatures. Over the long term, this project should increase the shade on the River.

The Bitterroot Water Forum has been a responsible proponent of restoring riparian and upland watershed habitats. This project will continue that legacy.

Sincerely,

Chris Clancy

Chris Clancy

Fisheries Biologist.

Geum
Environmental
Consulting, Inc.

307 State Street
P.O. Box 1956
Hamilton, MT 59840
Phone: (406) 363-2353, Fax (406) 363-3015
http://www.geumconsulting.com

September 23, 2016

To: Heather Barber, Bitter Root Water Forum

From: Tom Parker, Principal Ecologist and Alyssa Gulley, Restoration Specialist

Re: Lazy J Cross Preliminary Restoration Design

The East Fork Bitterroot River flowing through the Lazy J Cross property has been identified as a corridor with high potential for restoration. A lack of woody riparian vegetation and past channelization contributes to sediment and thermal loading in this reach (Montana DEQ 2005). The western half of the river corridor on the Lazy J Cross property, downstream from a private bridge, has been identified as the project area. This memo describes a preliminary restoration design intended to reduce sediment and thermal pollution by increasing woody riparian vegetation along river banks. Figure 1 provides an overview of the project location. Figure 2 shows proposed restoration treatments.

Existing condition and restoration potential

The project reach extends from below the bridge to the Lazy J Cross property boundary. This section of the river was channelized in the past; however, this reach is beginning to develop meanders via lateral cutting, and point bars are developing as sediment deposits. Some of these newly developed point bars are protected from grazing and support young willows and cottonwoods. Other point bars have the potential for willow and cottonwood establishment, and therefore provide locations to actively create vegetative communities through planting and seeding. As these point bars have developed, the river has created a small inset floodplain that provides some energy dissipation during high flows. The resulting reduction in shear stress provides an opportunity to revegetate portions of the river bank. The project reach has high potential to support woody riparian vegetation, but it will be necessary to protect point bars and river banks by creating a riparian pasture where livestock can be excluded while vegetation has a chance to establish. The vegetative site potential for the entire riparian corridor on the Lazy J Cross property is a black cottonwood forest with a riparian shrub understory. Tall shrubs would include several native willow species (*Salix lasiandra*. *S. exigua*, *S. geyeriana*, *S. bebbiana*), red-osier dogwood (*Cornus sericea*), gray alder (*Alnus incana*), black hawthorne (*Crataegus douglasii*), and water birch (*Betula occidentalis*). Smaller shrubs would include snowberry (*Symphoricarpos* spp.), rose (*Rosa woodsii*), and currant/gooseberry (*Ribes* spp.).

