Upper Clark Fork River Basin Aquatic and Terrestrial Resources Restoration Plans

Draft Updated November 2018
Public Comment Version

Montana Department of Justice
Natural Resource Damage Program

Montana Department of Justice
Natural Resource Damage Program

MEMORANDUM

TO: UCFRB Advisory Council, Trustee Restoration Council, Public

CC:

FROM: Doug Martin

DATE: October 30, 2018

SUBJECT: 2018 Restoration Plans Update: State Revisions

The NRDP staff, proposes revisions to the Final Upper Clark Fork River Basin Aquatic and Terrestrial Resources Restoration Plan, 2016 (Restoration Plans), in coordination with Fish, Wildlife and Parks and NRDP's partners who have assisted with the implementation of the Restoration Plans. The substantive revisions to each section of the Restoration Plans are summarized below. All changes in the Restoration Plans, substantive revisions as well as administrative updates are highlight in red in the draft document. The draft document can be found on the NRDP website at www.doj.mt.gov under "Montana Lands" or by request at 444-0205 or nrdp@mt.gov.

Section 1.1: Update of the 2018 Restoration Plan revision process.

Section 2.3: Update describing the 2018 project concept and comment solicitation.

Section 2.4:

Update on the 2018 revisions to the aquatic and terrestrial resources funding allocations. NRDP presents an explanation of the allocation of the accrued interest since 2012 and proposes $4,950,000 of aquatic interest be allocated to priority aquatic projects and $500,000 of terrestrial interest be allocated to priority terrestrial projects.

Section 3.1 - 3.2: No revisions proposed.

Section 3.2.1:

Propose to develop flow projects in all flow Groups 1, 2, and 3.

Propose to fund projects associated with Aquatic Priority Area Specific Plans where in-stream flow can be enhancement with aquatic funds allocated to improve instream flow.

Summary of how flow related abstracts submitted in 2018 were included in Restoration Plans.

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Section 3.2.2.1:

Propose to enhance fish passage and recreational activities on Clark Fork River mainstem upstream of Deer Lodge using funding from aquatic flow funds allocated to improve instream flow on a case-by-case basis.

Propose to allocate an additional $500,000 to the Flint Creek to Rock Creek fish population evaluation and follow-up actions for implementation of pilot studies.

Section 3.2.2.2:

Propose to include the new Priority 1 and 2 tributary streams from the 2018 Aquatic Prioritization Plan: Basin Creek, Gold Creek, O'Neil Creek, and Rock Creek.

Propose to allocate $1.0 million in funding specifically to maintenance of the aquatic restoration actions. Half of funding would be from 2018 aquatic interest allocation and half would be from the contingency allocation.

Propose to allow restoration actions on tributaries, such as spring creeks, with connections to Priority 1 and 2 tributaries to improve connectivity and habitat on a case-by-case basis.

Updated watershed implementation schedule.

Propose to include engineering, design, and project management costs into the estimated costs for each restoration actions. This revision is based on the conceptual level of many of the projects and budgets creates inaccurate assumptions on engineering, design, and project management costs.

Section 3.2.2.3 through 3.2.2.18

All priority watershed sections were updated with proposed funding revisions based on concept abstracts submitted and working knowledge of available projects within each watershed.

The 2018 Restoration Plans propose to prioritize the restoration actions to better reflect the understanding of drainage-scale fish populations limiting factors.

Funding from Dempsey Creek, Section 3.2.2.6, was eliminated based on the 2018 Aquatic Prioritization Plan classifying Dempsey Creek as a Priority 3 stream.

Propose to allow restoration actions on flow limited streams if the restoration action(s) enhances or is coordinated with actions that address flow. This proposed revision is only for Racetrack Creek and Will and Willow Creeks.

Watershed sections for new Priority 1 and 2 streams, Basin Creek, Gold Creek, O'Neill Creek, and Rock Creek, were added with allocations associated with the project abstracts submitted. Sections 3.2.2.15, 16, 17, and 18.

Section 3.2.3: Monitoring: No revisions proposed.

Section 4.1: No revisions proposed.

Section 4.2:

Propose to allocate terrestrial interest ($500,000) as State matching funds to the Conservation Reserve Enhancement Program funding.

Tables updated with acquisitions completed since 2012.

Section 5.0:

Section updated with 2018 project concept submittals. Due to lack of available funds to allocate, in 2018, the State does not propose funding to assist with completion of these projects.

Section 6.0:

Section updated with State procurement guidance and requirements.

Proposal to review and revise the Restoration Plans at least four years after Governor's approval of the 2018 revision.

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Abbreviations

ARCO/BP	Atlantic Richfield Company/British Petroleum
BLM	Bureau of Land Management
CFR	Clark Fork River
cfs	cubic feet per second
DEQ	Department of Environmental Quality
DNRC	Department of Natural Resources and Conservation
FWP	Fish, Wildlife and Parks
GIS	Geographic Information Systems
NRD	Natural Resource Damages
NRDP	Natural Resource Damage Program
NWI	National Wetlands Inventory
RMEF	Rocky Mountain Elk Foundation
SBC	Silver Bow Creek
TBD	To Be Determined
TRC	Trustee Restoration Council
TU	Trout Unlimited
UCF	Upper Clark Fork
UCFRB	Upper Clark Fork River Basin
UM	University of Montana
USFS	United States Forest Service
WMA	Wildlife Management Area
WRC	Watershed Restoration Coalition
WWTP	Waste Water Treatment Plant

SECTION 1. INTRODUCTION

1.1 Purpose and Scope of this Document

This *Upper Clark Fork River Basin Aquatic and Terrestrial Resources Restoration Plans* (*Restoration Plans*) document describes the State of Montana's proposed restoration actions for aquatic and terrestrial resources of the Upper Clark Fork River Basin. It is based on the natural resource damage provisions in state and federal superfund law and on the plan development process set forth in the *2012 Final Upper Clark Fork River Basin Interim Restoration Process Plan* (*2012 Process Plan*) approved by Governor Schweitzer in May 2012. It is organized as follows:

- This introductory Section 1 describes the purpose and scope of this document.
- Section 2 provides background on the previous restoration planning efforts that led to the development of this Plan and on available restoration funding.
- Section 3 describes the restoration alternatives analysis and actions the State proposes for restoration of aquatic resources in the UCFRB.
- Section 4 describes the restoration alternatives analysis and actions the State proposes for restoration of terrestrial resources in the UCFRB.
- Section 5 describes the actions the State proposes for enhancement of recreational services in the UCFRB.
- Section 6 summarizes all proposed actions and describes how actions are to be implemented.

The State of Montana Natural Resource Damage Program (NRDP) developed these plans in consultation with fish and wildlife biologists from the Montana Department of Fish, Wildlife and Parks (FWP). Draft versions of these plans were the subject of a 30-day public comment period that ended on Friday, October 26, 2012.[1] The Governor made the final decision on these plans in December of 2012, following consideration of input from the public, the NRDP, the UCFRB Remediation and Restoration Advisory Council, and the Trustee Restoration Council. Further information on the role of each of these entities in the restoration planning development, review and approval process is provided in the *2012 Process Plan*. Any substantive change to any of these plans would be subject to the same review and public comments steps prior to a final decision by the Governor.

In 2015, the NRDP in consultation with FWP, updated and revised the 2012 *Restoration Plans*. As part of the 2015 Update to the 2012 *Restoration Plans*, the NRDP solicited from the public, including governmental entities, revisions to the 2012 *Restoration Plans* and restoration action concepts. Revisions to the 2012 *Restoration Plans* were considered in the Response to Comments dated April 12, 2015. These projects and revisions were summarized in the Draft 2016 Update to

[1] The public comments received and State's responses to them are covered in the *Final Response to Public Comment on the Draft UCFRB Aquatic and Terrestrial Resources Restoration Plans*, prepared by the NRDP, dated December 2012. This response document and this final restoration document are available on the NRDP website at: https://dojmt.gov/lands/upper-clark-fork-river-basin/

the 2012 *Restoration Plans*. The NRDP released the Draft 2016 Update to the 2012 *Restoration Plans* for a 32-day public comment period and provided opportunities for additional public comment at the Upper Clark Fork River Basin Advisory Council meeting on April 22, 2015, and at the Governor's Trustee Restoration Council meeting on May 13, 2015. Based on the public comment received, the NRDP prepared a Final 2016 Update to the 2012 *Restoration Plans*. This Final 2016 Update was recommended by the Upper Clark Fork River Basin Advisory Council at their October 21, 2015, meeting, and the Governor's Trustee Restoration Council at their November 10, 2015, meeting.

In 2018, the NRDP in consultation with FWP, updated and revised the 2016 *Restoration Plans*. As part of the 2018 Update to the 2016 *Restoration Plans*, the NRDP solicited from the public, including governmental entities, revisions to the 2016 *Restoration Plans* and restoration action concepts. Revisions to the 2016 *Restoration Plans* were considered in the Response to Comments dated _____, 2018. These projects and revisions were summarized in the Draft 2018 Update to the 2016 *Restoration Plans*. The NRDP released the Draft 2018 Update to the 2016 *Restoration Plans* for a 30-day public comment period and provided opportunities for additional public comment at the Upper Clark Fork River Basin Advisory Council meeting on ___, 2018, and at the Governor's Trustee Restoration Council meeting on ___, 2018. Based on the public comment received, the NRDP prepared a Final 2018 Update to the 2016 *Restoration Plans*. This Final 2018 Update was recommended by the Upper Clark Fork River Basin Advisory Council meeting at their December __, 2018, meeting, and the Governor's Trustee Restoration Council at their December __, 2018, meeting. The Governor approved this Final 2018 Update on _____.

SECTION 2. BACKGROUND

2.1 Restoration Plan Development Steps

In 1983, the State of Montana (State) filed a lawsuit against the Atlantic Richfield Co. (ARCO) for injuries to the State's natural resources in the UCFRB, which extends from Butte to Milltown (Figure 1-1). The lawsuit was brought under federal and state Superfund laws and sought damages from ARCO. Decades of extensive mining and mineral processing by ARCO and its predecessors in the Butte and Anaconda areas released hazardous substances that injured natural resources and deprived Montanans of their use. In 1989, the Environmental Protection Agency (EPA) filed another lawsuit to establish ARCO's liability for remedial cleanup in the UCFRB.

The NRDP pursued the natural resource damage (NRD) litigation against ARCO on behalf of the State. The State settled this lawsuit through a series of settlement agreements completed in 1999, 2005, and 2008.[2] This document is specific to the expenditure of the UCFRB Restoration Fund, which was established with natural resource damages recovered in the State's partial settlement of its lawsuit in 1999. The consent decrees for the 2005 and 2008 settlement agreements, along with the restoration plans approved pursuant to those decrees, provide the framework for expenditures of natural resource damages obtained from those settlements, which are specific to the Milltown, Butte Area One, Clark Fork River, and the Smelter Hill Upland injured areas.

The UCFRB Restoration Fund contains no Montana taxpayer funds, is administered by the Governor of Montana as trustee for natural resources of the State, and is established to restore, rehabilitate, replace, or acquire the equivalent of the injured natural resources of the UCFRB. From 2000 through 2010, the NRDP administered an annual restoration grants process funded largely by the interest earnings of the UCFRB Restoration Fund. In December 2011, the Governor approved a revised framework document for UCFRB Restoration Fund expenditures, the *Final UCFRB Long Range Priorities and Fund Allocation Plan*, hereafter referred to as the *2011 Long Range Guidance Plan.* That plan allocated the remaining balance of the UCFRB Restoration Fund into separate funds for groundwater, aquatic, and terrestrial resource restoration projects.

The *2011 Long Range Guidance Plan* also triggered the development of a restoration planning process for development of restoration plans specific to groundwater, aquatic, and terrestrial resources. In May 2012, the Governor approved a *final UCFRB Interim Restoration Process Plan* (*2012 Process Plan*) that set forth the process for development of these resource-specific restoration plans that dictate the expenditures of UCFRB Restoration Fund in the future.

In October 2012, the Governor approved groundwater restoration plans from Butte-Silver Bow and Anaconda Deer-Lodge city-county local governments pursuant to the procedures and requirements specified in the *2012 Process Plan*.[3] These plans describe the counties' proposed plans for expenditure of groundwater priority funds that were allocated via the *2011 Long Range Guidance Plan* for water system improvements in Butte (about $30.1 million) and Anaconda (about $10 million). The counties' draft versions of these plans were subject of public comment

[2]These settlements are summarized on the NRDP's website at: https://dojmt.gov/lands/

[3] The counties' final groundwater plans are available from the NRDP website at: https://dojmt.gov/lands/butte-area-one/ (Butte Groundwater), https://dojmt.gov/lands/anaconda/ (Anaconda Groundwater)

and consideration by the UCFRB Remediation and Restoration Advisory Council and the Trustee Restoration Council prior to the Governor's final approval decision.[4]

Similarly, the aquatic and terrestrial *Restoration Plans* are based on the procedures and requirements specified in the *2012 Process Plan*, as well as provisions in federal and state laws regarding restoration plans. Under the federal Superfund law, the natural resource trustees must complete a restoration plan and consider public input before natural resource damage settlement funds can be spent.[5] The restoration plan needs to specify how funds will be spent and include an evaluation of restoration alternatives according to criteria specified in federal natural resource damage regulations.[6] These plans cover proposed expenditures of the aquatic and terrestrial priority funds that were allocated via the *2011 Long Range Guidance Plan* for the restoration of aquatic and terrestrial resources and associated recreational services. Restoration projects funded in the future by the UCFRB Restoration Fund will be developed and implemented pursuant to the provisions of these final aquatic and terrestrial *Restoration Plans* and associated funding approved by the Governor in December 2012.

2.2 Previous Analysis of Restoration Alternatives

The *Restoration Plans* rely on the State's previous restoration planning efforts that entailed analysis of restoration alternatives and helped form the basis for aquatic and terrestrial resource prioritization plans finalized in 2011. Following is a summary of those past alternatives analysis efforts.

In the State's 1995 *Restoration Determination Plan (RDP)*, the State analyzed restoration alternatives and selected a specific restoration and or replacement alternative for each of the nine injured resource areas covered under Montana v. ARCO, using the DOI legal criteria.[7] The 1995 *RDP* provided part of the basis for the State's partial settlement with ARCO in 1999.

From 2003 to 2008, the State produced a restoration plan, and several revisions thereof, for the Milltown site, which was incorporated into a consent decree that addressed the terms and costs of cleaning up the Milltown Dam Reservoir area east of Missoula and restoring the Clark Fork and Blackfoot Rivers at the site. The 2008 Milltown Restoration Plan[8] included an analysis of restoration alternatives and selection of a preferred alternative that essentially revised the 1995 *RDP's* restoration alternatives analysis for the Milltown site.

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[4] Public comments on these draft groundwater restoration plans and the State's responses to them are *Final Response to Public Comment on the Draft Groundwater Restoration Plans Prepared by Butte-Silver Bow and Anaconda-Deer Lodge County City/County Government*, prepared by the NRDP, dated October 2012. This response document and this final restoration document are available on the NRDP website at: https://dojmt.gov/wp-content/uploads/FinalRtoConGWplans2012.pdf

[5] 42 U.S.C. §9607 and §9611.

[6] 43 CFR §§ 11.81 & 11.93.

[7] *Restoration Determination Plan for the Upper Clark Fork River Basin*, prepared by the NRDP, with assistance from Rocky Mountain Consultants, Inc., dated October 1995.

[8] *Design Summary and Implementation Plan, Restoration Plan for the Clark Fork River and Blackfoot River near Milltown Dam*, prepared for NRDP by River Design Group, Inc., WestWater Consultants, Inc., and Geum Environmental Consulting, Inc., dated January 2008.

In 2007, the State produced restoration plans for the Butte Area One, Smelter Hill Uplands, and Clark Fork River sites that were incorporated into the 2008 Consent Decree, which finally settled Montana v. ARCO.[9] These plans included an analysis of restoration alternatives and selection of a preferred alternative that essentially revised the 1995 *RDP's* restoration alternatives analysis for these three sites. The State most recently updated the Butte Area One Restoration Plan in the December 2016 *Butte Area One Restoration Plan Amendment for the Parrot Tailings Waste Removal*.

From 2000 to 2010, the State produced annual restoration plans that summarized the annual grant cycle process and projects and the Trustee's final funding decisions on those projects. Through June 2011, the Trustee has approved 122 restoration grant projects in the UCFRB for funding totaling $119.6 million from the UCFRB Restoration Fund.

Following the final settlement of Montana v ARCO in 2008, the State initiated restoration planning efforts that built on these previous restoration planning efforts and ultimately led to the framework provided in the *2011 Long Range Guidance Plan.* A myriad of approaches to allocating the UCFRB Restoration Fund to groundwater, aquatic, and terrestrial resources were proposed and subject of considerable deliberation by the Advisory and Trustee Restoration Councils, with consideration of public comment over a three-year period. Likewise, various alternatives to prioritizing areas for the restoration and replacement of aquatic and terrestrial resources were considered in developing draft and final aquatic and terrestrial prioritization plans issued in 2010. Considerable scientific data, analysis, and expertise contributed to the State's development of these prioritization plans, which were subject to substantial public consideration over an 18-month period and finalized in 2011. The *2011 Aquatic Prioritization Plan* was updated in 2018 with data collected by FWP. The *2018 Prioritization of Areas in the Upper Clark Fork River Basin for Fishery Enhancement*[10] was subject to a 30-day public comment period and subject to Advisory and Trustee Restoration Councils consideration. The prioritization plans built on the restoration actions already conducted or planned for the Silver Bow Creek, Clark Fork River, Smelter Hill Area Uplands, Butte Area One, and Milltown injured area sites. As part of the changes to the draft prioritization plans that were based on public comment, additional clarification was provided on the connections between the work in the priority areas designed in this plan and the work already funded/planned for the restoration of injured aquatic and terrestrial areas.

The *2011 Aquatic Prioritization Plan* and the 2018 update to this plan focused on a combination of restoration and replacement alternatives. It prioritized tributary areas based on helping restoration of the Silver Bow Creek and Clark Fork River mainstem fisheries. It also identified increasing flows by acquiring water rights on the mainstems as a priority in considering what additional measures along the mainstems, beyond those already conducted or planned and funded,

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[9] *Butte Ground and Surface Water Restoration Planning Process and Draft Conceptual Restoration Plan,* prepared by the NDRP, dated November 2007*; Revised Restoration Plan for the Clark Fork River Aquatic and Riparian Resources,* prepared by the NRDP, dated November 2007*; Draft Conceptual Smelter Hill Uplands Resource Restoration Plan, prepared by the NRDP, dated December 2007*. These plans are available from the NRDP website at: https://dojmt.gov/wp-content/uploads/2011/06/anacondauplandsrestorationplan2008.pdf (Smelter Hill Uplands) https://dojmt.gov/wp-content/uploads/010308-CFR-Restoration-Plan-no-append..pdf (Clark Fork River) https://dojmt.gov/wp-content/uploads/buttearеaonerestorationplan2008.pdf (Butte)

[10] The Final Response to Public Comment on the Draft 2018 UCFRB Prioritization of Areas in the Upper Clark Fork River Basin for Fishery Enhancement, prepared by the NRDP, dated January 2018. This response document and this final restoration document are available on the NRDP website at: https://media.dojmt.gov/wp-content/uploads/2018-Final-Aquatic-Prior-Plan-and-Respons-to-Comments.pdf

were needed to restore the mainstem fisheries.[11] The *2011 Terrestrial Prioritization Plan* focused on replacement alternatives, taking into consideration the remediation and restoration efforts funded through other efforts that will cost-effectively address the terrestrial resource injured areas. Both of these plans identified priority areas for aquatic and terrestrial restoration from 1 to 4 (with 1 being the highest priority and 4 being the lowest), with some landscapes and water bodies not prioritized and injured areas included. Sections 3.1.1 and 4.1.1 of this document further explain the goals and methodology of these prioritization efforts.

The 2011 prioritization plans, and the 2018 update were adopted as part of the *2011 Long Range Guidance Plan,* which focused future restoration funds to the four priority areas identified in these prioritization plans and the aquatic or the terrestrial injured resource areas for which the State made restoration claims. The *2012 Process Plan* further narrowed the universe of aquatic and terrestrial restoration alternatives by focusing restoration alternatives in the high Priority 1 or 2 areas, consistent with the sequential approach to restoration work advocated in the prioritization plans,[12] or in the aquatic and terrestrial injured resource areas for which the State made restoration claims. These areas of eligible funding are shown in Figures 2-1 and 2-2. The *2012 Process Plan* further focused restoration efforts in the Basin by providing guidance on encouraged types of aquatic and terrestrial restoration projects that would be most likely to cost-effectively address restoration needs in Priority 1 and 2 resources areas.[13]

These restoration planning efforts that entailed analysis of alternatives all were conducted based on achieving an overall goal of restoring or replacing injured natural resources in a timely, cost-effective, and prioritized manner. The resource allocation and prioritization efforts initiated after the final 2008 Montana v. ARCO settlement focused on determining, within available funding limits, what additional actions would best augment the already completed or planned integrated remediation and restoration efforts being conducted with settlement funds earmarked to the injured areas that focus on addressing hazardous substance contamination. It should be understood that injuries to natural resources of the UCFRB from over 100 years of extensive mining and mineral processing are pervasive and extensive and that no amount of money can restore fully all the injured resources of the UCFRB, as captured in the following excerpt from the State's *1995 Restoration Determination Plan*:[14]

> It must be observed that the State of Montana harbors no illusions about what can practically be accomplished in the Upper Clark Fork River Basin given the type and pervasiveness of contamination and the magnitude of the injures to the State's natural resources. Restoration will be difficult if for no other reason than the fact that metals and metalloids like arsenic, which are responsible for much of the contamination in the Upper Clark Fork River Basin, do not degrade, rather they must be removed, otherwise isolated, or leave the system naturally for injuries to be mitigated. Although it may

[11] See pp. 2 – 4 of the *2011 Aquatic Prioritization Plan*.
[12] See pp. 10 – 11 in the *2011 Terrestrial Prioritization Plan* and Table 2 on pp. 24 – 25 in the *2011 Aquatic Prioritization Plan*.

[13] Attachment 5-2, 5-3, and 5-4 of the *2012 Process Plan* contain guidance on encouraged types of aquatic, terrestrial, and recreation projects, respectively, in Priority 1 and 2 areas.

[14] See p. 1-5 in the *Restoration Determination Plan for the Upper Clark Fork River Basin*, prepared by the State of Montana NRDP and Rocky Mountain Consultants, October 1995.

be possible in some instances of natural resource injury for human intervention to restore resources and services to baseline levels in year or even decades, for the most part this is not such a case. Generally, the most that can be achieved in the way of restoration of the Upper Clark Fork River Basin within the lifetimes of persons alive today is to ameliorate natural resource injuries, enabling the resource and the services provided by the resources to recover substantially.

2.3 Public Solicitation of Aquatic and Terrestrial Concept Restoration Proposals

To assist with the development of restoration alternatives for these restoration plans, the State solicited restoration concept proposals from the public, in recognition of the wealth of knowledge and relationships that other entities can bring to the restoration planning process. Through these solicitation processes, which were first introduced in a February 2012 draft version of the Process Plan, the State requested that interested individuals and entities submit abstracts outlining their ideas for projects that would protect or enhance fishery or wildlife resources in Priority 1 and 2 areas or in the aquatic and terrestrial injured resource areas for which the State made restoration claims, or enhance recreational services associated with these resources, such as fishing, floating, hunting, wildlife viewing, and hiking (Figure 2-1 and 2-2). To assist the public, the State emphasized its guidance on encouraged types of aquatic, terrestrial, and recreation projects in its outreach efforts on this solicitation process.

In 2012, eighty restoration concept abstracts were submitted by various individuals or entities by the June 15, 2012, deadline. Appendix A provides a summary table of these 80 abstracts (Table A-1), which are posted on the NRDP website.[15] Of the 80 abstracts, 15 were submitted by governmental entities, 54 were submitted by five different non-profit conservation or watershed groups, and 11 were submitted by other individuals/entities.

The NRDP conducted an initial screening analysis of the abstracts for eligibility and reported on this analysis at the July 18, 2012, Advisory Council meeting. Of the 80 abstracts, six were determined not to meet eligibility requirements, either because they did not meet project location eligibility requirements (abstracts #2, #39a, #41, #70) or did not meet legal threshold requirements (#5c, #72).[16] The Advisory Council hosted two public forums, held on August 1, and August 2, 2012, to learn more about the 74 concept proposals from the public that met eligibility requirements.[17] Figure 2-3 indicates the general location of these concept proposals.

In 2015, the NRDP received a total of seven letters during the public solicitation / comment period: four conceptual restoration proposals and three letters proposing revisions to the *Restoration Plans*. The State's draft 2015 Update to the *Restoration Plans* that considered these four projects and three comments was presented at the April 22, 2015, meeting of the Advisory Council and a

[15] A compilation of all 80 abstracts is available upon request from the NRDP at nrdp@mt.gov.

[16] While the creation of a land trust proposed in abstract #75 does not constitute a restoration action, the ideas for easements and acquisitions suggested in this concept proposal were further considered.

[17] The presentations from the Advisory Council's abstract forums held in August 2012 is available upon request from the NRDP at nrdp@mt.gov.

meeting of the May 13, 2105, Trustee Restoration Council. These projects are listed in Table A-1 in Appendix A.

In 2018, the NRDP again solicited for project concepts and comments proposing revisions to the *Restoration Plans*. NRDP received a total of 24 conceptual restoration abstract proposals and one letter with five comments proposing revisions to the *Restoration Plans*. The State's draft Response to Project Abstracts and Public Comments on the 2018 Update to the *Restoration Plans* that considered these 24 projects and five comments was presented at the September 19, 2018, meeting of the Advisory Council and a meeting on September 27, 2018, Trustee Restoration Council. These projects are also listed in Table A-1 in Appendix A.

The State carefully considered incorporation of the concept proposals submitted by the public, along with State-generated concept proposals, in its preparation of the aquatic and terrestrial resources restoration plans and revisions to the *Restoration Plans*. Sections 3.2 and 4.2.3 explain how the State further considered the concept proposals that met eligibility requirements and determined what additional restoration actions would be appropriate for funding at this time, beyond those suggested by the public. The State's consideration of these concept proposals was also part of its restoration alternatives analysis process. In most cases, those proposals submitted by the public that fit with the State's guidance in the *2012 Process Plan* on encouraged types of projects were incorporated, either partially or fully, into the State's proposed restoration actions covered in this document. The abstract summary table contained in Appendix A (Table A-1) provides references to the sections of this document that address a concept proposal submitted by the public or generated by the State. Table A-1 also indicates whether the proposal was or was not incorporated into the State's restoration aquatic and terrestrial restoration plans. Section 6 explains how the State will further work with the entities that submitted concept proposals that are included in these restoration plans. Table A-1 provides summary information on the additional restoration concepts generated by the State as part of its analysis of priority restoration needs.

2.4 Funding Summary

As set forth in the *2012 Process Plan*, the exact allocation amount for aquatic and terrestrial resource priority and reserve funds was determined by the applying the percentages for each resource and reserve fund specified in the *2011 Long Range Guidance Plan* to the UCFRB Restoration Fund Balance on July 1, 2012, the end of fiscal year 2012.[18] This market fund balance was $144,029,070. Subtracting out the $26,746,332 of encumbered funds for already-approved restoration projects and $40,129,972 allocated to the Butte and Anaconda groundwater priority funds, the remaining funds that can be allocated for restoration of aquatic and terrestrial resources is $77,152,766. Following are the priority and reserve fund allocations based on this balance:

- Aquatic Priority Account: $45,670,190; Aquatic Reserve Fund: $8,059,445
- Terrestrial Priority Account: $19,909,661; Terrestrial Reserve Fund: $3,513,470

The above priority resource allocations are the budgets the State used in determining the proposed actions specified in the *UCFRB Aquatic and Terrestrial Resources Restoration Plans* contained in Sections 3 and 4 of this document, respectively. The *UCFRB Aquatic Resources Restoration Plan*

[18] Section 5.2 of the *2012 Process Plan* indicates resource allocations will be based on the UCFRB Restoration Fund Balance at the end of the month, following the month in which the Governor approves of the *Process Plan*. The Governor approved that plan in May 2012, thus the fund balance at fiscal year-end 2012 is the basis for allocations.

governs future expenditures from the Aquatic Priority Account, and the *UCFRB Terrestrial Resources Restoration Plan* governs future expenditures from the Terrestrial Priority Account. The costs of proposed actions that have both aquatic and terrestrial restoration components would be debited from the Aquatic and Terrestrial Priority Accounts in a manner similar to how funding for past approved projects was broken down by resource category as shown in Table A-2. For example, proposed flow augmentation projects would be funded by aquatic resource funds, but proposed acquisition of riparian habitat would be funded by a proportionate split of aquatic and terrestrial resource funds.

Appendix B contains four tables that provide additional background on how these fund balances were derived: 1) Table B-1 provides the 2012 and 2018 fiscal year end report; 2) Table B-2 provides a detailed breakdown of the past approved funding by resource categories; 3) Table B-3 provides a spreadsheet showing how the future resource allocation was derived based on past approved funding; and 4) Table B-4 provides an October 2012 update to a funding chart from the *2011 Long Range Guidance Plan* that contains summary fund status information on all the NRD settlement funds dedicated to restoration work in the UCFRB.

In 2016, no new allocation of funding was proposed or considered for projects.

In 2018, NRDP was advised to use the cash and invested cash value and not the Statewide Accounting and Budgeting and Human Resource System (SABHRS) fund balance, referred to as the market value[19], for reporting UCFRB Restoration Funds available to allocate. The market value of the reported UCFRB Restoration Fund balance includes non-cash accounting entries of unrealized appreciation/deprecation and does not account for changing liabilities that will impact cash. The change to the cash and invested cash value methodology is required to properly calculate the amount of funding available to spend on groundwater, aquatic, and terrestrial priority restoration actions at any one point in time. As of 2012, using the cash and invested cash value, $68,715,246 was allocable; this is compared to the market value of $77,152,766 that was allocated to the aquatic and terrestrial priority resources in 2012, as reported above. This corrected starting UCFRB Restoration Fund balance of cash and invested cash, results in balances for each resource allocation: aquatic $48,588,022 and terrestrial $20,127,225.

Since the cash and invested cash value in 2012 was less than the 2012 allocation, interest earned from fiscal years 2013 to 2018 was used to make the original allocations whole. Then, the remaining interest was allocated per the 2012 Final Process Plan to the Butte and Anaconda groundwater priority accounts ($4 million and $900,000 respectively), the aquatic ($4.95 million) and terrestrial ($500,000) priority accounts and the aquatic and terrestrial reserve accounts ($1.15 million and $300,000 respectively), as shown on Table B-4.

The 2018 *Restoration Plan* revision proposes $4,950,000 of aquatic interest be allocated to priority aquatic projects and $500,000 of terrestrial interest be allocated to priority terrestrial projects.

[19] The term "market value" was used in the 2012 Restoration Plan for what is actually the SABHRS fund balance, the basis for the original allocation. The SABHRS fund balance is not the same as market value. The term market value will continue to be used for consistency in terminology.

Figure 2-1. Aquatic Priority Areas 1 and 2

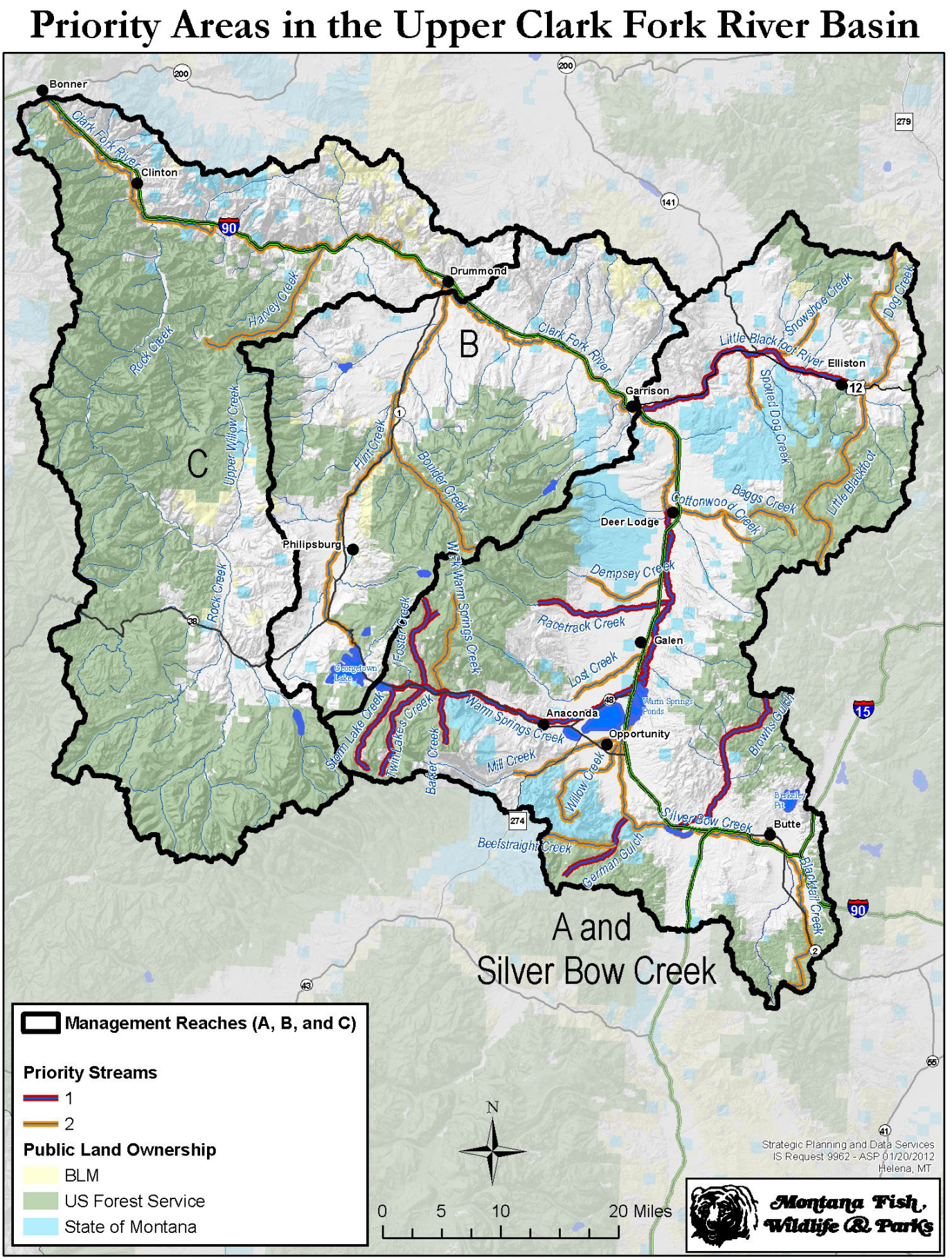


Figure 2-2. Terrestrial Priority Areas 1 and 2

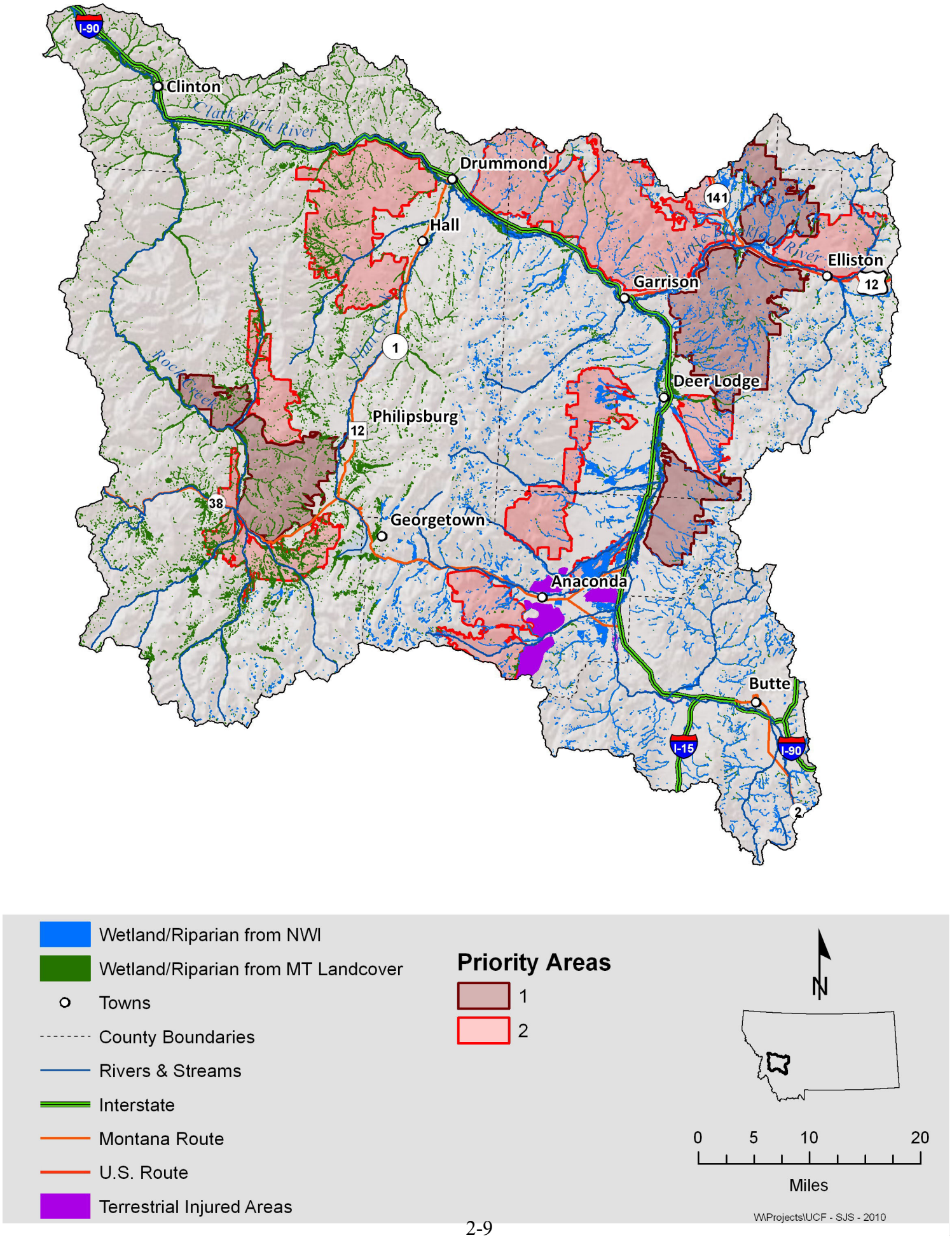
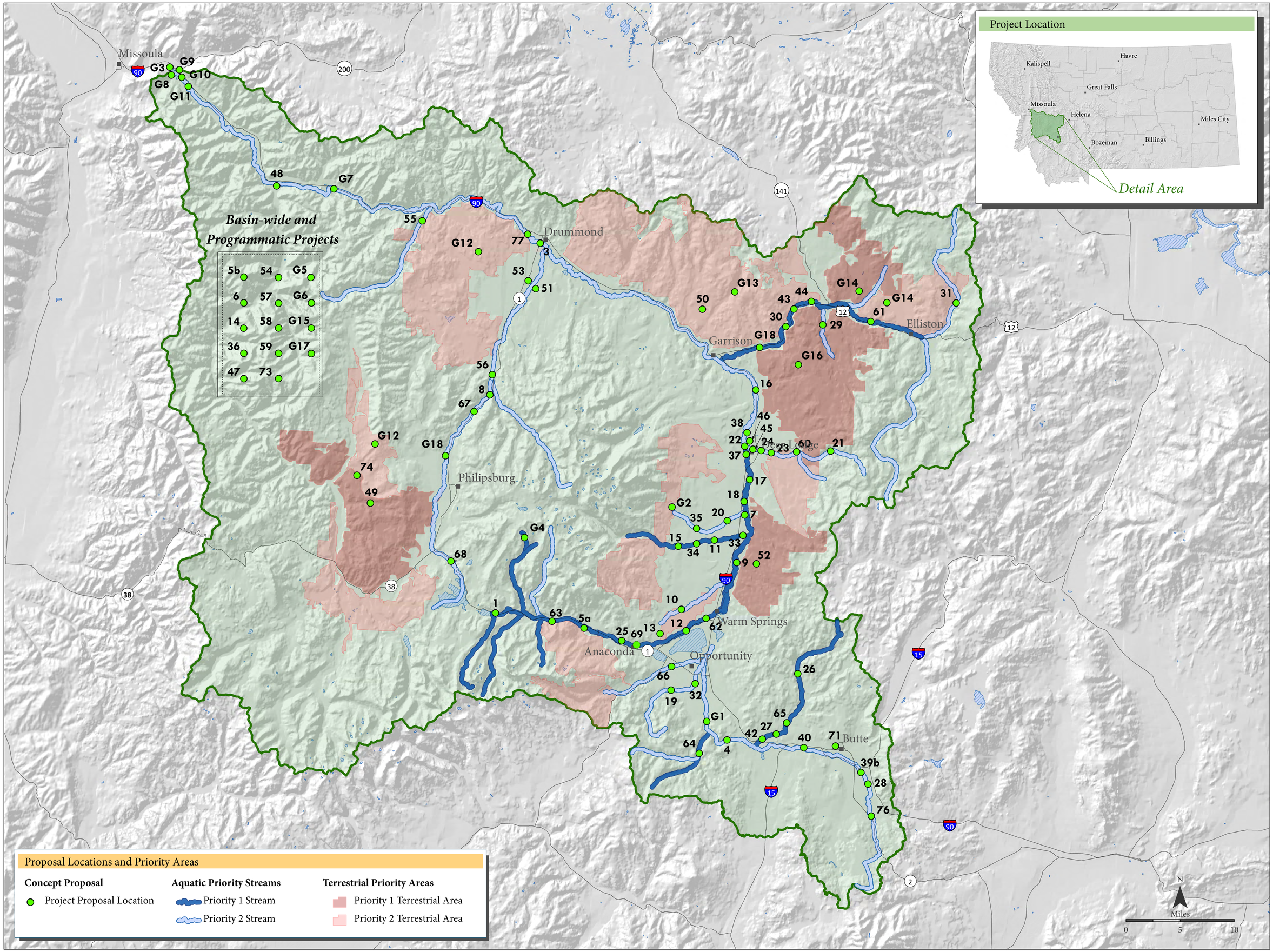


Figure 2-3. Restoration Concept Proposal Locations

September 20, 2012



SECTION 3. UCFRB AQUATIC RESOURCES RESTORATION PLAN

This section constitutes the State's aquatic resources restoration plan for the UCFRB. Section 3.1 provides the State's analysis of restoration alternatives for aquatic resources based on achieving restoration goals and on evaluation criteria specified in federal natural resource damage regulations, and identifies the State's preferred alternative. Section 3.2 describes how the State further developed the preferred alternative into a proposed set of restoration actions and budgets. These proposed actions are grouped in two parts: The first part covers flow augmentation (Section 3.2.1) and the second part covers other proposed restoration actions (Section 3.2.2).