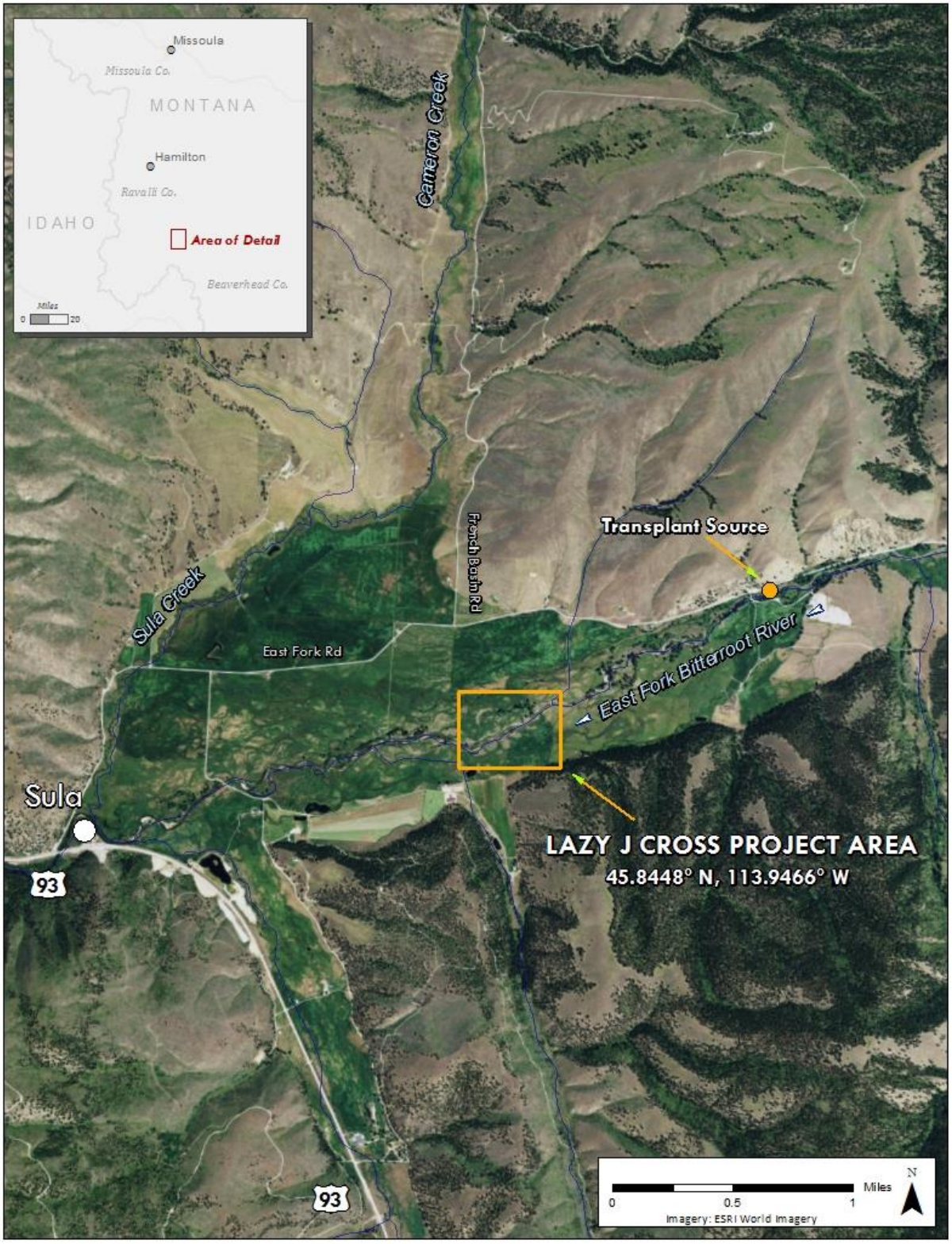

Figure 1. Overview of Lazy J Cross Ranch project location on the East Fork Bitterroot River near Sula, MT.

Preliminary restoration design elements

Riparian pasture

To allow vegetation to establish, a riparian pasture would be delineated and fenced to create a distinct area with different management objectives than adjacent pastures. The fence would be a 4 strand barbed wire livestock fence built with a minimum 30-foot buffer from the channel, 10-foot buffer from the outer edge of point bar features, and a 50-foot buffer from actively eroding banks. The riparian pasture would effectively delineate a channel migration zone which would allow river processes and associated movement to occur within a defined corridor over the long term. Initially, management objectives for the riparian pasture would focus on restoring woody vegetation to aid in reducing sedimentation and thermal pollution, in addition to supporting other functions the riparian vegetation would provide, such as habitat, food web support and water storage. Once riparian vegetation has established, the pasture could be used at certain times for livestock as part of a grazing management plan for the Lazy J Cross. Benefits to agriculture would include shade and thermal cover for livestock, and potential long-term increase in water storage and groundwater levels as riparian vegetation encroaches on and narrows the channel. Figure 2 shows potential fence locations that would define the riparian pasture.

Point bar features

Depositional bar features within the project reach provide locations hydrologically connected to the river where riparian vegetation can establish. These areas provide locations for active restoration through planting as well as passive restoration through browse protection. Areas where ground is disturbed as a result of the project would be seeded using a seed mix developed in coordination with the landowner once the final design is complete and fence locations have been finalized. All areas would need to be protected with livestock fence, and all nursery-grown plants would also be protected from wildlife using individual cages. Up to 100 individual cages would be used to protect existing trees and shrubs, and these would remain on plants until they grow tall enough to resist browse (approximately nine feet). Each individual cage is made from 5 foot tall, graduated woven wire fencing formed into a 3 foot diameter enclosure around three steel t-posts. Nursery-grown plants would include species listed in the *Existing Conditions* section above, and would be grown from appropriate western Montana seed sources. These areas are delineated on Figure 2 and described in detail below.

P1: This is a cobbly, developing point bar feature with a few willows present. Due to its low elevation and substrate, it is not suitable for planting or installing individual cages. The design would preserve existing shrubs within the riparian pasture and allow for natural recruitment of cottonwoods and willows over time.

Photo 1. P1 point bar, photo taken from upstream end looking downstream.

P2: This is a large point bar feature with an area of dense Pacific willows and sandbar willows that are heavily browsed. Some gray alders are present on higher positions, but they are mostly browsed to the ground. Up to 20 existing plants would be protected with individual cages and the rest of the point bar would be planted with up to 280 nursery grown plants, and approximately half of these (the more palatable species) would be protected with individual cages.

Photo 2. P2 point bar, photo taken from upstream end looking downstream.

P3: This is another large point bar with a smaller area of existing willows establishing on rocky substrate. Up to 20 existing plants would be protected with individual cages and the rest of the point bar would be planted with up to 180 nursery grown plants, and approximately half of these (the more palatable species) would be protected with individual cages.

Photo 3. P3 point bar, photo take from upstream end looking downstream.