3.1 Evaluation of Alternatives

3.1.1 Aquatic Restoration Goals

As explained in Section 2.2, restoration of aquatic resources and services to baseline condition is not possible in the UCFRB due the widespread injury to natural resources associated with the release of hazardous substances from the mining and mineral processing activities in the Basin. However, the State's previous restoration planning efforts, which are summarized in Section 2.2, make it clear that significant progress can be accomplished with restoration efforts. The *2011 Aquatic Prioritization Plan* focused on the areas and general types of projects most likely to derive the greatest fishery benefits for the UCFRB, and in so doing, restore, rehabilitate, replace, or acquire the equivalent of the injured natural resources of the UCFRB. The priority areas set forth in the *2011 Aquatic Prioritization Plan*, and the types of projects recommended for specific priority stream areas in the *2012 Process Plan,* are based not solely on hazardous substances, but also based on the predicted effectiveness of actions in addressing limiting factors to aquatic life in the UCFRB. The State used the knowledge gained from the 2008 and 2009 aquatic assessments[1] to help determine the recommended types of restoration actions and the priority stream areas for UCFRB restoration work identified in the *2011 Aquatic Prioritization Plan*.

The State has developed goals for its on-going and planned remediation and restoration of the mainstems of Silver Bow Creek and the Clark Fork River that are guiding the integrated remediation and restoration actions that have been or will be conducted on those mainstems with dedicated NRD settlement funds. The primary goal for the Silver Bow Creek and Clark Fork River mainstem fisheries is to restore trout populations and associated angling opportunities to levels similar for other areas rivers. More specific goals for the mainstem fisheries are reflected in the *2011 Aquatic Prioritization Plan*, which connects the following goals for the UCFRB tributaries to the already-developed goals for the mainstem fisheries:

1. Restore the mainstem trout fishery by improving recruitment of fish from tributaries;

[1] Lindstrom, J. 2011. Upper Clark Fork River Fish Sampling: 2008-2010. Montana Fish, Wildlife and Parks. Helena, MT, and Pat Saffel, Region 2 Fisheries Manager FWP, Personal Communication, September 2012.

2. Replace lost trout angling in the mainstem by improving trout populations in tributaries; and

3. Maintain or improve native trout populations in the UCFRB to preserve rare and diverse gene pools, and improve the diversity and resiliency of the trout fishery.

As noted in the *2012 Process Plan*, the following are the types of projects that could be implemented to achieve the goals of the aquatic resources stated above.

- Flow augmentation: water right purchase, lease, or irrigation system efficiency improvements;

- Riparian habitat protection and/or Improvement: riparian fencing, grazing management, woody plant re-establishment, conservation easement, land purchase;

- Fish passage improvement: culvert replacement, irrigation diversion improvements, fish screen construction on diversions; and

- Sediment reduction/Bank stabilization: woody plant re-establishment, streambank/channel reconstruction, road improvements.

In general, water quantity, riparian habitat protection and/or improvement, fish passage/fish entrainment, and sediment reduction/instream habitat improvements are targeted for UCFRB restoration. These actions improve instream flows, fish passage, riparian condition, and reduce sediment, to obtain the above goals.

As discussed in Section 2.2, the *2011 Aquatic Prioritization Plan* was adopted as part of the *2011 Long Range Guidance Plan,* which focused future restoration to the priority areas identified in *2011 Aquatic Prioritization Plan* and the aquatic injured resource areas for which the State made its restoration claims. The *2012 Process Plan* further narrowed the universe of aquatic restoration alternatives by focusing restoration alternatives on the mainstems and high Priority 1 and Priority 2 tributary stream areas, consistent with the approach advocated in the *2011 Aquatic Prioritization Plan*.

As part of the development of a restoration plan, alternatives are considered in selecting a preferred alternative for the plan. As explained above, this process began with the restoration planning efforts that occurred prior to adoption of the *2011 Long Range Guidance Plan*. The previous restoration plans and other pertinent evaluations that contain alternative analyses are described in Section 2.2. The State, through these efforts, has already considered many alternatives for restoration of the injured groundwater, aquatic, and terrestrial resources in the UCFRB.

3.1.2 Description of Alternatives

The State analyzed no action, and two alternatives based on geographic approaches, for aquatic restoration in the Basin.

Alternative 1: No Action. Alternative 1 is the no action alternative. It is a required alternative under the federal NRD assessment regulations and allows for comparison to other alternatives. The no action alternative leaves the Clark Fork River and Silver Bow Creek mainstem and their tributaries in their current condition, allowing only natural processes to restore the fishery and angling opportunities.

Alternative 2: Restoration of Mainstem Injured Areas and Priority 1 Stream Areas. The *2012 Process Plan* required that aquatic restoration alternatives focus on the high Priority 1 and Priority 2 stream areas, consistent with the *2011 Aquatic Prioritization Plan*. Alternative 2 focuses on restoration of the aquatic natural resources of the Clark Fork River and Silver Bow Creek mainstem injured areas, and ten Priority 1 tributary stream areas within the UCFRB, as shown on Figure 2-1. Alternative 2 also includes recreational components associated with the Priority 1 stream areas.

Alternative 3: Integrated Restoration of Mainstem Injured Areas and High Priority 1 and 2 Stream Areas on a Watershed basis. As the *2012 Process Plan* required aquatic restoration alternatives to focus on the mainstem injured areas and Priority 1 and Priority 2 stream areas, Alternative 3 focuses on restoration of the aquatic natural resources of the Clark Fork River and Silver Bow Creek mainstems, and the 28 Priority 1 and Priority 2 tributary stream areas on an integrated, watershed basis, as shown on Figure 3-1. This approach would implement restoration actions to address each of the watersheds' limiting factors with a goal of restoring aquatic resources in the UCFRB through actions in each of the 14 watersheds. Alternative 3 also includes recreational components associated with the mainstems and Priority 1 and Priority 2 stream areas.

3.1.3 Evaluation of Alternatives

Under the DOI NRD regulations, a Trustee's restoration plan needs to evaluate a reasonable number of alternatives for restoring, rehabilitating, replacing, or acquiring the equivalent of injured natural resources based on all relevant considerations, including the DOI legal criteria.[2] Below, the three restoration plan alternatives are evaluated using the ten evaluation criteria set forth in the *2012 Process Plan*. Those include eight legal criteria, seven of which represent the criteria set forth in the U.S. Department of the Interior's NRD assessment regulations,[3] which Trustees are to use when selecting the restoration plan alternatives. The other legal criterion addresses the additional factors the State is to consider under a Memorandum of Agreement with the Confederated Salish and

[2] 43 CFR §11.93, §11.81, and §11.82.

[3] 43 CFR §11.82(d). These regulations provide a list of "factors" to consider when selecting the alternative to pursue; those factors are referred to as DOI legal criteria in this document.

Kootenai Tribes and the Department of the Interior. In addition to these legal criteria, there are two policy criteria of special interest to the State.

The evaluations below provide a summary description of each criterion and how each of the three alternatives meets that criterion. Section 3.1.5 provides an overall summary of these criterion-specific analyses and identifies the State's preferred alternative based on the collective analysis of the ten criteria.

Technical Feasibility: Under this criterion, the State evaluates the degree to which alternative employs well-known and accepted technologies and the likelihood that the alternative will achieve its objectives. Application of this criterion focuses on an evaluation of the alternatives' relative technological feasibility.

Alternative 1 (the no action alternative) is technically feasible. Alternative 2 (Priority 1 stream areas) and Alternative 3 (Priority 1 and Priority 2 stream areas) would both employ the encouraged activities set forth in the *2012 Process Plan*, which are well-known and accepted technologies, with a reasonable chance of successful completion in an acceptable period of time, and are therefore also technically feasible. For Alternative 2, there is a minor uncertainty that enough access will be allowed on private lands to sufficiently effectuate implementation. The same minor uncertainty exists for Alternative 3, but to a lesser extent, due to the larger geographical area available for actions.

Relationship of Expected Costs to Expected Benefits: Under this criterion, the State examines whether an alternative's costs are commensurate with the benefits it provides. In doing so, the State will need to determine the costs associated with the alternative, and the benefits that would result from the plan.

For this criterion, Alternative 3 (Priority 1 and Priority 2 stream areas) is superior to Alternative 1 (the no action alternative) and Alternative 2 (Priority 1 stream areas). For Alternative 1, there would be no benefit, and no costs would be incurred. As past mining and mineral processing activities have resulted in widespread injury to natural resources in the UCFRB, a lack of benefit would be an unacceptable outcome.

Alternative 2 offers net expected benefits compared to expected costs, by providing fisheries improvement as well as related services (e.g., restoring and replacing angling opportunities and other recreational services) in the two mainstems and ten Priority 1 stream areas. However, by providing fisheries improvement and related services in the two mainstems and twenty eight Priority 1 and Priority 2 stream areas, Alternative 3 will provide significantly more fisheries improvement and related services through its integrative approach (since greater benefits and cost efficiencies can be achieved than would occur by addressing separately), offer a greater opportunity for partnerships and for coordination with terrestrial resource projects, and cover a larger geographic area within the

UCFRB for the same costs as Alternative 2, thereby providing higher net expected benefits compared to expected costs.

Cost-Effectiveness: Under this criterion, the State evaluates whether the alternative accomplishes its goal in the least costly way possible. In evaluating this criterion, the State considers whether the alternative is consistent with the guidance for aquatic and terrestrial restoration and recreation projects provided in the *2012 Process Plan*,[4] as well as the likelihood of matching funds, which can enhance cost-effectiveness.

For this criterion, Alternative 3 (Priority 1 and Priority 2 stream areas) is superior to Alternative 1 (the no action alternative) and Alternative 2 (Priority 1 stream areas). Alternative 1 is cost-effective, as no costs would be incurred. However, there is considerable precedence in the UCFRB for cost-sharing with other entities in UCFRB restoration activities. This ability to accomplish more restoration through the use of matching funds is lost under Alternative 1.

Alternative 2 and Alternative 3 are similar in that both would require necessary evaluations and designs before implementing the encouraged activities set forth in the *2012 Process Plan.* Both are consistent with the aquatic and recreational projects guidance set forth in the *2012 Process Plan*, and not inconsistent with the terrestrial guidance.

However, Alternative 3 offers greater opportunities for matching funds due to its greater opportunity for partnerships, and the larger geographical area available for actions. In addition, Alternative 3 offers superior cost-effectiveness to Alternative 2 through its integrative watershed approach (which creates efficiencies to reduce costs), plus its larger geographic area offers more selectivity in determining specific locations for actions in order to improve cost-effectiveness. Also, as set forth below, Alternative 3 can also be expected to lessen the recovery period for the UCFRB, thereby leading to further restoration at less cost.

Results of Response Actions: Under this criterion, the State considers the results or anticipated results of response actions underway, or anticipated, in the UCFRB. Numerous response actions are ongoing and additional response actions are scheduled to begin in the next several years, continuing for many years into the future.

Alternative 1 (the no action alternative), Alternative 2 (Priority 1 stream areas), and Alternative 3 (Priority 1 and Priority 2 stream areas) do not interfere with planned response actions, however, Alternative 1 does not enhance planned response actions. Alternative 2 enhances planned response actions, while Alternative 3 offers further enhancement by addressing a larger portion of the UCFRB watershed.

Adverse Environmental Impacts: Under this criterion, the State weighs whether, and to what degree, the alternative will result in adverse impacts to both the physical and human environment.

[4] This guidance is provided in Attachments 5-2, 5-3, and 5-4 of the *2012 Process Plan*.

Specifically, the State will evaluate significant adverse impacts, which could arise from the alternative, short- or long-term, direct or indirect, including those that involve resources that are not the focus of the project.

There would be much greater adverse environmental impacts associated with implementation of Alternative 1 (the no action alternative) because the adverse impacts resulting from the contamination would not be addressed. Temporary impacts are anticipated for Alternative 2 (Priority 1 stream areas), and Alternative 3 (Priority 1 and Priority 2 stream areas) due to construction activity. Protective measures would be required to assure that impacts to human health and safety would be limited to the extent practicable.

Recovery Period and Potential for Natural Recovery: Under this criterion, the State evaluates the merits of the alternative in light of whether the resource is able to recover naturally and, if a resource can recover naturally (i.e., without human intervention), how long that will take. (The term "recovery" refers to the time it will take an injured natural resource to recover to its "baseline," i.e., pre-injury condition.)

As noted in the *1995 Restoration Determination Plan,*[5] natural recovery to baseline would be anticipated to take thousands of years. Therefore, Alternative 1 (the no action alternative) would result in an indefinite recovery period, and extremely poor potential for natural recovery. This would be an unacceptable result. Alternative 2 (Priority 1 stream areas) would advance the recovery period and enhance potential for natural recovery by addressing restoration needs on the two mainstems and ten Priority 1 stream areas and should significantly shorten the time of recovery for the UCFRB fishery. Alternative 3 (Priority 1 and Priority 2 stream areas) would be expected to further advance the recovery period and enhance potential for natural recovery through its expanded and integrated approach of addressing the UCFRB through actions within the fourteen priority watersheds.

Federal, State, and Tribal Policies, Rules, and Laws: Under this criterion, the State considers the degree to which the alternative is consistent with applicable policies of the State of Montana and applicable policies of the federal government and Tribes (to the extent the State is aware of those policies and believes them to be applicable and meritorious). In addition, projects must be implemented in compliance with applicable laws and rules, including the consent decrees. As part of the evaluation of this criterion, the State assesses whether the alternative would potentially interfere, overlap, or partially overlap with the restoration work covered under current or planned consent decrees or restoration plans.

[5] *Restoration Determination Plan for the Upper Clark Fork River Basin*, prepared by the NRDP, with assistance from Rocky Mountain Consultants, Inc., dated October 1995.

All alternatives are compliant with applicable law. The State would require or obtain all needed permits and authorizations.

Resources of Special Interest to the Tribes and DOI: Pursuant to the State's Memorandum of Agreement (MOA) with the Department of Interior and Confederated Salish and Kootenai Tribes (Tribes), the State is to pay particular attention to natural resources of special interest to the Tribes and/or DOI, including attention to natural resources of special environmental, recreational, commercial, cultural, historic, or religious significance to either the Tribes or the United States.[6] The MOA also provides for the State to pay particular attention to "Tribal Cultural Resources" or "Tribal Religious Sites," as those terms are defined in the MOA.

Alternative 1 (the no action alternative) does not address resources of special interest to the Tribes and DOI. Alternative 2 (Priority 1 stream areas), and Alternative 3 (Priority 1 and Priority 2 stream areas) enhance resources of special interest such as native trout, with Alternative 3 expected to provide further enhancement. Alternative 2 and Alternative 3 have the potential for site disturbance of tribal cultural sites, and appropriate evaluation and coordination would be required.

Normal Government Function: The State will not fund restoration activities for which a governmental agency would normally be responsible or that would receive funding in the normal course of events. With this criterion, the State evaluates whether a particular alternative would be implemented if recovered natural resource damages were not available. The Restoration Fund may be used to augment funds normally available to government agencies to perform a particular action if such cost sharing would result in the implementation of a restoration action that would not otherwise occur through normal agency function.

Alternative 2 (Priority 1 stream areas), and Alternative 3 (Priority 1 and Priority 2 stream areas) do not replace normal government functions, as the State is prohibited from funding restoration activities for which a governmental agency would normally be responsible or that would receive funding in the normal course of events. However, Alternative 2 and Alternative 3 may augment normal government function, if funding is normally available to a government agency to perform a particular action, and such cost sharing would result in the implementation of a restoration action that would not otherwise occur through normal government function. This criterion is inapplicable to Alternative 1 (the no action alternative).

Price: Under this criterion, the State evaluate whether the land, easements, water rights, or other property interests proposed to be acquired are being offered for sale at or below fair market value. Fair market value of water rights may be difficult to evaluate, and the State may look at various information, including the cost to conserve an equivalent amount of water at another location.

[6] This MOA, dated November 1998, is available from the NRDP website at: http://doj.mt.gov/wp-content/uploads/2011/06/1998moatribes.pdf.

Alternative 2 (Priority 1 stream areas), and Alternative 3 (Priority 1 and Priority 2 stream areas) are equivalent, as all land, easements, water rights, or other property interests proposed to be acquired under Alternative 2 and Alternative 3 will be require evaluation to assure that all interests are being offered for sale at or below fair market value. This will likely require a State appraisal and other due diligence, as well as negotiation of price. This criterion is inapplicable to Alternative 1 (the no action alternative).

3.1.4 Evaluation Summary

The criteria that are most influential in this analysis are cost:benefit and cost effectiveness. Under the no action alternative (natural recovery), any aquatic resource benefits derived from the proposed aquatic restoration actions in the Basin would not occur. The injury to this river has been documented and, even with the intense remediation and restoration effort targeted at remediating and restoring the upper 46 miles of this river, full restoration of the fishery will not occur without also improving aquatic resources of the priority tributaries connected to the mainstem Clark Fork River. Services normally provided by aquatic resources would continue to be greatly reduced.

Alternative 2 provides for restoration actions on the mainstems and ten Priority 1 stream areas, whereas Alternative 3 provides for restoration on the mainstems and twenty-eight Priority 1 and 2 stream areas. Both alternatives will significantly shorten the time of recovery of the Clark Fork River and Silver Bow Creek mainstem fisheries. By integrating proposed actions on Priority 1 and 2 stream areas as watershed projects, however, Alternative 3 accomplishes this restoration more cost-effectively and provides for greater benefits and cost-efficiencies compared to Alternative 2. Alternative 3 provides for significantly more benefits over a larger geographic area compared to Alternative 2. Greater benefits would be gained to aquatic resources and the public's use and enjoyment of those resources as a whole by integrating restoration actions over a larger area, as proposed in Alternative 3, compared to Alternative 2. The State believes by working on the limiting factors within each of the fourteen watersheds in the mainstem and Priority 1 and 2 stream areas that restoration success will be more likely. The result should be improvement in the highest priority stream areas, thus restoring the fishery in the Clark Fork River and Silver Bow Creek mainstem, and also improving angling opportunities within the UCFRB. Alternative 3 also provides for more coordination with terrestrial restoration projects that will benefit both aquatic and terrestrial resources over a greater area compared to Alternative 2. Alternative 3 encompasses more concept proposals submitted by the public, providing greater opportunities for partnerships (which may increase cost-effectiveness).

Alternative 3 also does better than Alternative 2 based on the results of response actions and potential natural recovery criteria. Alternative 3 offers further enhancement of planned response actions by addressing a larger portion of the UCFRB watershed than Alternative 2. Alternative 3 would be expected to further advance the recovery period and enhance potential for natural recovery through its expanded and integrated approach of addressing the UCFRB through actions within the fourteen priority watersheds more than Alternative 2.

Based on the better results for Alternative 3 reflected for the four criteria summarized above, the State selects Alternative 3 as the Preferred Alternative. For the other six NRD criteria, Alternative 2 and 3 are comparable.

3.2 Development of Proposed Alternative: Restoration of Priority 1 and 2 Stream Areas as Watersheds

The State collectively addressed the three Priority 1 and 2 stream areas along mainstems of Silver Bow Creek and the Clark Fork River and lumped the twenty-eight Priority 1 and 2 Tributary stream areas into twelve tributary watersheds, as shown in Figure 3-1. The focus of each watershed involves implementation of projects that reduce or eliminate the effects of factors that limit aquatic resources of the mainstems or these tributary watersheds in meeting restoration goals. The proposed actions are most likely to derive the greatest aquatic benefits for the mainstems and the priority tributaries, taking into consideration the restoration actions that the State already has or will be conducting on the mainstems and has already funded on the some of the tributaries.

To achieve the restoration goals in a cost-effective, cost/beneficial, and technically feasible manner the State proposes, within each tributary watershed, to address the factor(s) that most limit the aquatic resources (limiting factors) of each priority stream area first, then implement projects that reduce or eliminate the next most limiting factor(s). For example, in some stream reaches, instream flow augmentation may be needed before other restoration actions such as fish passage and riparian enhancement would be worth attention. Prioritizing actions within each watershed will ensure that restoration actions will have the greatest chance of success. By improving and increasing flow, fish passage, floodplain vegetation, and aquatic habitats, trout populations of the UCFRB are expected to trend towards a pre-mining baseline condition. In addition, recreational opportunities through the restoration and enhancement of natural resources will also be substantially improved.

For aquatic restoration actions (both the flow augmentation and other proposed watershed restoration actions), the State conducted the following steps in development of this aquatic resources restoration plan:

1. The State assessed how the restoration concept proposals submitted through the public scoping process fit with the guidance provided in the *2012 Process Plan* on encouraged aquatic restoration activities. This first entailed categorizing the concept proposals according to the categories of encouraged activities provided in that guidance assessment and then assessing feasibility, the extent to which the proposals addressed limiting factors (cost-effectiveness), and the magnitude of potential aquatic benefits (cost:benefit). The concept proposals submitted by the public that fit the guidance and offered high aquatic benefits were incorporated into the State's proposed restoration actions, although the State further refined the cost estimates provided through the public scoping process and adjusted budgets to work within the available budget allocation. Alternately, those concept proposals

that did not fit the guidance or were not considered feasible or cost-effective were not incorporated in the State's Restoration Plan.

2. The State then identified what areas and activities should be added to further meet restoration needs, beyond those covered through the public scoping process. An example is the proposed fish barrier on Silver Bow Creek that was recommended in the *2011 Aquatic Prioritization Plan* but not covered in any abstracts submitted by the public.

3. Taking the results of steps 1 and 2, the State developed proposed restoration actions and associated budgets for those actions for the mainstems and the twelve priority tributary watersheds, using the limiting factor approach described above. Initially in many areas, assessment activities and an evaluation process will be necessary, due to the lack of adequate information needed to establish measurable objectives and to determine the types and magnitude of actions that could be taken to meet these objectives and achieve goals.

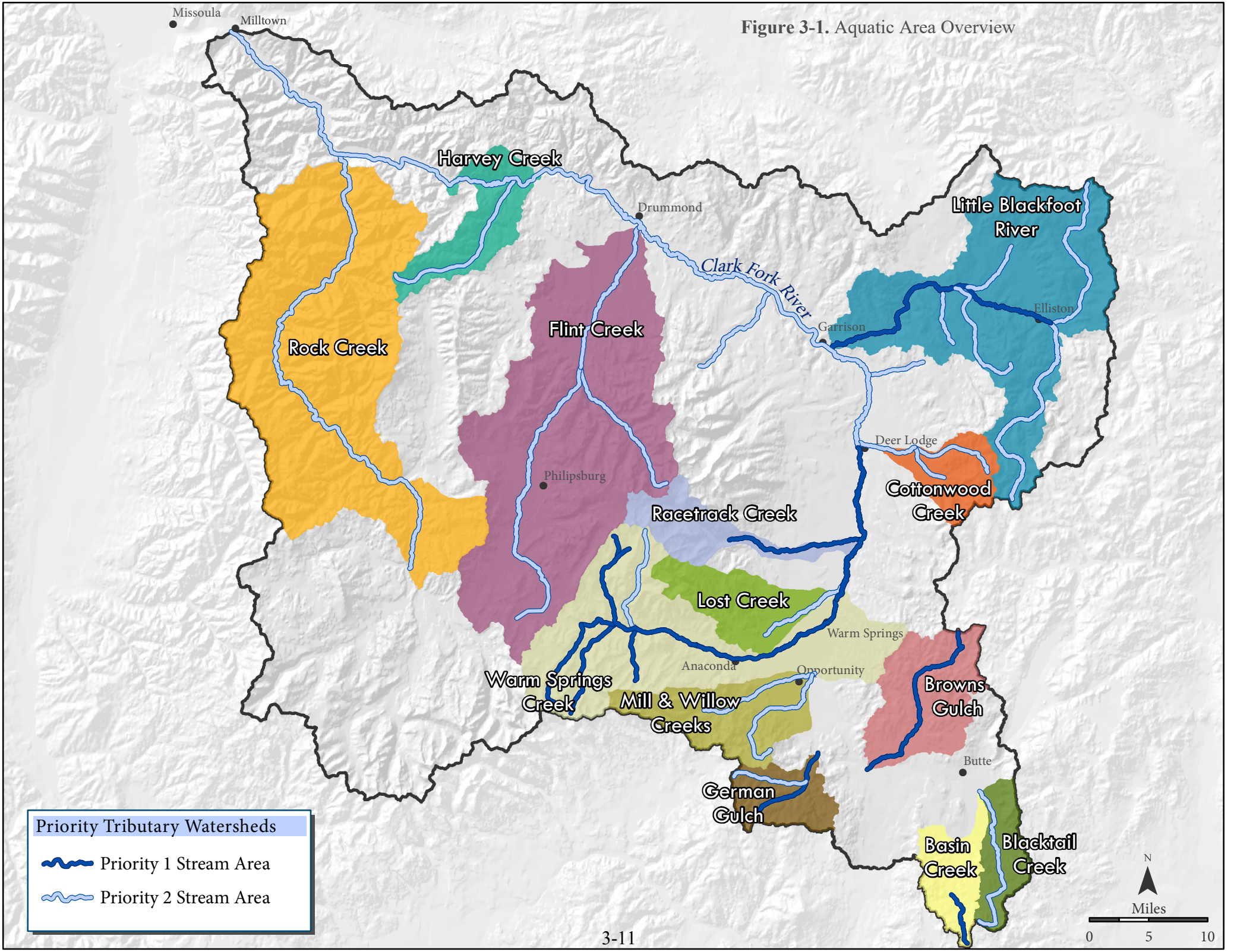
4. Since flow augmentation is the overall most important and highest priority restoration action as identified in the *2011 Aquatic Prioritization Plan*, the State determined the budget for flow augmentation separate from other aquatic restoration activities. After determination of the flow augmentation budget, the State adjusted the budgets for the other restoration actions accordingly to stay within the total available aquatic allocation.

5. Separately, and as provided for in the *2012 Process Plan*, the State identified programmatic monitoring activities and associated budget that is covered in Section 3.2.3.

Flow augmentation is described separately from the other restoration actions (Section 3.2.2) due to differences in how these actions will be implemented. Flow augmentation will entail investigating available water rights to determine the amount of instream flow that can be protected through the change of use process, and conducting valuations and negotiations on acquiring or leasing these rights. In contrast, the other watershed activities to be implemented primarily involve conducting needed assessments, to be followed by engineering design and construction. In Section 3.2.1, flow augmentation is addressed collectively for the two mainstem areas and the twelve tributary watershed areas. In Section 3.2.2, other proposed actions are addressed separately for two mainstem areas and each the twelve tributary watershed areas.

Aquatic-related recreational projects are addressed separately in Section 5.0.

Figure 3-1. Aquatic Area Overview



3.2.1 UCFRB Flow Restoration Plan

Background

The UCFRB has many areas that have been identified as dewatered. The *2011 Aquatic Prioritization Plan* clearly identifies the importance of and need to augment instream flows in dewatered areas in the UCFRB. The report indicates the benefits of increases to instream flow in Silver Bow Creek and the Clark Fork River will improve fish habitat, moderate water temperature, and dilute nutrients and metal loads. Flow augmentation projects as defined in Section 3.0, are projects such as: water right purchase, lease, or irrigation system efficiency improvements. The importance of these types of projects were identified after taking into consideration the restoration actions that have or will be accomplished through the already approved and funded integrated remediation and restoration efforts on the mainstems of Silver Bow Creek and the Clark Fork River.

In determining needed flow levels, FWP established flow targets for the UCFRB as a part of the *Application for Reservation of Water in the Upper Clark Fork River Basin* (Nov. 1986) filed with the Montana Department of Natural Resources and Conservation (DNRC). The report notes flow targets of 40 cfs as the minimum amount needed at Galen and 90 cfs as the minimum amount needed at Deer Lodge. It follows that if an additional 50 cfs was obtained between Galen and Deer Lodge, the worst dewatered area in the Clark Fork River would be addressed, the Group 1 project areas. These targets are only minimum flow targets, and additional water instream during the dry times of the year will likely supply increased benefits. Although specific minimum flow targets remain to be determined for Silver Bow Creek, increased base flow there could greatly improve the ability of the creek and other tributaries to support trout populations.

The FWP targets for other areas are summarized for the Priority 1 and 2 stream areas in Table 3-1. The 1986 flow targets differ from recent recommendations by FWP because the 1986 flow targets were based on upper inflection points, whereas other flow recommendations such as those in the *2011 Aquatic Prioritization Plan* were based on the lower inflection point. Therefore, the recommendations represent a range, where the lower inflection point indicates the minimum flow needed to support aquatic life in that area based on channel geometry, and the upper inflection point is a target that should ensure the area is a fully functional aquatic system.

In addition to the dewatered area of the Clark Fork River between Galen and Deer Lodge, there are also a number of stream areas within the UCFRB that are, at least at some time during the year, significantly dewatered and in need of flow augmentation, such as, the Group 2 and Group 3 streams. Supplying instream flow to these areas is an important part of restoring the fisheries and riparian function, which will improve the aquatic health of the Basin. In some areas, unless there is sufficient instream flow to support a fishery, other restoration activities, such as fish passage and riparian enhancement, may not be worth pursuing until instream flow augmentation can be obtained. Alternatively, some areas could be improved through these other types of restoration activities, even if additional instream flow cannot be obtained.

The *2012 Process Plan* lists flow augmentation as the highest recommended activity in five of the eleven Priority 1 Areas and in thirteen of the twenty Priority 2 areas, for a total of eighteen of the thirty-one Priority 1 and 2 Areas (58%). Since it has been established that instream flow augmentation is the most important part of aquatic restoration for the UCFRB, it follows that significant effort and resources should be placed on obtaining flow augmentation where it is most needed in the Basin. In response to the 2012 NRDP solicitation for restoration concept proposals, the public submitted 24 abstracts for obtaining flow augmentation and/or managing or valuing flow projects (abstracts #1, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 44, 55, 57, 58, 59, 66, and 69). These abstracts addressed many of the recommendations in the *2012 Process Plan* and covered all of the priority areas that the State targeted for flow augmentation. In 2015, no new restoration concept proposals for flow projects were submitted. In 2018, two abstracts (#98 and 100) were submitted, although each abstract was addressed in the 2012 Plan.

An issue that was not fully considered in the *2011 Aquatic Prioritization Plan* and the *2012 Process Plan* is the low fish population in the Clark Fork River from Flint Creek to Rock Creek. Results of recent fish population studies and fish movement study have indicated a significant need for restoration in this area.[7] In addition to the known dewatered reaches of the Clark Fork River, the State is targeting flow augmentation in this area. Additional study is also proposed to better define the problems (see Section 3.2.3 on aquatic resource monitoring).

Instream Flow Project Implementation Process

Obtaining water for protectable instream flow is technically and legally challenging, and efforts usually take several years to accomplish. In some cases, the full amount of water anticipated for instream flow is not available for purchase or lease, and/or cannot be protected as far downstream as originally anticipated. Valuation of water for instream flow varies greatly based on the ability of water to be delivered where and when needed, and thus developing projects in these priority areas is important.

Priority Areas for Flow Augmentation

- Highest priority are projects (Group 1) that may supply instream flows to the area of the Clark Fork River between Galen and Deer Lodge, as they have the highest likelihood of providing water to the most dewatered reach of the river and, thus, supply the best overall benefits to the restoration of the UCFRB.
- Second in priority are those projects that do not meet the Group 1 criterion but are in either Priority 1 areas or in Priority 2 areas that are also injured areas.
- Third in priority are flow projects in Priority 2 areas that are outside injured areas.

[7] Lindstrom, J. 2011. Upper Clark Fork River Fish Sampling: 2008-2010. Montana Fish, Wildlife and Parks. Helena, MT, and Pat Saffel, Region 2 Fisheries Manager FWP, Personal Communication, September 2012.

All Group 1 projects have been evaluated between 2012 and 2018 by NRDP and its partners. Based on NRDP's experience working with Group 1 projects, and because of the limited opportunities to implement flow augmentation due to the small number of water users in the area and the length of time needed to complete instream flow projects, starting in 2019 all projects in Group 1, Group 2 and Group 3 will be investigated at the same time. Thus, a wide-range of projects can be developed, which should lessen the time taken to meet instream flow targets and/or assist in increasing fish populations. Though Group 1 projects are still the highest priority, Group 2 and Group 3 projects will also assist in restoration of the resources even though they may not directly increase flow in the Clark Fork River dewatered areas. Increased flow in tributaries could also assist in recruitment of fish from these areas to the mainstems.[8]

Project Development

The project development phase will require a rigorous due diligence process, which includes working with each water right holder to determine current point of diversion, place of use, purpose of use and a potential place of storage, rate of diversion and volume of yearly water diversion and the historic use of each water right involved in the project. This process often involves irrigation flow data gathering or, if absent, measurement of current water use practices. The process to engage a water right holder and the gathering of the water use data often takes more than a year.

Since various projects may have different goals, each project may require different paths to reach full project development. Specific projects that require a well-defined protected flow rate and/or, instream flow volume, in a specific reach of instream flow to be able to judge whether the project can reach a goal, will be required to successfully go through the DNRC's change authorization process prior to funding. Thus, it is necessary to consult with DNRC about the water rights associated with all flow augmentation projects early in the project development process. In this way, discussions about whether a water change is necessary and if so, then what is the best pathway to successfully making a change of use for the water rights.

Other projects, where benefits can be met without going through the change authorization process, may be recommended for funding prior to going through the process or may not need to go through the above process if associated with Aquatic Priority Area Specific Plans outlined in Section 3.2.2. These projects will be analyzed using the NRD funding criteria on a project-by-project basis.

In some special situations when further development is necessary, project development costs may include up to an additional $50,000 in costs for a short-term agreement with water right holders, to help gather additional information for the change authorization process and/or inform the parties about how the water lease will affect the instream flow and the water users' ability to operate without the leased water. A short-term agreement with water right holders could be a water right lease, diversion reduction or forbearance agreement, split-season lease, minimum flow agreement, single

[8] Lindstrom J. 2018, personal communication, Montana Fish Wildlife and Parks.

season agreement or other flow management agreement. Short-term agreements are limited to funding of up to $50,000 per project and may not exceed two years. The cost for any such agreement will be based on the data gathered by the State for similar transactions within the State, must be at or below the fair market value for use as instream flow, and would be applied toward any later transaction. The State will report on project development costs as part of its normal reporting requirements as provided in Section 6.0.

In other cases, such as the Silver Lake flow augmentation project, the change process has already occurred,[9] nonetheless, further due diligence analysis is needed to move the project forward. As of October 2018 the State has initiated, but not completed, it's due diligence review of this proposed project.

Once a project has been developed, an agreement with the water right holder on the terms of the agreement is recommended. The agreement should outline the State's intended actions and funding sought, as well as what the water right holder agrees to in exchange for the funding. This agreement is designed to clearly state the terms prior to initiating the approval and funding process. This often includes the flow rate and volume of instream flow and the protectable reach of the water body and if applicable, is defined in the change authorization process.

In order to fund a project, the NRDP staff will draft a funding recommendation that includes the cost-benefit, cost-effectiveness and all other applicable criteria necessary to judge the merits of the project. This recommendation will be subject to public comment, consideration by the Advisory Council and Trustee Restoration Council, and the final funding decision by the Governor.

Eligible Flow Projects

Projects that may supply instream flows to the area of the Clark Fork River between Galen and Deer Lodge receive the highest priority. Group 1 projects that meet this criterion are four projects located on the Clark River: The Westside, Whalen, Helen Johnson ditch improvement project, and the Clark Fork Meadows acquisition project, though the latter two projects will not individually be likely to provide a large amount of flow (abstracts #7, 9, 17, and 18). The Silver Lake flow augmentation project also meets this criterion, since it involves an existing water right for instream flow that should be protectable from Silver Lake, through Warm Springs Creek, to the Clark Fork River at Gold Creek (abstract #1).

Also of highest priority are projects that address flow from Flint Creek to Rock Creek, which is an area of concern and restoration focus based on results of the recently completed trout movement study, as explained above. These include the Lower Flint Creek flow project and the Harvey Creek project (abstracts #8 and 55). Abstract #16, which generally targets flow augmentation on the Clark Fork mainstem below Deer Lodge, may also address this area of concern, and is therefore included. If upon further investigation, a Group 1 project remains viable but is determined not to likely provide

[9] This change is classified as a temporary change in effect until 2026, at which time it has to be reconsidered for another 10-year renewal.

instream flow to the dewatered reach of the Clark Fork River, it will be reclassified as a Group 2 project and be evaluated with the Group 2 projects.

Second in priority are those projects that do not meet the Group 1 criterion but are in either Priority 1 areas or in Priority 2 areas that are also injured areas (e.g., the mainstem of Silver Bow Creek). Group 2 projects include those that originate in Warm Springs Creek and tributaries to Warm Springs Creek, such as Barker Creek, Storm Lakes Creek and Twin Lakes Creek, and other Priority 1 tributary areas, such as Lower Racetrack Creek, the Lower Little Blackfoot River, Silver Bow Creek and the Clark Fork River Flow Projects below the City of Deer Lodge (abstracts #4, 11, 12, 16, and 44).

Third in priority are flow projects in Priority 2 areas that are outside injured areas. Group 3 projects that have been identified through the NRDP public scoping process are on Lost Creek, Mill Creek, Willow Creek, and Dempsey Creek (abstracts #10, 19, 20, and 66).

It should be noted that a few of the concept proposal abstracts set forth above involve multiple actions, rather than solely flow augmentation (abstracts #1, 7, 8, 9, 55, and 66). The State addresses the other aspects and benefits of these abstracts in the Priority Areas component of the Aquatic Restoration Plan (see Section 3.2.2). For some of these projects, such as Harvey Creek, it is the combination of benefits of all project components, not solely the flow component, which led to its inclusion. Abstract #69, that generally suggests increased flow on Warm Springs Creek, overlaps other proposals, such as abstracts #1 and #12, and thus was not included in the analysis.

In addition to the flow projects identified, needed programmatic flow-related activities involving the valuation of flow augmentation projects and the monitoring/oversight of funded projects (abstracts #58 and 59, respectively) will be funded. Valuation and monitoring/oversight activities are flow restoration components, as further explained in the next section on project development and implementation.

There were other programmatic flow-related concept proposals offered by the public that the State considered but did not choose to include as a component of this proposed Flow Restoration component (abstracts #6, 14, and 57). The State considered the management of an Emergency Drought Response Fund (#6) to have less likelihood of success and benefits in the long-term when compared to the selected flow projects that involve more permanent solutions. The suggested concept proposal to establish pilot flow projects as a landowner incentive (#14) and develop a 30-year flow augmentation program (#57) will essentially occur as the State pursues development and implementation of the selected flow projects, consistent with the flow project strategies outlined above.

Table 3-2 provides a summary table of all instream flow abstracts, including which ones are to be funded and which are not.

Many of the abstracts submitted by the public identified potential matching funds (abstracts #4, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 44, 55, 57, 58, 59, and 66). While matching funds are not required as part of the project development efforts, matching funds to leverage the Aquatic Priority Funds will be pursued to expand flow augmentation efforts and benefits to the maximum extent possible. Section 6.0 further explains how the State will partner and coordinate with the other entities to accomplish flow augmentation projects.

The 2018 flow-related abstracts are 98 and 100. Abstract 98, which is the Little Blackfoot River, is a Group 2 Project. Abstract 100, which is Silver Lake, is a Group 1 Project that was offered under abstract 1 in 2012. Since both of these project abstracts are in priority areas and included in Group 1, 2 and/or 3, these abstracts are proposed to be included in future development work for flow augmentation.

FWP has not established flow targets for all of the streams in Group 2 and Group 3 areas, such as Willow Creek, Dempsey Creek and Mill Creek. As a part of project development for these areas a flow target will need to be established. In addition, the flow target for Reach 2 of Racetrack Creek needs to be reevaluated since the current target of 3 cfs, is too low.[10]

In conjunction with the DNRC change of use process, which requires a flow monitoring plan, the State will plan and fund the follow-up monitoring and oversight activities that would include the same requirements as other water rights under Montana Law. Funding for implementation will also include costs necessary for instream flow oversight. These include self-administration or the use of a court-appointed water commissioner. Under the Water Use Act, a commissioner and the district court judge can utilize a temporary or preliminary decree issued by the Water Court. Water commissioners on multiple streams in the UCFRB are using these water court enforcement projects to administer water rights. The State will fund the applicable avenues specific to the acquired instream flow project to conduct monitoring and oversight for that project as is deemed necessary to consistently and efficiently accomplish flow restoration and assure benefits in the long-term.

Percentage of Aquatic Flow Funding for Instream Flow

As discussed previously, the Aquatic Prioritization Plan placed flow augmentation as the highest recommended activity in 58% of the State's priority stream areas. Flow augmentation has also exhibited the highest level of funding sought by the public through the publicly submitted concept proposals ($85 million total). It follows that flow augmentation should receive a substantial funding allocation to ensure that the State achieves its restoration goals for instream flow. Thus, the State is allocating 50% of the Aquatic Priority Fund, or approximately $20.5 million to the development, purchase, monitoring and management of flow augmentation projects. This budget includes approximately $500,000 for flow monitoring and oversight activities, as further explained in Section 3.2.3 on aquatic resource monitoring.

[10] Lindstrom, J. 2018, Personal communication, Montana Fish Wildlife and Parks.

Monitoring of projects will need to be conducted for the project life of each individual project, which is likely to occur for many years.