P4: This area has existing woody vegetation including sandbar willow, Pacific willow, and black cottonwood that would be preserved. There is no need to plant this area, and up to 20 cages would be used to protect existing healthy plants from wildlife browse.

Photo 4. P4 point bar, photo taken from upstream end looking downstream.

P5: This is a mid-channel bar with a patch of 6-foot-tall willows that is beginning to trap debris. This feature could continue to grow and form a point bar connected to the left bank, and it is positioned correctly to support a developing meander pattern in this reach. This design, which includes setting back a bank revegetation treatment on the opposite bank in anticipation of future lateral bank movement, would allow this feature to naturally form and promote additional sinuosity in the project reach.

Photo 5. P5 mid-channel bar, photo taken from downstream end on left bank, looking upstream.

P6: This area has abundant willows that would be preserved and up to 40 plants would be protected from wildlife browse with individual cages. There is no need to plant this area.

Photo 6. P6 depositional bar, photo taken from upstream end looking downstream.

Bank revegetation

Some banks within the project reach provide an opportunity for bank revegetation to support aquatic habitat, reduce sediment delivery, and provide cover to reduce stream temperatures. Bank revegetation would utilize mature willows and alders that would be harvested as part of clearing out a ditch on an adjacent property depicted in Figure 1 ("Transplant Source"). Bank revegetation would include several components. First, a six- to ten-foot wide bench would be excavated behind the river bank during low flow, and the bench would be sloped down away from the river to the base flow elevation. A combination of mature transplants, willow cuttings and dead brush would be placed on the bench, oriented so live transplant roots and the base of willow cuttings are at the back, low end of the bench, and live branches extend over the river channel. The area behind the bank would then be backfilled to its original elevation using the material excavated to construct the bench. In some cases, banks would be set back from the existing bank line to allow room for lateral migration. The banks identified as possible revegetation locations are shown on Figure 2 and described below.

B7: A 30 foot length of this bank would be revegetated as described above, tying into the downstream end of the P3 point bar feature as a stable tie-in point. The downstream section of this bank will probably continue to move laterally as the river gains length and the opposing point bar expands. The 50 foot buffer within the riparian pasture at this location would allow for this lateral movement. While this bank erosion will contribute some sediment in the short term, woody riparian vegetation will develop on the expanding left bank point bar across from the eroding bank, resulting in long-term benefit to the aquatic and riparian habitat in this reach.

Photo 7. B7 bank location, photo taken from end of P3 point bar looking downstream.

B8: Bank B8 is located along the upstream half of a meander bend across from an island in the channel. Here, bank revegetation would tie into the P2 point bar feature, and be set back from the bank line at an increasing distance, until it is set back approximately 20 feet at the meander apex, in anticipation of future bank movement. The downstream half of this meander may continue to move laterally, so no bank revegetation is proposed along that portion of the bank.

Photo 8. B8 bank location, photo taken from end of P2 point bar looking downstream.

B9: This section of streambank would receive the bank revegetation treatment, tying into the P1 and P2 point bar features on either end and leaving a 20-foot gap around an existing cottonwood tree on the bank. Cottonwood suckers are currently present and will grow if protected from grazing. Young willows are present along the bank and will also likely expand after the riparian pasture is constructed. A point bar feature is beginning to develop across the channel, indicating this bank may migrate laterally in the future. To accommodate this, the bank revegetation treatment will be set back up to 20-feet from the existing bank line to account for lateral movement.

Photo 9. B9 bank location, photo taken from existing cottonwood tree looking downstream at the lower section of treatment area.