Table 3-1. 1986 FWP Flow Targets[11]

Relevant Reach	Priority	Flow Requested (cfs)	Flow Requested (ac-ft)
Clark Fork River Reach #1 (Galen to Deer Lodge)	1	180	130,314
Clark Fork River Reach #2 (Deer Lodge to Gold Creek)	1	400	289,587
Warm Springs Cr. Reach #1	1	50	36,198
Warm Springs Cr. Reach #2	1	40	28,959
Barker Cr.	1	12	8,688
Storm Lake Cr.	1	10	7,240
Twin Lakes Cr.	1	13	9,412
Lost Cr.	2	16	11,583
Racetrack Cr. Reach #2	1?	3	2,172
Dempsey Cr.	2	3.5	2,534
L. Blackfoot R. Reach #1	1	85	61,537
Snowshoe Cr.	2	9	6,516
Dog Creek	2	9	6,516
Flint Cr. Reach #1 (Georgetown to Boulder Cr.)	2	50	36,198
Flint Creek #2 (Boulder Creek to mouth)	2	45	32,578
Boulder Cr.	2	20	14,479
Harvey	2	3	2,172
Willow Creek	?	NA	NA
Dempsey Creek	?	NA	NA
Mill Creek	?	NA	NA

[11] *Application for Reservation of water in The Upper Clark Fork River Basin*, Fish, Wildlife and Parks, November 1986.

Table 3-2. Aquatic Flow Groups

AQUATIC FLOW GROUPS				
Group	**Abstract No.**	**Concept Proposals**	**Location**	**Priority Stream**
Group 1	1	Aquatic improvements to the Silver Lake Water System: BSB proposes numerous activities to repair the Silver Lake water system in exchange for instream flow augmentation in Warm Springs Creek via releases of stored water.	Warm Springs Creek	1
	7	Clark Fork Meadows Ranch Land and Water conservation easement or purchase.	CFR Mainstem, south of Deer Lodge	1, INJ
	8	Flint Creek aquatic habitat conservation (upper and lower). Proposes to seek opportunities to work with landowners to implement aquatic restoration projects – flow augmentation, and other restoration activities.	Flint Creek drainage	2
	9	Helen Johnson Ditch flow enhancement project. Improve Dry Cottonwood Ranch irrigation system to provide up to 5 cfs of instream flow to the CFR.	CFR Mainstem, south of Deer Lodge	1, INJ
	13	Pauley Ranch Flow Enhancement. Acquire 9 cfs of irrigation water rights for instream flow in Warm Springs Creek and Lost Creek.	Warm Springs and Lost Creeks	1
	15	Racetrack Water Users Assoc. Irrigation Efficiency and Energy Conservation Project – Phases 1, 2, 3. A series of irrigation pipeline improvement projects that would benefit agriculture and provide instream flow to Racetrack Creek, improve fish passage, and eliminate fish entrainment.	Racetrack Creek	1
	17	West Side and Whalen Ditch Water Conservation Project. Consolidate the West Side and Whalen ditches into a single ditch to conserve water and provide 20 cfs to the CFR.	CFR Mainstem above Deer Lodge	1, INJ
	18	CFR Flow Enhance Project (above Deer Lodge). Identify, develop, and implement projects with private landowners that enhance flows in the CFR above Deer Lodge.	CFR Mainstem above Deer Lodge	1, INJ
	55	Harvey Creek Integrated Restoration. Proposal to work on private and state land to complete water rights acquisition for instream flow, and other restoration activities.	Harvey Creek	2

AQUATIC FLOW GROUPS				
Group	**Abstract No.**	**Concept Proposals**	**Location**	**Priority Stream**
Group 2	4	Silver Bow Creek Stream flow augmentation investigation and acquisition: determine need, survey existing rights, identify waters, and purchase rights.	SBC	2, INJ
	11	Lower Racetrack Creek Flow Enhancement. Identify, develop, and implement projects with private landowners that enhance flows in Racetrack Creek.	Lower Racetrack Creek	1
	12	Warm Springs Creek Flow Enhancement. Identify, develop, and implement projects with private landowners that enhance flows in Warm Springs Creek.	Warm Springs Creek	1
	16	CFR Flow Enhancement (below Deer Lodge). Identify, develop, and implement projects with private landowners that enhance flows in the CFR below Deer Lodge.	CFR Mainstem below Deer Lodge	2, INJ
	44	Little Blackfoot Streamflow Restoration. Project would identify reaches of Little Blackfoot River and its major tributaries to develop minimum flow targets to improve water quality and fish habitat, survey existing water rights to identify potential partners, prioritize available water rights to achieve flow targets, build funding portfolio and implement water leases or acquisitions, and design and implement water monitoring program.	Little Blackfoot River	1
Group 3	10	Lost Creek Flow Enhancement. Identify, develop, and implement projects with private landowners that enhance flows in lower Lost Creek.	Lost Creek	2
	19	Willow Creek Flow Enhancement. Identify, develop, and implement projects with private landowners that enhance flows in Willow Creek near Opportunity.	Willow Creek near Opportunity	2
	20	Dempsey Creek Flow Enhancement. Identify, develop, and implement projects with private landowners that enhance flows in Dempsey Creek.	Dempsey Creek	2
	66	Mill Creek Fish Passage and Flow Restoration Project. Development of project to install 3 fish screens, improve diversion structures and install flow measurement equipment and attempt to develop in-stream flow water rights.	Mill Creek near Opportunity	2

AQUATIC FLOW GROUPS				
Group	**Abstract No.**	**Concept Proposals**	**Location**	**Priority Stream**
Programmatic Flow Proposals Indirectly Included in Restoration Plan	58	Flow Augmentation Basin-Wide Programmatic Monitoring Program Proposal. Proposal would develop monitoring plan and training for water commissioners to ensure purchased water was making it to and staying instream.	UCFRB	1 2 INJ
	59	Water Rights Transaction Pricing and Valuation Framework Proposal. Proposal for establishing a framework and value for acquisition of water rights both general guidelines for water right values in the UCFRB and specific values for projects.	UCFRB	1 2 INJ
Abstracts Not Included in Restoration Plan	6	Emergency Drought Response Fund for CFR. Develop, design and implement drought fund to ensure CFR flows are maintained for fish during drought years.	CFR Mainstem	1 2, INJ
	14	Pilot Flow Project. Work with private landowners to establish pilot study flow restoration projects to teach landowners the benefits of flow restoration.	CFR	1 2 INJ
	57	Flow Augmentation Basin-Wide Program Proposal. Proposal to develop a flow augmentation program for the UCFRB funded for 30-years to advise NRDP on water right purchases.	UCFRB	1 2 INJ
	69	Numerous ideas that ADLC further categorized as three types of projects: Overlaps with abstract #1, it was not included in further evaluation.	Anaconda	2, INJ

3.2.2 Aquatic Priority Area Specific Plans

The following sections provide specific actions that are proposed for each of these fourteen watershed priority areas developed under the State's preferred alternative. They include Silver Bow Creek and the Clark Fork River mainstems and twelve priority tributary watershed areas comprised of Priority 1 and 2 stream areas.

3.2.2.1 Other Proposed Actions for the Silver Bow Creek and Clark Fork River Mainstems

The State's proposed restoration actions for the mainstems include flow augmentation of both mainstems (Section 3.2.1), riparian protection/enhancement of some areas along the Clark Fork River mainstem, a fish barrier on the Silver Bow Creek mainstem, evaluating and, as warranted, implementing actions to address low trout populations between Flint Creek and Rock Creek.

In 2018, the State proposes restoration actions to enhance fish passage on the Clark Fork River mainstem upstream of Deer Lodge, as proposed in concept proposal abstract #83. The modification of diversions on the mainstem of the Clark Fork River will improve fish passage and recreational activities within this reach will be considered on a case-by-case basis.

The State does not propose any other restoration actions on the mainstems associated with the substantial restoration work already completed or to be completed pursuant to the integrated remediation and restoration plans involving already dedicated site-specific settlement funds.

Riparian Habitat Protection/Enhancement

The State proposes to protect riparian habitat and upland habitat through easement and land acquisitions on the Clark Fork River mainstem and ecological enhancements at the Milltown restoration site. Proposed easements and acquisitions are addressed in the terrestrial resources restoration plan, due to their dominant terrestrial benefits. Concept proposals offered by the public or generated by the State that were specific to easements or acquisitions along the Clark Fork River mainstem (abstracts #7, 48, 52, and G6) have been incorporated into proposed restoration actions specified in Section 4.2.4 of this Restoration Plan. The potential easement/acquisition areas cover approximately 13,000 acres along the Clark Fork River mainstem. Two projects are located south of Deer Lodge, (abstracts #7 and #52) and one project is near Rock Creek (abstract #48). The State's concept proposal (abstract #G6) generally provides for potential easement/fee-title acquisition along the Clark Fork mainstem between Deer Lodge and Milltown, inclusive of the Milltown restoration site.

To ensure restoration success at the Milltown restoration site, the State proposes $400,000 be allocated for monitoring and maintenance (abstract #G5) of the restoration actions as specified in the *2005 Milltown Restoration Plan Monitoring and Maintenance Plan*. This will provide for completion of the fifteen years of monitoring proposed (years 3, 5, 10, and 15), as well as provide

for maintenance actions as determined necessary for this project to achieve the goals and objectives set forth in the *2005 Milltown Restoration Plan*.

The budget for these habitat protection and enhancement efforts on the Clark Fork River mainstem, inclusive of the Milltown restoration site, totals $6.9 million with funding to be split between aquatic and terrestrial priority accounts as specified in Table 6-1.

The State does not propose any additional riparian protection/enhancement along the Silver Bow Creek mainstem because the integrated remediation and restoration work being conducted under the Streamside Tailings Operable Unit (remediation) and Silver Bow Creek Greenway project (restoration) will accomplish the needed riparian protection and enhancement efforts judged to be cost-effective.

Fish Passage

In the *2011 Aquatic Prioritization Plan*, the State recommended investigating the feasibility of having a fish barrier that would allow the re-establishment of a native trout fishery in Silver Bow Creek.[12] A 2011 potential fish barrier site evaluation indicated several possible appropriate locations of such a barrier on Silver Bow Creek just downstream of its confluence with German Gulch, with an estimated cost of $250,000. The State proposes that this amount be allocated to construction of this fish barrier (abstract G1).

Mainstem Clark Fork River (Flint Creek to Rock Creek) Fish Population Evaluation and Follow-up Actions

An evaluation of the Clark Fork River between Flint Creek and Rock Creek will be performed to determine the reason(s) for the low trout densities in this reach (abstract G4). Habitat protection/enhancement, fish passage, fish entrainment, and/or in-stream habitat actions will be implemented as warranted from the results of this study. $1.5 million is provided for these Clark Fork River mainstem actions.

In 2018, the State proposes an additional $500,000 be allocated to this action to facilitate implementation of pilot projects proposed as a result of the evaluations started in 2012.

Concept Proposals

Some concept proposals offered by the public are not included in the State's proposed restoration actions for the mainstem (abstracts #38, 40, 71, and 77). The State does not propose funding upgrades of the Deer Lodge Waste Water Treatment Plant (abstract #38) and the Drummond sewage

[12] As a part of the 2005 NRDP-funded German Gulch Restoration Project, a fish barrier was to be constructed in German Gulch by the George Grant Chapter of Trout Unlimited. Since that time and, in large part due to the success of Silver Bow Creek remediation and restoration actions, FWP has determined that a more desirable barrier location would be on Silver Bow Creek.

lagoon (abstract #77) because these upgrades are considered to be a normal government function. In addition, water from these wastewater treatment systems returns to the Clark Fork River mainstem, either through direct discharge or groundwater returns, thus the cost:benefit relationship of the upgrades in terms of restoration of aquatic resources is low, since flow quantity is a higher priority than nutrient reduction for the mainstem. While the Deer Lodge wastewater treatment upgrade would reduce treatment inflows, it would not augment flows to the Clark Fork River, and other aquatic benefits are low compared to costs. The State does not propose funding any stormwater management activities in Butte (abstract #71) and Rocker (abstract #40) because such activities are a normal government function. For Butte, any needed stormwater management is either normal government function, or should be part of the approved remedial actions for Butte Priority Soils Operable Unit.

3.2.2.2 Summary of Proposed Actions and Funding in Priority Tributary Watersheds

The State's proposed actions to restore the fishery of the Clark Fork River and Silver Bow Creek mainstems, beyond the already approved restoration actions to be implemented with remediation along the mainstems and the additional proposed actions identified in the previous section, is to work on the limiting factors of the Priority 1 and 2 tributary streams areas as, following tributary re-evaluation of priority streams in 2018, fifteen watershed projects. The fifteen tributary watersheds all have factors that limit their ability to provide more fish to the mainstems or provide more angling opportunities. The State has identified riparian habitat, fish passage, fish entrainment, in-stream habitat, and flow as the resource areas that will be targeted within the UCFRB watersheds that contain Priority 1 and 2 tributary stream areas. The fifteen watersheds where these restoration actions will be implemented are listed below and shown on Figure 3-1:

1. Blacktail Creek near Butte
2. Browns Gulch, north of Rocker
3. Cottonwood Creek (includes Baggs Creek) east of Deer Lodge
4. Dempsey Creek southwest of Deer Lodge (Re-classified to Priority 3 in 2018, no longer eligible for funding)
5. Flint Creek (includes Boulder Creek), south of Drummond and near Philipsburg
6. German Gulch (includes Beefstraight Creek), west of Ramsey
7. Harvey Creek south of the Clark Fork River east of Clinton
8. Little Blackfoot River (includes Spotted Dog, Snowshoe, Trout and Dog creeks), east of Garrison
9. Lost Creek, west of the Clark Fork River south of Deer Lodge
10. Mill/Willow Creeks, east of Anaconda
11. Racetrack Creek, near Warm Springs
12. Warm Springs Creek (includes Barker, Twin Lakes, Storm Lake, and Foster creeks), east and west of Anaconda

    Watersheds added in 2018:
13. Basin Creek (Upper) south of Butte
14. Gold Creek - Lower, south of the Clark Fork west of Garrison
15. O'Neil Creek, North of Deer Lodge

16. Rock Creek, East of Missoula

Prior to work on any of the watersheds, evaluations of each of the watersheds' targeted resources are needed to prioritize and implement restoration actions in the most cost-effective method. Following is a brief description list of the five (5) general proposed actions for the fifteen tributary watersheds collectively. Also included below are the budgets for the project development tasks entailing further resource evaluations, engineering and design, and project management.

The State is allocating 50% of the Aquatic Priority Fund, or approximately $20.4 million to the development and implementation of restoration actions on the Clark Fork River and Silver Bow Creek mainstems and the twelve watersheds that include the Priority 1 and 2 streams (listed above). The cost to plan and implement the Aquatic Priority Specific Plans watershed actions is approximately $13.1 million. The State is allocating $2.8 million for contingency for the Aquatic Priority Specific Plans watershed actions because of the conceptual nature of these actions as well as the uncertainties associated with these types of actions. This budget also includes $1.5 million for monitoring and maintenance of these actions, as further explained in Section 3.23 on aquatic resource monitoring.

In 2018, the State proposes allocating $1.0 million specifically to maintenance of the aquatic actions. Based on maintaining these actions since 2012, the State proposes establishing a specific fund to ensure the actions implemented are maintained and functional. Most of the actions (fish screens, fences, diversions, etc.) are installed on private property and without the proper funding to maintain these actions, many of these actions will fail.

In 2018, the State also proposes the ability to work on tributaries, such as spring creek tributaries, with connection to Priority 1 and 2 tributaries to improve connectivity and habitat if the resource managers agree these are priority actions.

The following table 3-3, provides an evaluation and implementation schedule for the 17 aquatic priority watershed areas. In 2018, the State proposes to evaluate and implement priority actions in all the priority watersheds starting in 2019.

Table 3-3. Evaluation/Implementation Schedule for Priority Watershed Areas

Watershed	Evaluation Schedule	Implementation Schedule
Blacktail Creek	2013	2014
Browns Gulch	2013	2014
Cottonwood Creek	2019	2019
Dempsey Creek*	NA	NA
Flint Creek	2013	2015
German Gulch	2013	2013
Harvey Creek	2013	2013
Little Blackfoot River	2013	2015

Lost Creek	NA	NA
Mill/Willow Creek	2019	2019
Racetrack Creek	2019	2019
Warm Springs Creek	2013	2014
Silver Bow Creek	2013	2014
CFR Study/Implementation	2013	2015
2018 New Watersheds		
Basin Creek (above reservoir)	2019	2019
Gold Creek	2019	2019
O'Neil Creek	2019	2019
Rock Creek	2019	2019

*Dempsey Creek no longer meets criteria for funding with a priority change from 2 to 3 in 2018.

Riparian Habitat Protection/Enhancement: Actions to enhance or protect the riparian habitat in all fifteen watersheds are proposed. Actions taken within each of the fifteen watersheds will vary; however, actions could include: installing riparian fencing, revegetation, developing off-stream water sources, developing grazing management strategies, and establishing long-term management agreements and/or permanent conservation easements to protect the investments in the riparian habitats for these areas. The total estimated cost for riparian habitat enhancement/protection within these watersheds is approximately $3.5 million.

Fish Passage Improvement: Fish passage improvements in all fifteen watersheds are proposed based on ongoing monitoring and evaluation of tributaries within the UCFRB. Fish passage will address movement of fish upstream and downstream at, but not limited to, irrigation diversions, culverts, and bridges. The total estimated cost for fish passage projects within these watersheds is approximately $5.5 million.

Fish Entrainment Reduction: Fish entrainment projects in all fifteen watersheds are proposed. Fish entrainment will address the loss of fish down irrigation intakes by various methods, which may include installing fish screen or alternative irrigation source water endeavors such as installing a well. The total estimated cost for fish entrainment within these watersheds is approximately $7.3 million.

In-stream Habitat Improvement: In-stream habitat improvements within eight of the fifteen watersheds are proposed. In-stream habitat improvements include, but are not limited to, streambank construction, channel construction, and /or channel function projects. The estimated cost for these various projects within the eight of the twelve watersheds is $851,530.

Flow Quantities Improvements: Flow is listed as a limiting factor in all fifteen of the watersheds. Flow is addressed within Section 3.2.1 of this Restoration Plan.

Watershed Evaluations: In 2018, the four watersheds added as part of the 2018 Tributary Prioritization Plan need to be evaluated prior to implementation of the above work actions in order for the work to be worth the investment. The estimated cost for these various projects within the four watersheds is $609,796.

Engineering and Design and Project Management Costs: In 2018 engineering, design, and project management costs were included in the costs for the restoration actions within each watershed. Splitting these costs separately, as presented in 2012, resulted in inaccurate cost accounting since the cost of engineering, design, and project management has been found to be specific to each action being implemented.

Following are more detailed descriptions of the proposed actions and restoration budgets for each of the twelve priority tributary watersheds. These sections also address the concept proposals generated by the public or by the State that are relevant to a particular watershed.

3.2.2.3 Blacktail Creek Watershed

Blacktail Creek is a Priority 2 headwaters tributary to Silver Bow Creek that originates in the Highland Mountains south of Butte, Montana. The Blacktail Creek watershed has westslope cutthroat trout in headwaters reaches upstream of Thompson Park, and brook trout in downstream reaches near Butte. Genetic sampling indicates a 100% pure westslope cutthroat trout population. The *2012 Process Plan* lists the following encouraged restoration activities (listed in the *2012 Process Plan* in the order of priority based on the best available information at the time) for Blacktail Creek that, when implemented, will improve the fishery of Blacktail Creek as well as the mainstem of Silver Bow Creek.

In 2018, the *Restoration Plans* re-prioritize the proposed restoration actions based on new data and information NRDP and other stakeholders have gathered and analyzed since 2012. The new order of priority for encouraged restoration actions reflects a better understanding of drainage-scale fish population limiting factors and the cost-benefit of proposed actions. The revised order of the proposed restoration actions follows.

Blacktail Creek

1. Fish Passage: Fish passage improvement at select irrigation diversions and culverts (e.g., diversion or crossing redesign or retrofit to allow for fish passage); throughout drainage.

2. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; throughout drainage.

3. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); primarily downstream of Nine Mile, with greater preference given to projects where flows are protectable to or beyond the mouth.

4. Riparian Habitat: Riparian habitat improvement (e.g., riparian fencing, woody shrub and tree plantings); primarily on private lands downstream of Nine Mile.

5. Instream Habitat: Channel reconstruction in select, localized areas where projects would benefit stream function; originally identified at locations where channel has been diverted into a ditch; however, Blacktail Creek has returned to the valley bottom and this is no longer a priority at this location. At present, the primary area identified for channel restoration is through the Butte Country Club. These areas were identified and described in the 2009 Restoration Study of Blacktail Creek prepared by Pioneer Technical Services, Inc. for the Mile High Conservation District and City-County of Butte-Silver Bow. A conceptual design for the Butte Country Club has been completed.

Proposed Actions

Actions specific to Blacktail Creek are set forth below, summarized in Table 3-4, and shown in figure 3-2.

1. Fish Passage: Inventory and assessment of irrigation diversions and road culverts for upstream and downstream fish passage along Blacktail Creek was completed in 2013. In 2018 the State is removing one identified fish barrier and installing a fish friendly irrigation diversion. Evaluations of other fish passage barriers identified in Blacktail Creek are ongoing.