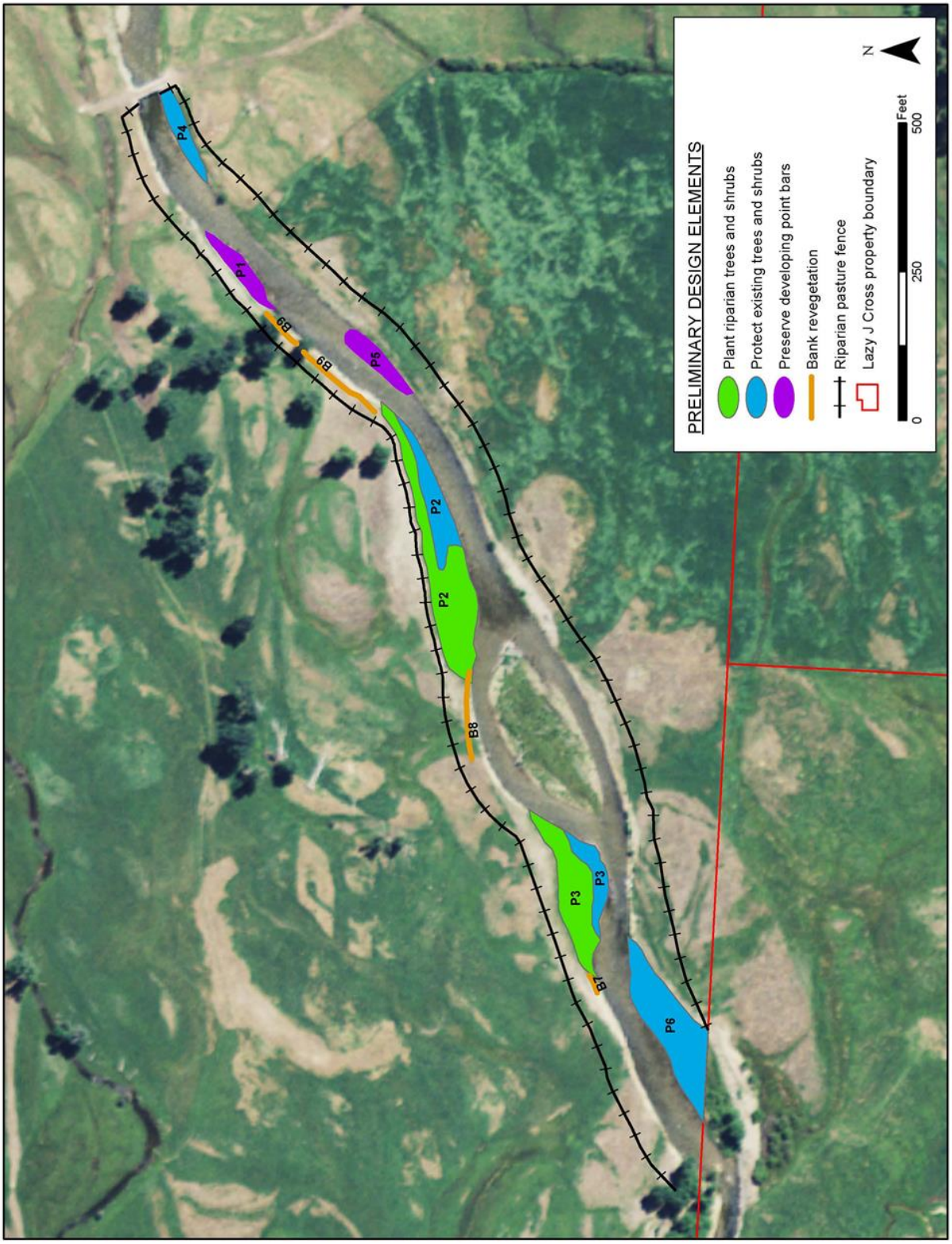

Figure 2. Proposed restoration treatments for the East Fork Bitterroot River on Lazy J Cross Ranch.

Estimated Costs

Estimated costs are shown in Table 1. Most costs are based on actual bid prices from similar restoration projects completed as part of State of Montana contracts in the last two years in western Montana. Fencing costs are mid-range costs, assuming a local fencing contractor would implement that work. These costs do not factor in potential volunteer labor that may be supplied by local conservation groups, or in-kind contributions from the landowner which may include equipment time or materials. Some costs such as seeding and mobilization are rough estimates to ensure these activities are covered as part of the budget.

Table 1. Estimated Costs for Riparian Restoration along East Fork Bitterroot River on the Lazy J Ranch.

Description	Quantity	Unit	Cost per Unit	Total Cost	Comments
Livestock Fence	4050	LF	$3.00	$12,150.00	Installed cost of 4 strand barbed wire fence, includes labor and materials
Nursery Plant Installation	460	EA	$8.00	$3,680.00	TPOT1 (4"x4"x14")
Nursery Plant Material	460	EA	$5.00	$2,300.00	Plant P2 and P3 at average 8 ft spacing
Browse Protectors	330	EA	$35.00	$11,550.00	Installed cost--includes labor and materials--protect approximately 50% of nursery plants, plus 100 existing plants
Live shrub transplants	150	EA	$75.00	$11,250.00	Taken from nearby ditch, distributed in bank revegetation treatments
Seeding	2	AC	$200.00	$400.00	All disturbed areas inside fencing will be seeded. Installed cost; potential mobilization covered below
Equipment time	20	HRS	$125.00	$2,500.00	Excavator with operator to construct benches for bank revegetation treatments
Mobilization	1	LUMP SUM	$2,000.00	$2,000.00	Covers potential cost for contractors mobilizing equipment to site
Oversight support	1	LUMP SUM	$5,000.00	$5,000.00	Assist with procuring materials, staking out fencelines and planting zones, and overseeing planting crew
			Subtotal	**$50,830.00**	

References

Montana Department of Environmental Quality (DEQ). 2005. Water Quality Restoration Plan and Total Maximum Daily Loads for the Bitterroot Headwaters Planning Area. Montana Department of Environmental Quality. Helena, MT.