2. Fish Entrainment: Inventory and assessment of irrigation diversions for fish entrainment along Blacktail Creek was completed in 2013. A single irrigation diversion, being addressed for fish passage issues, was identified as a risk for entrainment of fish in Blacktail Creek. The diversion has been designed to incorporate a fish screen to eliminate fish entrainment in the irrigation ditch. Evaluations are ongoing for other fish entrainment structures identified in Blacktail Creek.

3. Water Quantity: Further evaluation is necessary, and this process is addressed in Section 3.2.1.

4. Riparian Habitat Protection and Enhancement Implementation: An assessment of riparian and stream habitat in Blacktail Creek was completed in 2013. Priority areas for riparian protection and enhancement were identified. Project develop is ongoing.

5. Instream Habitat Improvement: Channel reconstruction may be implemented after the implementation and evaluation of the success of other Blacktail Creek actions are complete and if reconstruction activities are warranted. Channel reconstruction areas were documented in a 2009 Restoration Study of Blacktail Creek,[13] including: creation of approximately 1 mile of new, naturalized channel through the golf course.

[13] Pioneer Technical Services, 2009, "Restoration Study of Blacktail Creek: Summary Report," for Mile High Conservation District, Butte, MT.

These actions along Blacktail Creek will have high net benefits with respect to accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and are technically feasible to implement.

These actions were based on activities identified in the *2012 Process Plan*, taking into consideration the restoration concepts proposed through the public scoping process. The concept proposals submitted by the public for the Blacktail Creek drainage are set forth in abstracts #28, 39b, and 76. Overlap amongst concept proposals were merged (fencing, in-stream construction). The proposed actions for this watershed generally cover the concepts in the abstracts. These concepts adequately focus on the factors within Blacktail Creek that limit restoration of the Silver Bow Creek mainstem without a need of additional State-generated alternatives.

No new concept proposals were received in 2018.

Costs

The costs to implement the Blacktail Creek actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of $1,157,245 (increased by $200,000 in 2018) is preliminarily estimated to implement the proposed actions in the Blacktail Creek.

Implementation Schedule

2018:

- Replace an existing irrigation diversion with a new passable diversion and fish screen to eliminate entrainment.

2019:

- Remove the Butte Silver Bow sanitary sewer line causing a fish passage barrier.
- Evaluate remaining restoration dollars allocated to Blacktail Creek.
- Identify and plan additional projects that meet the encouraged actions for Blacktail Creek.

Table 3-4. Relationship of restoration plan components to limiting factors and encouraged activities for Blacktail Creek

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Riparian Habitat	Riparian habitat improvement (e.g., riparian fencing, woody shrub and tree plantings) primarily on private lands downstream of Nine Mile.	Identify locations for TBD riparian protection and/or enhancement projects. Implement riparian protection and enhancement projects.	Habitat management (Fencing, grazing management, off-stream water development) followed by active revegetation where needed after evaluating effects of passive management.	Evaluation of specific types and location of riparian protection and enhancement. Completion of designs.	$150,000
Fish Passage	Fish passage improvement at select irrigation diversions and culverts (e.g., diversion or crossing redesign or retrofit to allow for fish passage); throughout drainage.	Implement 1 diversion replacement or retrofit and ~4 culverts for fish passage issues.	Replace or retrofit existing diversions, road crossings, and other water control structures to ensure fish passage.	Evaluate existing irrigation diversions, water control structures, and culverts for fish passage. Completion of designs.	$619,495
Instream Habitat	Channel reconstruction in select areas with stream function issues.	Identify and implement channel reconstruction on TBD feet of stream channel.	Stream reconstruction.	Evaluate whether stream reconstruction is warranted. Complete channel and floodplain designs.	$350,000

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Data gaps and feasibility questions	Develop overall project work plan.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each component.	$37,750
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1.	Further analyses of flow as set forth in Section 3.2.1.	N/A
				Total	**$1,157,245**

TBD: To Be Determined as part of the project work plan development.

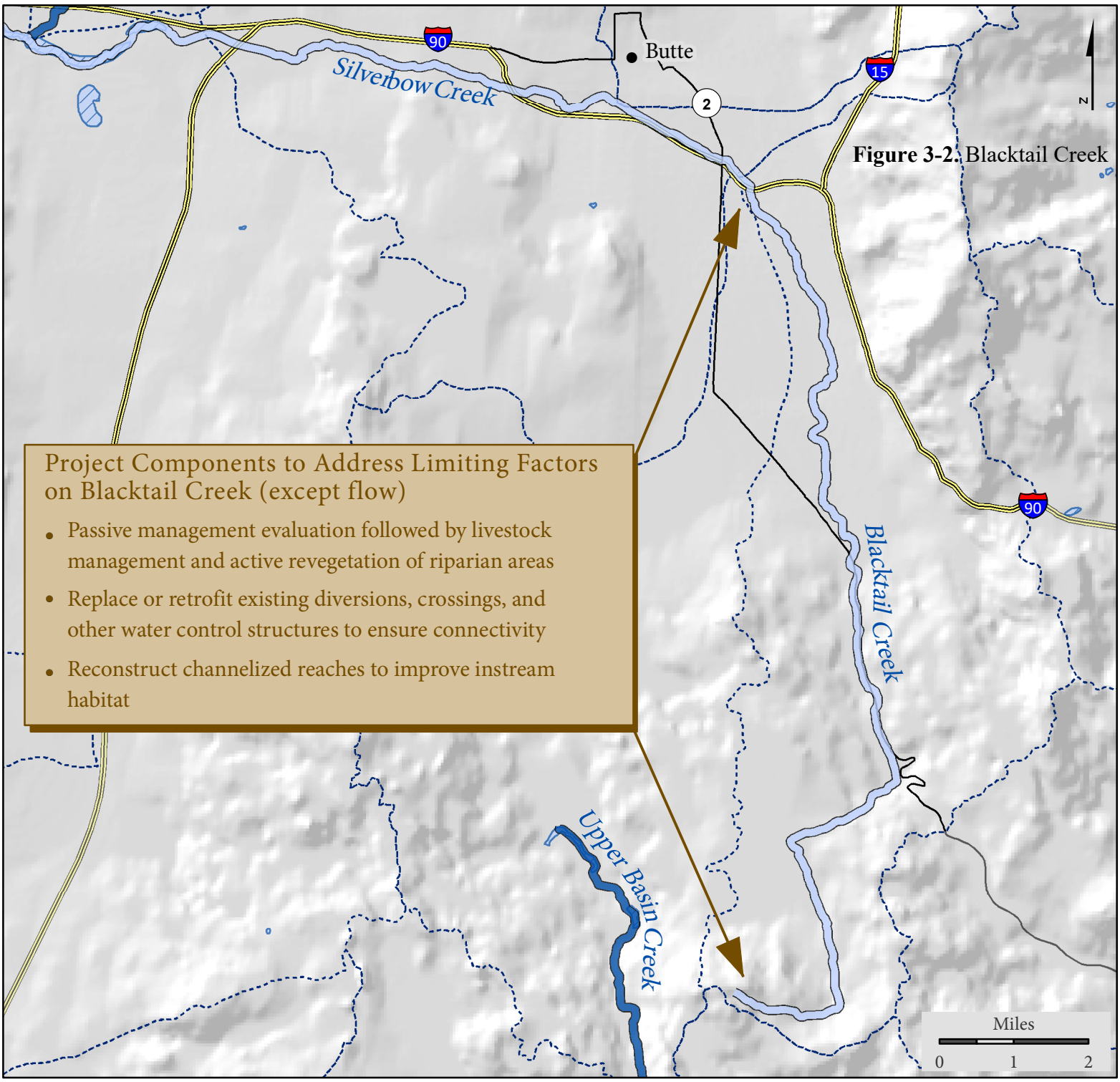
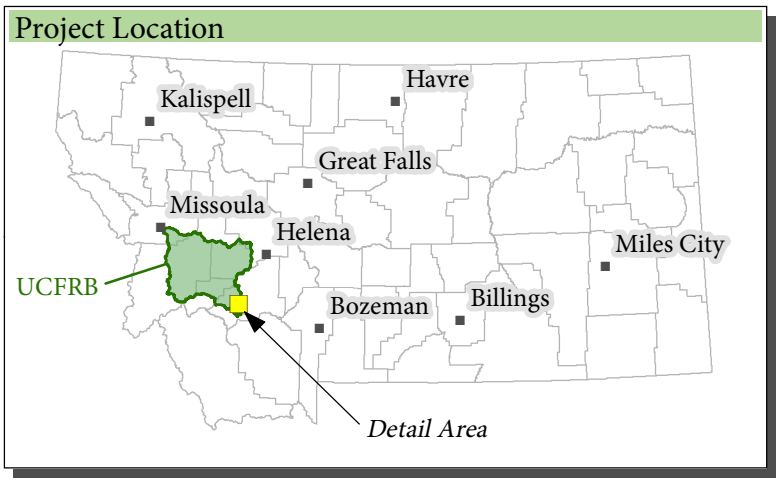


Figure 3-2. Blacktail Creek



NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Conservation Easement
- Subwatershed Boundary
- Lake / Pond

3.2.2.4 Browns Gulch Watershed

Browns Gulch is a Priority 1 tributary to Silver Bow Creek. The Browns Gulch watershed has its headwaters in the Boulder Mountains on the Continental Divide north of Butte, Montana, and drains approximately 85 square miles (54,380 acres) down its 19-mile length to its confluence with Silver Bow Creek near Ramsay. Browns Gulch is chronically dewatered and suffers from sedimentation and habitat loss. Several tributaries to Browns Gulch are known to host populations of genetically pure westslope cutthroat trout, and adult cutthroat tagged in Sliver Bow Creek have been observed in Browns Gulch.[14] The *2012 Process Plan* lists the following encouraged restoration activities (listed in order of priority) for Browns Gulch that, when implemented, will improve the fishery of Browns Gulch as well as the mainstem of Silver Bow Creek.

In 2018, the Restorations Plans re-prioritized the proposed restoration actions based on new data and information gathered and analyzed since 2012. The new order of priority for encouraged restoration actions reflects a better understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The revised order of the proposed restoration actions follows.

Browns Gulch

1. Flow Augmentation: Water right purchases, water leases, irrigation efficiency improvements; etc., particularly in lower reaches closer to mouth.

2. Fish Passage Improvement: at select irrigation diversions. Diversion redesign or retrofit to allow for fish passage throughout drainage.

3. Fish Entrainment: To reduce fish entrainment into irrigation ditches; throughout drainage.

4. Riparian Habitat Protection/Enhancement: Riparian fencing, woody shrub plantings; etc., primarily on private lands in lower 14 miles – especially in areas completely devoid of woody vegetation.

5. Sediment Reduction/Bank Stabilization: At select, localized areas where project would benefit stream function; throughout drainage.

Proposed Actions

Actions specific to Browns Gulch are set forth below, summarized in Table 3-5, and shown in Figure 3-3.

[14] MT NRDP. 2005. Silver Bow Creek Watershed Plan. Montana Natural Resource Damage Program and Confluence Consulting Inc. Bozeman, MT.

1. Water Quantity: Flow needs for Browns Gulch, particularly, the lower reaches, will be addressed through the Flow Augmentation process set forth in Section 3.2.1.

2. Fish Passage: Nine of the 14 Browns Gulch diversions impair fish passage.[15] However, Browns Gulch contains genetically pure stocks of westslope cutthroat trout that are currently isolated from Silver Bow Creek. As Silver Bow Creek contains aggressive non-native trout species that readily hybridize with or out-compete the westslope cutthroat, the broader implications of reestablishing stream connectivity here will first be evaluated. Where appropriate, diversions will be designed and reconstructed to reestablish connectivity.

3. Fish Entrainment: All Browns Gulch diversions have a potential for fish entrainment. An entrainment evaluation for the other diversions will be performed. Screens for the other diversions will be designed and implemented if warranted.

4. Riparian Habitat Protection and Enhancement Implementation: Riparian and in-stream habitat were assessed in 2013 and 2014 to determine the specific types and location of the following actions: installing riparian fencing, developing off-stream water sources, and developing grazing management strategies.

5. Channel Reconstruction/Bank Stabilization: Channel reconstruction will be implemented only after implementation of other Browns Gulch actions, and subsequent evaluation concludes reconstruction activity is warranted. Two sites on lower Browns Gulch and four sites on upper Browns Gulch exhibit severe channel instability and habitat degradation issues, resulting in a loss of channel form and function and heavy loads of fine sediment deposited in the stream channel and flushed downstream into Silver Bow Creek. In addition, long term agreements for site access to permit maintenance of the project will be implemented.

The actions along Browns Gulch will have high net benefits with respect to accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and are technically feasible to implement.

These actions were based on activities identified in the *2012 Process Plan*, taking into consideration the restoration concepts proposed through the public scoping process. The concept proposals submitted by the public for the Browns Gulch drainage are set forth in abstracts #26, 27, 42 and 65. The proposed actions for this watershed generally cover the concepts in the abstracts. These concepts adequately focus on the factors within Browns Gulch that limit restoration in the UCFRB, without a need for reliance on additional State-generated alternatives.

[15] WRC-TU. 2012. Upper Clark Fork diversion inventory. Watershed Restoration Coalition (WRC) and Trout Unlimited. Deer Lodge, MT.

No new concept proposals were received in 2018.

Costs

The costs to implement the Browns Gulch actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of $923,403 (increased by $150,000 in 2018) is preliminarily estimated to implement the proposed actions in Browns Gulch.

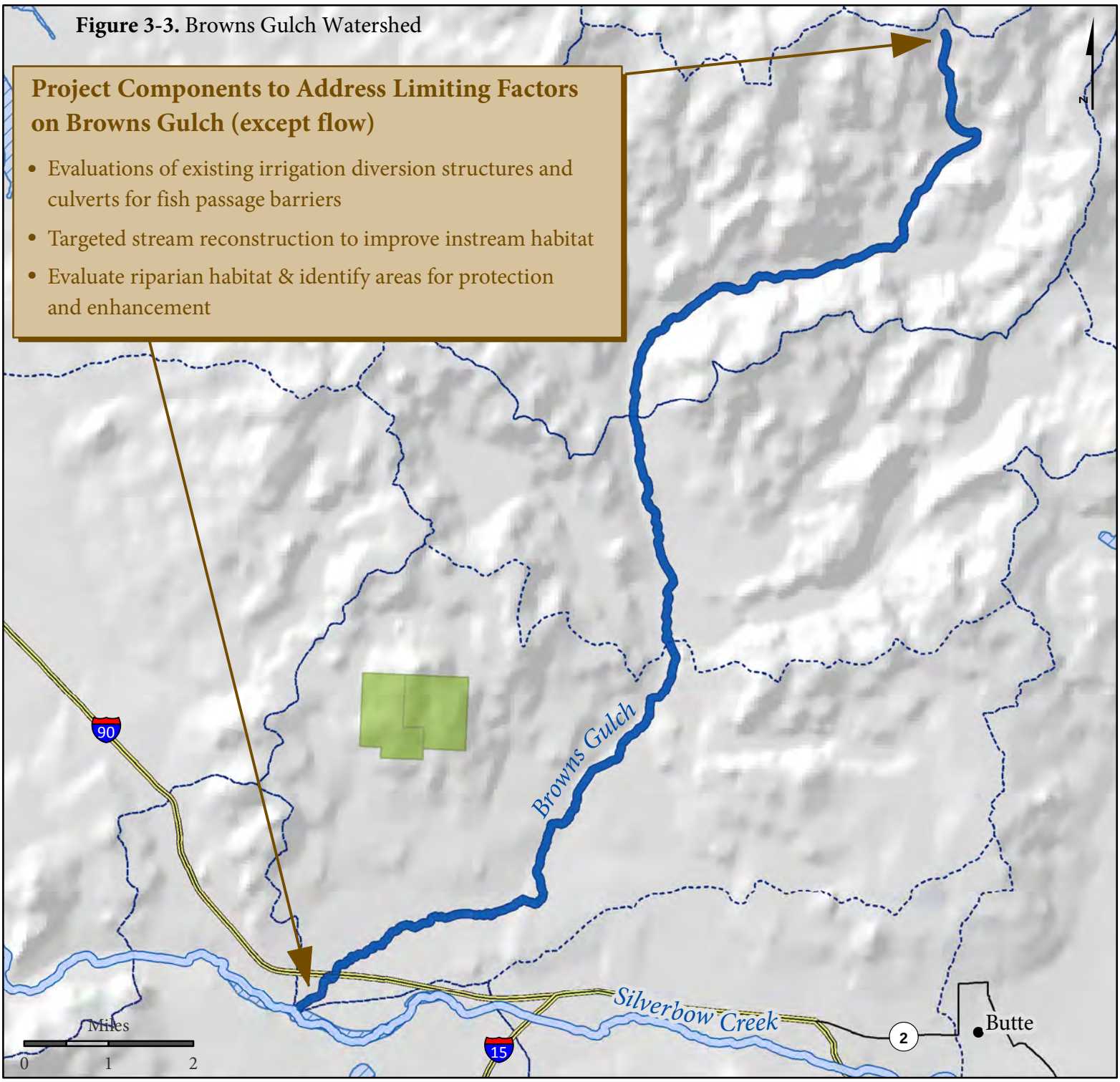
Table 3-5. Relationship of restoration plan components and limiting factors and encouraged activities for Browns Gulch

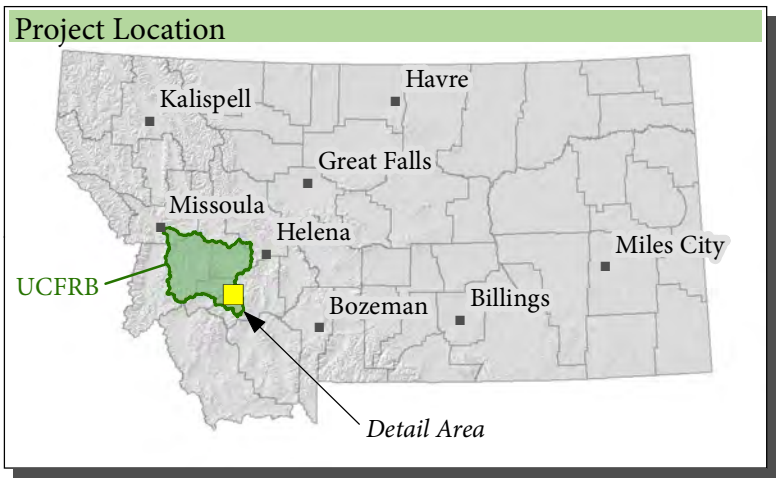
Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1, and irrigation infrastructure improvements.	Further analysis of flows as set forth in Section 3.2.1.	NA
Fish Passage	Fish passage improvement at select irrigation diversions (e.g., diversion redesign or retrofit to allow for fish passage) with passage issues.	Implement identified diversion replacements or retrofits and 2 culverts for fish passage issues.	Implementation of existing irrigation diversion structures and culverts for fish passage barriers.	Completion of design.	$380,452
Instream Habitat	Channel stabilization/reconstruction in select reaches with severe instability.	Implement ~1100 feet of channel restoration needed in Lower Browns Gulch.	Stream reconstruction.	None – to be implemented in 2018	$200,000
Riparian Habitat	Riparian habitat improvement (e.g., riparian fencing, woody shrub plantings) primarily on private lands in lower 14 miles – especially in areas completely devoid of woody vegetation.	Implement riparian protection and/or enhancement projects at identified locations.	Riparian protection and enhancement.	Evaluation of specific types and location of riparian protection and enhancement. Completion of designs.	$71,000

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Fish Entrainment	Ditch fish screening to reduce fish entrainment into irrigation ditches.	Implement fish screen projects in the Browns Gulch watershed.	Evaluations and installation of fish screens on diversions where necessary, coincident with fish passage improvement projects.	Evaluation of diversions with potential for fish entrainment. Completion of designs.	$241,451
Data Gaps and Feasibility Questions	Develop overall project work plan.	Complete integrated project work plans for each component.	Fill data gaps and answer feasibility questions.	Described above for each component.	$30,500
				Total	$923,403

TBD: To Be Determined as part of the project work plan development.

Figure 3-3. Browns Gulch Watershed





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Conservation Easement
- Subwatershed Boundary
- Lake / Pond

3.2.2.5 Cottonwood Creek Watershed

Cottonwood Creek is a Priority 2 tributary to the Clark Fork River that drains east of I-90 for over nine miles before reaching the Clark Fork River near Deer Lodge. Baggs Creek is a Priority 2 tributary to Cottonwood Creek. The Cottonwood is over nine miles long and is comprised entirely of brown trout. Baggs Creek flows for approximately 8.0 miles before entering Cottonwood Creek and is comprised of brook trout and westslope cutthroat trout. A natural waterfall creates a fish barrier isolating westslope cutthroat upstream at stream mile 5.3. The *2012 Process Plan* provides the following guidance on encouraged activities (listed in order of priority) for Cottonwood and Baggs Creek that, when implemented, will improve the fishery of these tributaries as well as the mainstem of the Clark Fork River.

In 2018, the Restorations Plans re-prioritized the proposed restoration actions based on new data and information gathered and analyzed since 2012. The new order of priority for encouraged restoration actions reflects a better understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The revised order of the proposed restoration actions follows.

Baggs Creek

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); in lower extent of drainage.

2. Fish Passage: Fish passage improvement at select irrigation diversions (e.g., diversion redesign or retrofit to allow for fish passage); throughout drainage with special focus on the Cottonwood Creek diversion that crosses the stream near the mouth.

3. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; in lower extent of drainage.

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., riparian fencing); on private grazing lands and Forest Service allotment.

5. Instream Habitat: Sediment reduction/bank stabilization in select, localized areas where projects would benefit stream function; mostly on private lands in lower extent of drainage.

Cottonwood Creek – Lower and Upper

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); throughout drainage, with greater preference given to projects where flows are protectable to or beyond the mouth.

2. Fish Passage: Fish passage improvement at select irrigation diversions and culverts (e.g., diversion or crossing redesign or retrofit to allow for fish passage); throughout reach.

3. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; throughout reach.

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., riparian fencing); mostly on private lands above Interstate 90.

5. Instream Habitat: Channel reconstruction in select, localized areas where projects would benefit stream function; mostly on private lands upstream of Interstate 90.

Proposed Restoration Actions

Actions specific to Cottonwood Creek and Baggs Creek are set forth below, summarized in Table 3-6, and shown in Figure 3-4.

1. Water Quantity: Past projects have addressed flow in the Cottonwood Creek watershed. Further flow needs will be addressed through the Flow Augmentation process set forth in Section 3.2.1.

2. Fish Passage: Eleven diversions along Cottonwood Creek and Baggs Creek were evaluated in 2010 and 2011 by Trout Unlimited[16] to determine whether improvements to specific diversion structures would improve fish passage. All diversions and culverts will first be evaluated, then where appropriate diversions will be redesigned and reconstructed to reestablish fish passage.

3. Fish Entrainment: All irrigation diversions that limit fish passage on Cottonwood Creek and Baggs Creek may also pose a risk of fish entrainment. An entrainment evaluation for each diversion will be performed. Screens for diversions will be designed and implemented if warranted.

4. Riparian Habitat Protection/Enhancement Implementation: Further data collection and other information gathering will first be performed to determine the specific types and locations of the following actions: fencing, grazing management, and off stream water. Revegetation will also be performed upon evaluation of the success of other actions.

5. Instream Habitat: Channel reconstruction will be considered only after the other actions have been implemented and subsequent evaluation of those actions concludes such reconstruction activity is warranted. A section of Cottonwood Creek that is straightened for approximate ½

[16] Trout Unlimited, 2012. Upper Clark Fork Diversion Inventory.

mile long just east of Deer Lodge may be reconstructed with appropriate channel dimensions and planform geometry.

These actions along and near Cottonwood Creek and Baggs Creek, when implemented as an integrated project, and after complete evaluation of the drainage area, will have high net benefits in terms of accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and will be technically feasible to implement.

These actions were based on activities identified in the *2012 Process Plan*, taking into consideration the restoration concept proposed through the public scoping process. The concept proposals submitted by the public for the Cottonwood Creek drainage are set forth in abstracts #21, 22, 23, 24, 45, 46, 60, 82. The proposed actions for this watershed generally cover the concepts in six abstracts. These concepts adequately focus on the factors within Cottonwood Creek and Baggs Creek that limit restoration in the Clark Fork River mainstem, without a need for reliance on additional State-generated alternatives.

The State does not propose restoration actions specific to the reach of Cottonwood Creek in the Deer Lodge urban area as proposed in abstracts #45 and 46 because such work serves more for flood control planning and mitigation purposes, rather than restoration purposes, with minimal aquatic benefits, and involves actions considered to be a normal government responsibility.

In 2018, one abstract (#82) proposed restoration specific to the reach of Cottonwood Creek in the Deer Lodge urban area similar to the actions proposed in 2012, but with more restoration purposes associated with instream habitat and riparian enhancement. Those aspects of the abstract involving restoration and not involving flood control and mitigation purposes are proposed to be implemented.

Costs

The costs to implement the Cottonwood Creek actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of about $1.7 million is preliminarily estimated to implement the proposed actions in the Cottonwood Creek watershed.

Implementation Schedule

2019:

- Implement fish passage and entrainment reduction projects previously identified and established by project partners using outside funding.

- Identify and plan additional projects that meet the encouraged actions for Cottonwood and Baggs Creek.

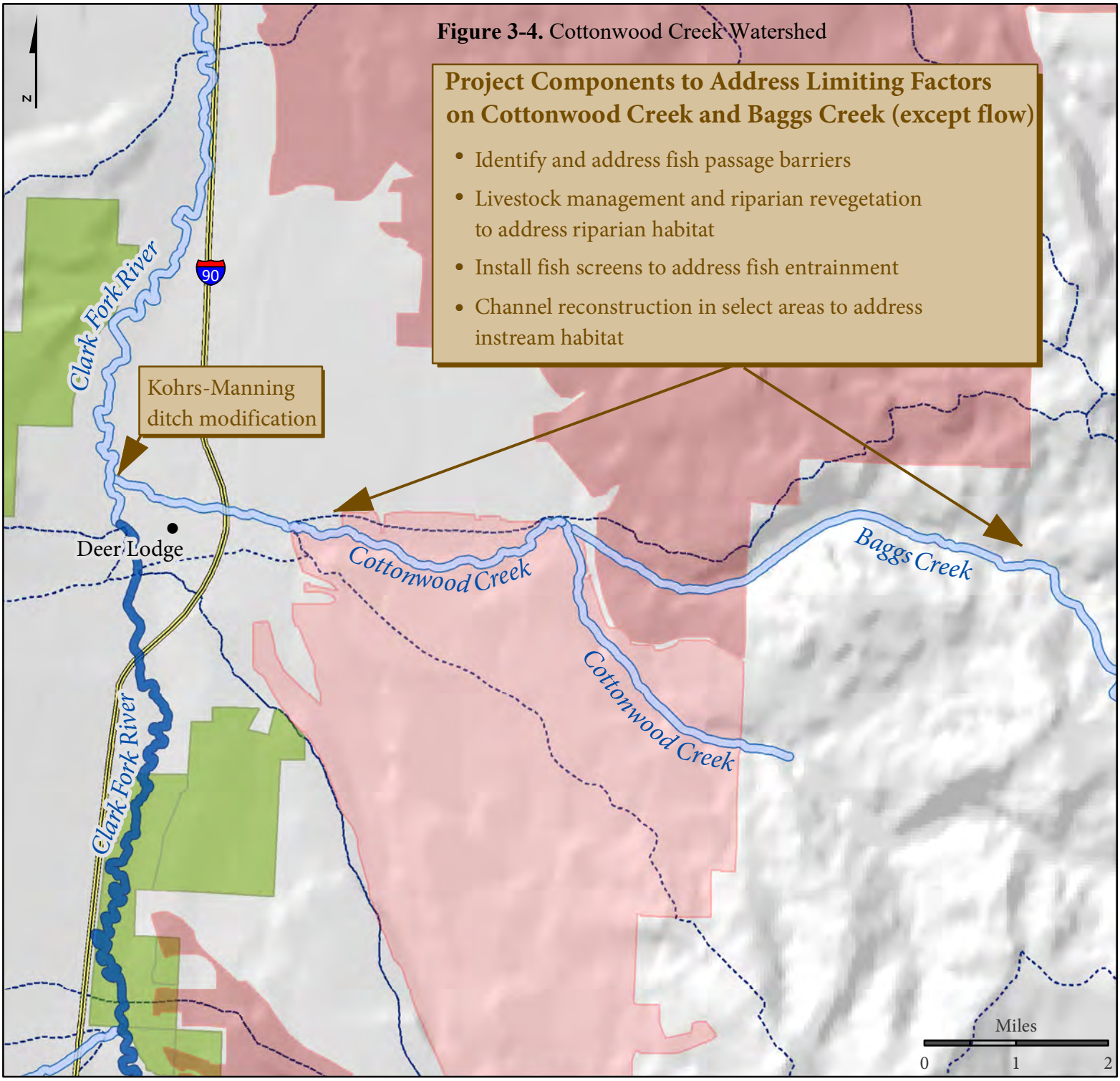
Table 3-6. Relationship of restoration plan components to limiting factors and encouraged activities for Cottonwood Creek watershed

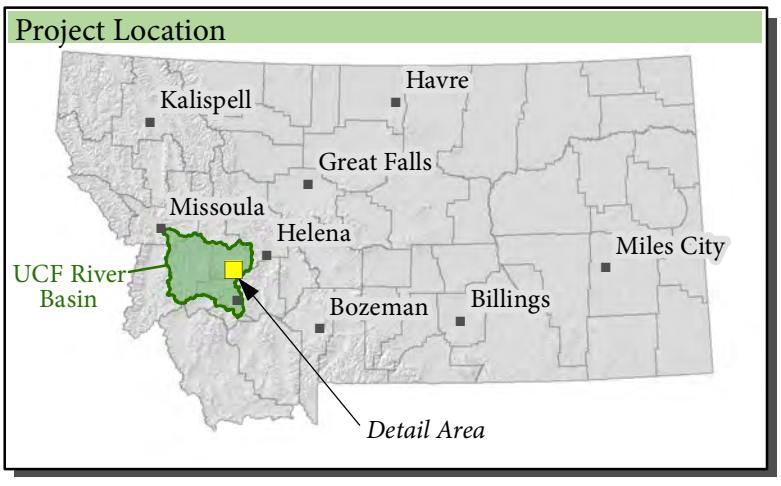
Limiting factor	Encouraged activities to address limiting factors	Objectives	Project components to address limiting factor	Data gaps and feasibility issues	Estimated Cost
Water Quantity	Flow augmentation.	Increase flow by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1.	Further analysis of flows set forth in Section 3.2.1.	N/A
Fish Passage	Fish passage improvement at select irrigation diversions and culverts (e.g., diversion or crossing redesign, fish ladders, step pools, etc.) to allow for fish passage throughout reach.	Implement TBD diversions or culverts replacements or retrofits to improve fish passage.	Implementation of Kohrs-Manning ditch modification and other diversions and culverts to ensure fish passage.	Evaluate all diversions and culverts for fish passage. Completion of designs.	$289,836
Riparian Habitat	Riparian habitat protection/enhancement (e.g., riparian fencing, revegetation); mostly on private lands above Interstate 90 and Forest Service allotment on Baggs Creek and within the Deer Lodge urban area.	Identify locations for TBD riparian protection/enhancement projects.	Habitat management (Fencing, grazing management, off-stream water development) followed by active revegetation where needed after evaluating effects of passive management.	Evaluation of specific types and locations of riparian protection and enhancement. Completion of designs.	$70,000

Limiting factor	Encouraged activities to address limiting factors	Objectives	Project components to address limiting factor	Data gaps and feasibility issues	Estimated Cost
Fish Entrainment	Ditch fish screening to reduce fish entrainment into irrigation ditches.	Implement TBD fish screen projects in Cottonwood and Baggs creeks.	Evaluation and installation of fish screens on diversions where necessary, coincident with fish passage improvement projects.	Evaluation of diversions with potential for fish entrainment. Completion of designs.	$1,130,000
Instream Habitat	Channel reconstruction in select areas where projects would benefit stream function, upstream of Interstate 90 and within the Deer Lodge urban area.	Identify and implement channel reconstruction on TBD feet of Cottonwood Creek within upstream of Deer Lodge.	Stream reconstruction.	Evaluate whether stream reconstruction is warranted. Complete channel and floodplain design.	$133,800
Data gaps and feasibility questions	Develop overall project work plan.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$63,000
				Total	**1,686,636**

TBD: To Be Determined as part of the project work plan development.

Figure 3-4. Cottonwood Creek Watershed





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary

3.2.2.6 Dempsey Creek Watershed

Dempsey Creek, re-evaluated in 2018 as part of the 2018 Prioritization of Areas in the Upper Clark Fork River Basin for Fisheries Enhancement, is now a Priority 3 tributary to the Clark Fork River and no longer eligible for funding. Dempsey Creek drains approximately twenty-eight square miles west of Interstate 90. The channel flows for approximately seventeen miles before entering the Clark Fork River between Racetrack and Deer Lodge. A mixed trout population resides in Dempsey Creek including a 100% genetically pure westslope cutthroat trout population.[17] The *2012 Process Plan* lists the following encouraged restoration activities (listed in order of priority) for Dempsey Creek that, when implemented, will improve the fishery of Dempsey Creek as well as the mainstem of the Clark Fork River. Because of Dempsey Creek being changed to a Priority 3 tributary prior allocation of funds to Dempsey Creek will be re-allocated to higher priority tributaries.

Costs

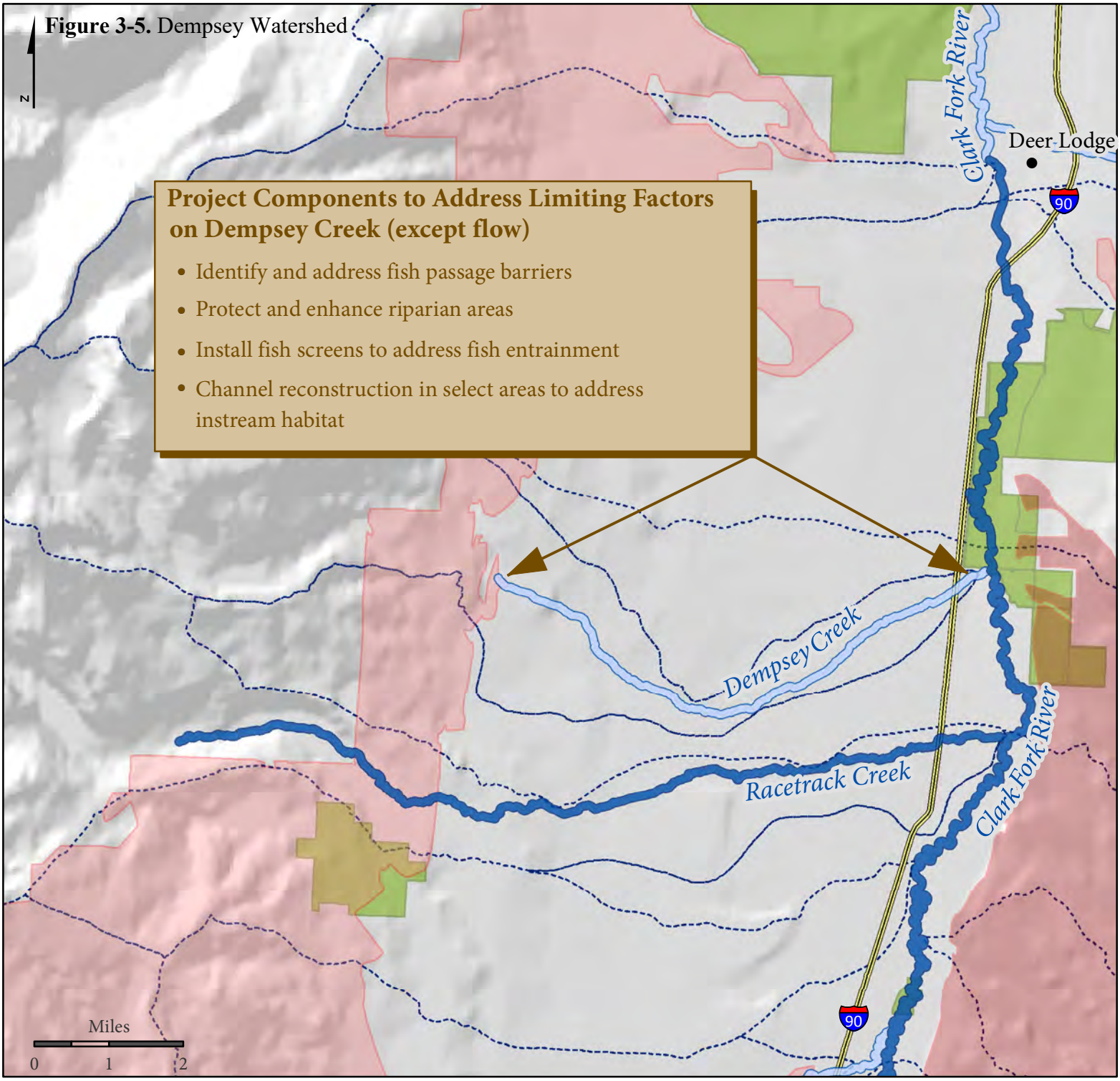
A total cost of $0 is preliminarily estimated to implement the proposed actions in the Dempsey Creek watershed based on re-prioritization to a Priority 3 stream.

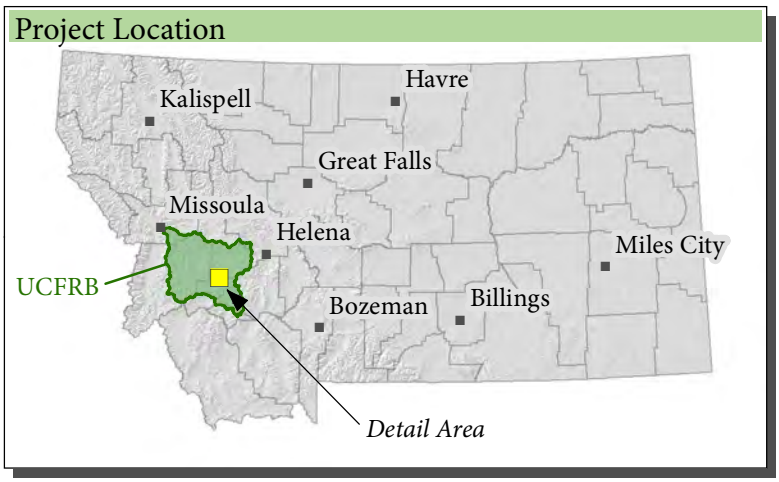
Implementation Schedule

- NA – now a Priority 3 stream

[17] WRC-TU 2012 Upper Clark Fork Diversion Inventory.

Figure 3-5. Dempsey Watershed





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary

3.2.2.7 Flint Creek Watershed

Flint Creek is a Priority 2 tributary to the Clark Fork River that drains south of Interstate 90 for approximately thirty-five miles from Georgetown Lake before reaching the Clark Fork River near Drummond. Boulder Creek is a Priority 2 tributary to Flint Creek. Flint Creek and Boulder Creek are designated as Critical Habitat for bull trout and Flint Creek is a migration corridor for fluvial bull trout from the Clark Fork River. The *2012 Process Plan* lists the following encouraged restoration activities (listed in order of priority) for Upper and Lower Flint Creek and Boulder Creek that, when implemented, will improve the fishery of these tributaries as well as the mainstem of the Clark Fork River.

In 2018, the Restorations Plans re-prioritized the proposed restoration actions based on new data and information gathered and analyzed since 2012. The new order of priority for encouraged restoration actions reflects a better understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The revised order of the proposed restoration actions follows.

Flint Creek – Lower

1. Water Quantity: Flow augmentation downstream of Allendale Diversion (e.g., water right purchases, water leases, irrigation efficiency improvements); with greater preference given to projects that allow flow protection to the mouth.

2. Fish Entrainment: Reduction in fish entrainment at irrigation diversions via ditch screening; throughout reach.

3. Fish Passage: Fish passage improvement particularly at irrigation diversions with passage issues (e.g., diversion design or retrofit to allow for fish passage); throughout reach.

4. Riparian Habitat: Riparian habitat improvement including riparian fencing/protection, woody shrub and tree plantings, off-site watering; throughout reach.

Flint Creek – Upper

1. Fish Passage: Fish passage improvement particularly at irrigation diversions with passage issues (e.g., diversion design or retrofit to allow for fish passage); throughout reach – particularly important below the mouth of Boulder Creek.

2. Fish Entrainment: Reduction in fish entrainment at irrigation diversions via ditch screening; throughout reach – particularly important below the mouth of Boulder Creek.

3. Riparian Habitat: Riparian habitat improvement including riparian fencing/protection, woody shrub and tree plantings, off-site watering; throughout reach.

Boulder Creek

1. Fish Entrainment: Reduction in fish entrainment at irrigation diversions via ditch screening; between the mouth of Boulder Creek and Maxville.

2. Riparian Habitat: Riparian habitat improvement including riparian fencing/protection and woody shrub and tree planting; downstream of Princeton (only a portion of this reach is impacted by riparian grazing).

3. Land Conservation: Acquisition of or placement of conservation easements on private in-holdings adjacent to Boulder Creek.

Proposed Restoration Actions

Actions specific to Flint Creek and Boulder Creek are set forth below, summarized in Table 3-7, and shown in Figure 3-6.

1. Water Quantity: Flow needs for Flint Creek and Boulder Creek, specifically, the lower reaches of Flint Creek below the Allendale diversion will be addressed through the Flow Augmentation process in Section 3.2.1).

2. Fish Entrainment: More than 40 irrigation diversions are located Flint Creek and Boulder Creek. Preliminary evaluation of all diversions was completed in 2013. Further evaluation, including numerical modelling of fish entrainment risk, is ongoing, but the area of highest priority for fish entrainment reduction is in Boulder Creek and Lower Flint Creek. Where appropriate, fish screens for diversions will be designed and implemented based on entrainment risk and net benefit to fish populations.

3. Fish Passage Improvement: As many as 10 irrigation diversions and 6 culverts potentially impair fish passage along Flint Creek and Boulder Creek. Priority sites for fish passage improvement have been identified, and project development is ongoing.

4. Riparian Habitat Protection and Enhancement Implementation: Riparian and instream habitat assessments were completed in 2014. These assessments guide specific actions and location of the following: installing riparian fencing, developing off-stream water sources, and developing grazing management strategies in cooperation with landowners and managers to reduce livestock impacts to the riparian and aquatic habitat.

These actions in Flint Creek and Boulder Creek, when implemented as a watershed project and after complete evaluation of the drainage area, will have high net benefits in terms of accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and will be technically feasible to implement.

These actions were based on activities identified in the *2012 Process Plan*, taking into consideration the restoration concept proposals submitted through the public scoping process. The concept proposals submitted by the public for the Flint Creek and Boulder Creek are set forth in 2012 abstracts #8, 51, 56 and 2018 abstract 85, 90, and 91. The proposed actions for this watershed generally cover all the concepts in the abstracts. These concepts adequately focus on factors within the Flint Creek watershed that limit restoration of the Clark Fork River, without the need for reliance on additional State generated alternatives. A proposed study of mercury contamination in the Flint Creek drainage, abstract #67, is addressed in the terrestrial resources restoration plan (Section 4.2.5).

The State does not propose concept proposals as proposed in abstracts #51, 53 or 68. Abstract #51 and 53 involving a proposed conservation easement on Barnes Creek and Lower Willow Creek have aquatic resource components, but these components are not for a Priority 1 or 2 stream area. The proposed weir and culvert replacements and streambank stabilization on Flint Creek below the powerhouse that are suggested in abstract #68 are unlikely to contribute significant to restoration goals and involves some activities considered to be normal government function.

Costs

The costs to implement the Flint Creek actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of approximately $5 million (increased by $2.5 million in 2018) is preliminarily estimated to implement the proposed actions in the Flint Creek watershed.

Implementation Schedule

2018:

- Monitor effectiveness of riparian and stream restoration in Boulder Creek.
- Obtain environmental permits for the Allendale Diversion and Fish Screen.
- Continue project development in Lower Flint Creek.

2019:

- Construct the Allendale Diversion project.

- Implement additional fish passage and entrainment reduction projects
- Evaluate remaining budget for Flint Creek.
- Prioritize and prepare projects for implementation in 2020 and 2021.

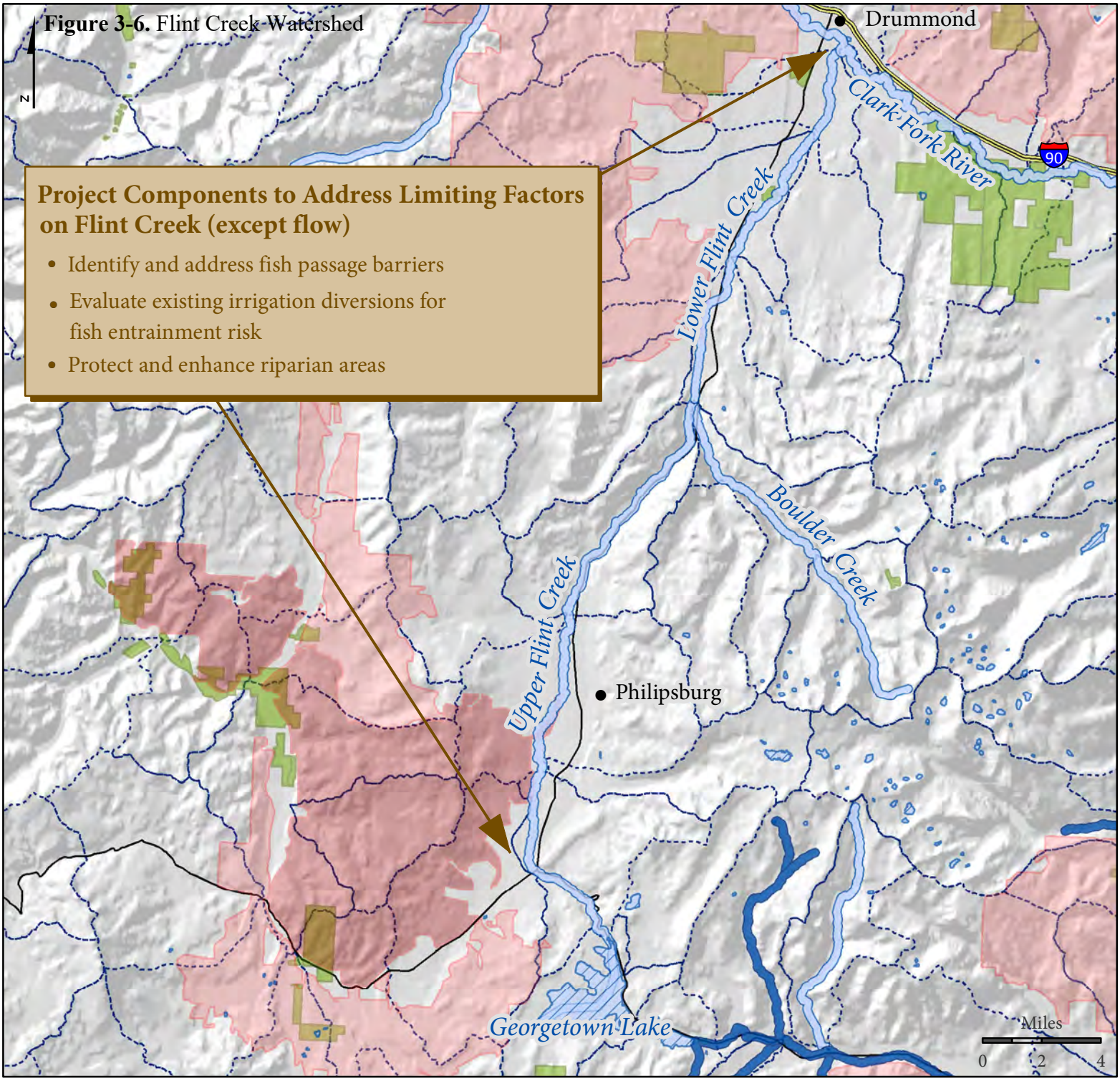
Table 3-7. Relationship of restoration plan components to limiting factors and encouraged activities for the Flint Creek watershed.

Limiting factor	Encouraged activities to address limiting factors	Objectives	Project components to address limiting factor	Data gaps and feasibility issues	Estimated Cost
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1.	Further analyses of flow as set forth in Section 3.2.1.	N/A
Fish Entrainment	Ditch fish screening to reduce fish entrainment into irrigation ditches.	Implement fish screen projects.	Evaluation and installation of fish screen on irrigation diversions where necessary.	Evaluation of diversions for fish entrainment. Completion of design.	$2,500,000
Fish Passage	Fish passage improvement at select irrigation diversions and culverts (e.g., diversion or crossing redesign or retrofit to allow for fish passage); throughout watershed.	Implement diversion replacements or retrofits and culverts for fish passage.	Replace or retrofit existing irrigation diversion structures and culverts to ensure fish passage barriers.	Evaluate existing irrigation diversions and culverts for fish passage. Completion of design.	$1,675,000
Riparian Habitat	Riparian habitat improvement (e.g., riparian fencing/protection, woody shrub and tree plantings).	Identify locations for riparian protection and/or enhancement projects.	Habitat management (Fencing, grazing management, off-stream water development) followed by active revegetation where needed after evaluating effects of passive management.	Evaluation of specific types and locations of riparian protection and enhancement. Completion of designs.	$760,750

Limiting factor	Encouraged activities to address limiting factors	Objectives	Project components to address limiting factor	Data gaps and feasibility issues	Estimated Cost
Data gaps and feasibility questions	Develop overall project work plans.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$100,000
				Total	$5,035,750

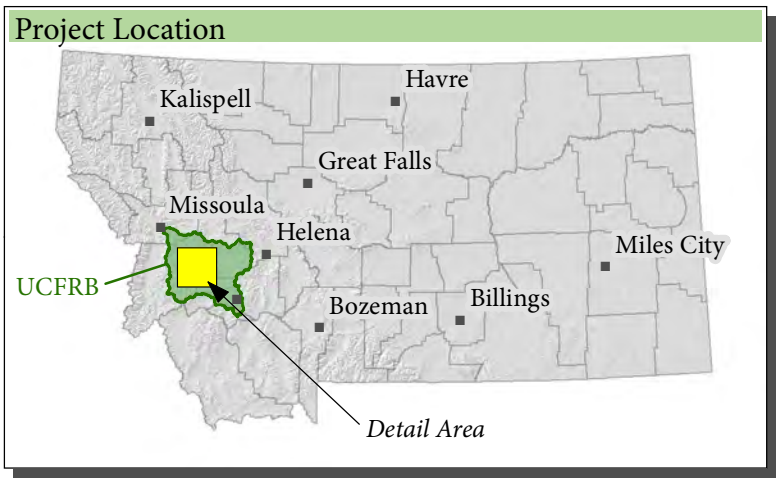
TBD: To Be Determined as part of the project work plan development.

Figure 3-6. Flint Creek Watershed



Project Components to Address Limiting Factors on Flint Creek (except flow)

- Identify and address fish passage barriers
- Evaluate existing irrigation diversions for fish entrainment risk
- Protect and enhance riparian areas



NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary
- Lake / Pond

3.2.2.8 German Gulch Watershed

German Gulch is a Priority 1 tributary to Silver Bow Creek that is approximately 8.4 miles long with a 41 square mile drainage area located about 6 miles south of Opportunity. Beefstraight Creek is Priority 2 tributary to German Gulch. The German Gulch watershed has westslope cutthroat trout and brook trout. Westslope cutthroat trout from German Gulch have recolonized Silver Bow Creek in recent years and have maintained near 100% genetic purity. The *2012 Process Plan* lists the following encouraged restoration activities (listed in order of priority) for German Gulch and Beefstraight Creek that, when implemented, will improve the fishery of these tributaries as well as the mainstem of Silver Bow Creek.

In 2018, NRDP (with FWP) evaluated the proposed restoration actions based on new data and information gathered and analyzed since 2012. The original prioritization is still valid and has not changed.

German Gulch

1. Riparian Habitat: Riparian habitat protection and improvement (e.g., riparian fencing, woody shrub plantings) within livestock allotment area.

2. Water Quantity: Additional flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements) near mouth.

3. Land Conservation: Acquisition of or placement of conservation easements on the remaining private inholdings along the channel.

Beefstraight Creek

1. Riparian Habitat: Riparian habitat protection and improvement (e.g., riparian fencing) at impacted areas within livestock allotment area.

Proposed Actions

Actions specific to German Gulch and Beefstraight Creek are set forth below, summarized in Table 3-8, and shown in Figure 3-7.

1. Riparian Habitat Protection/Enhancement Improvement: Approximately 7,000 cubic yards of streamside tailings will be removed from lower German Gulch by the Montana Department of Environmental Quality (DEQ) in 2013. Also, further data collection and other information gathering will be performed to determine the specific types and location of the following actions: fencing, grazing management, and off stream water. Revegetation, weed control, and floodplain reconstruction will also be implemented if warranted after completion and assessment of other actions.

The actions along German Gulch will have high net benefits with respect to accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and are technically feasible to implement.

These actions were based on activities identified in the *2012 Process Plan*, taking into consideration the restoration concepts proposed as part of the public scoping process. The concept proposals submitted by the public for the German Gulch watershed are set forth in abstract #64. The proposed actions for this watershed generally cover the concepts in the abstract. These concepts adequately focus on the factors within the German Gulch watershed that limit restoration in the Silver Bow Creek mainstem without a need for reliance on additional State generated alternatives.

No new concept proposals were received in 2018.

Costs

The costs to implement the German Gulch actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of $329,242 (decreased by $100,000 in 2018) is preliminarily estimated to implement the proposed actions in the German Gulch watershed.

Implementation Schedule

2019:

- Identify remaining projects needed to complete priorities.

2020:

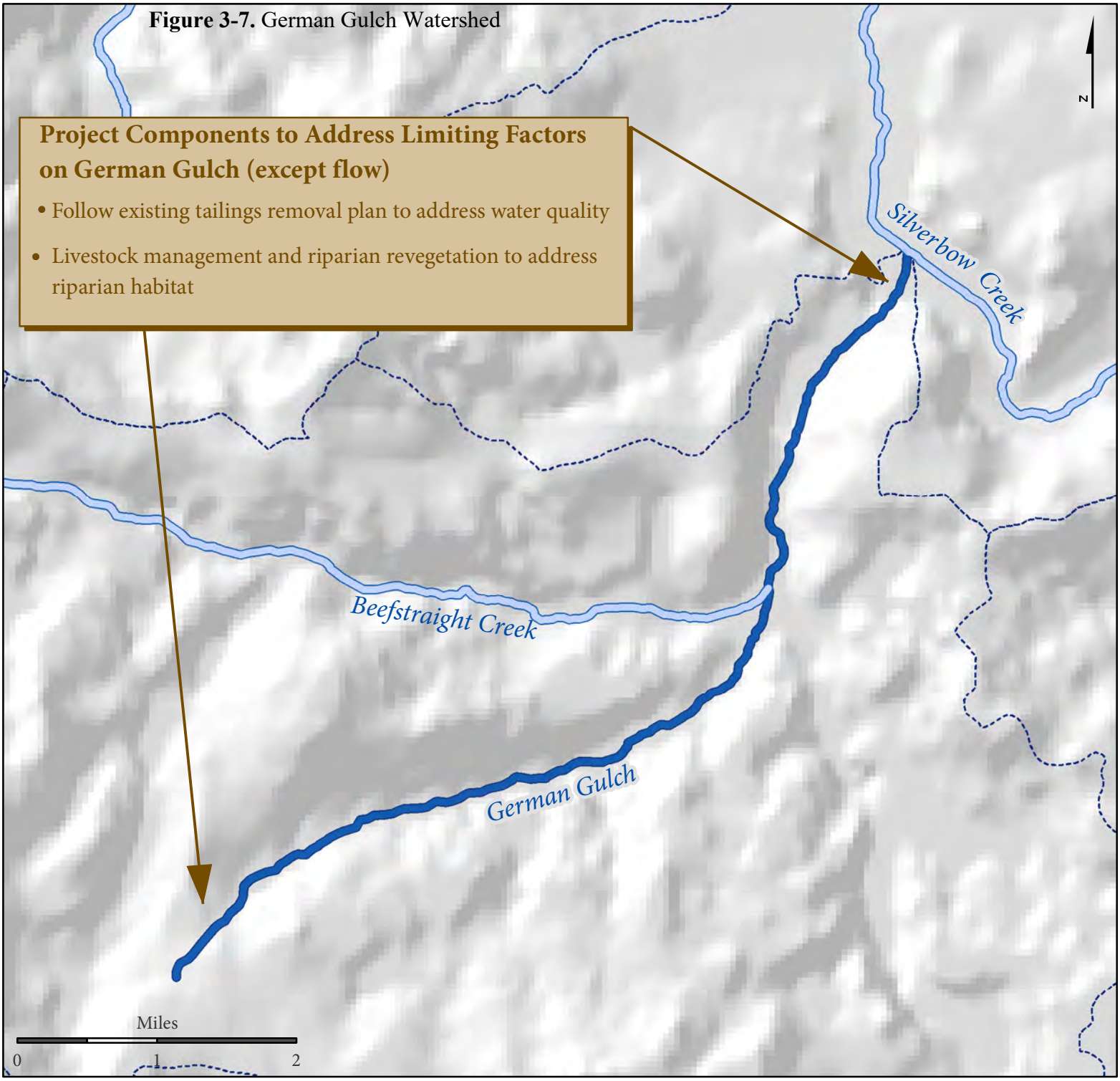
- Implement remaining projects, closeout watershed.

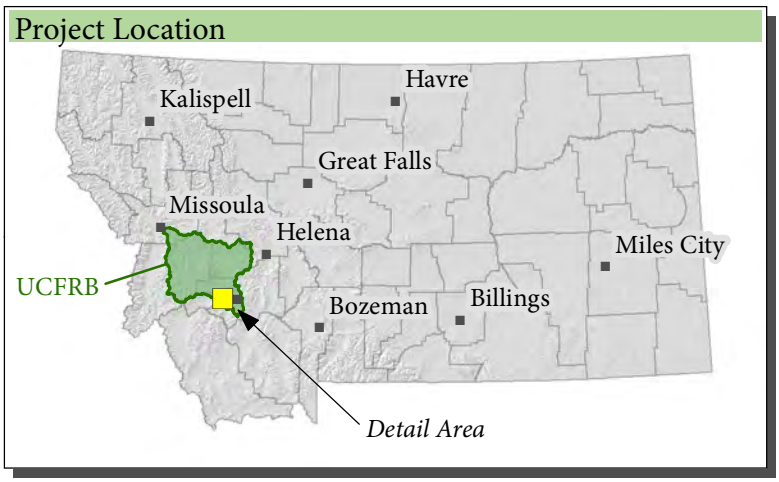
Table 3-8. Relationship of restoration plan components to limiting factors and encouraged activities for German Gulch

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimate Cost
Riparian Habitat	Riparian habitat protection and improvement (e.g., riparian fencing, woody shrub plantings) within livestock allotment area; floodplain reconstruction in select areas impacted by historic mining activities.	Install riparian fencing on up to TBD feet of riparian habitat.	. Habitat management (Fencing, grazing management, off-stream water development) followed by active revegetation where needed after evaluating effects of passive management.	Evaluation of specific types and locations of riparian protection and enhancement. Completion of designs.	$304,242
Data gaps and feasibility questions	Develop project work plan.	Complete project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$25,000
				Total	**$329,242**

TBD: To Be Determined as part of the project work plan development.

Figure 3-7. German Gulch Watershed





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Conservation Easement
- Subwatershed Boundary

3.2.2.9 Harvey Creek Watershed

Harvey Creek is a Priority 2 tributary to the Clark Fork River that drains forty-two square miles south of Interstate 90. The channel flows for approximately eighteen miles from the John Long Mountains before it enters the Clark Fork River twenty miles east of Clinton, Montana. A native bull trout and westslope cutthroat trout population in the stream is isolated and protected by a grade control structure just upstream from the mouth of the creek that forms a permanent, year-round fish passage barrier.[18] The *2012 Process Plan* lists the following encouraged restoration activities (listed in order of priority) for Harvey Creek that, when implemented, will improve the fishery of Harvey Creek as well as the mainstem of the Clark Fork River.

In 2018, NRDP (with FWP) evaluated the proposed restoration actions based on new data and information gathered and analyzed since 2012. The original prioritization is still valid and has not changed.

Harvey Creek

1. Riparian Habitat: Riparian habitat improvement including riparian fencing/protection and woody shrub and tree planting, off-site watering; throughout drainage.

2. Land Conservation: Acquisition of or placement of conservation easements on private in-holdings adjacent to Harvey Creek.

3. Fish Entrainment: Reduction in fish entrainment at irrigation diversions via ditch screening and potentially the development of a siphon at the lowest diversion; primarily below county road.

4. Fish Passage: Fish passage improvement at lowest irrigation diversion (e.g., diversion redesign, retrofit – approximately 50 meters above mouth) and potentially selective passage of bull trout at barrier located just below county road crossing.

5. Water Quantity: Flow augmentation downstream of lowest diversion (approximately 50 meters above mouth) – may be necessary to provide adequate water for up- and downstream fish migration should fish entrainment or upstream passage be improved at this diversion (e.g., water right purchase or water lease).

Proposed Actions

Actions specific to Harvey Creek are set forth below, summarized in Table 3-9, and shown in Figure 3-8.

[18] WRC-TU 2012, Upper Clark Fork Diversion Inventory.

1. Riparian Habitat Protection and Enhancement Implementation: Fencing riparian pastures occurred between 2013 and 2018. Based on current property ownership, no additional fencing is available at this time. Should land ownership change, the potential for additional fencing may become an option. Additional fencing on the east side of Harvey Creek, outside the scope of this restoration plan, was completed in 2012, funded by Future Fisheries and USFWS Partners in Wildlife.

2. Fish Entrainment: A fish screen and siphon will be installed at the main diversion structure located just upstream from the mouth where documented fish entrainment has been documented.[19] Detailed costs and designs have been developed for this fish screen and siphon project. Five other diversions have a potential for fish entrainment.

3. Fish Passage Improvement: Irrigation diversions and a road culvert are known fish passage barriers on Harvey Creek. Elimination of fish passage and entrainment issues at the remaining diversions is ongoing and will be completed by 2019.

4. Water Quantity: Flow needs for Harvey Creek will be addressed through the Flow Augmentation process set forth in Section 3.2.1.

These actions along and near Harvey Creek will have high net benefits in terms of accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and will be technically feasible to implement.

These actions were based on activities identified in the *2012 Process Plan*, taking into consideration the concept proposals submitted through the public scoping process. The concept proposals submitted by the public for Harvey Creek are set forth in 2012 abstract #55 and 2018 abstract 89. The proposed actions for this watershed generally cover the concepts in this abstract. These concepts adequately focus on the factors within Harvey Creek that limit restoration of the Clark Fork River mainstem without a need for reliance on additional State-generated alternatives.

Costs

The costs to implement the Harvey Creek actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

[19] Ibid

A total cost of $586,902 (increased by $300,000 in 2018) is preliminarily estimated to implement the proposed actions in the Harvey Creek.

Implementation Schedule

2018:

- Monitor restoration actions effectiveness.
- Maintain restoration actions as needed.

2019:

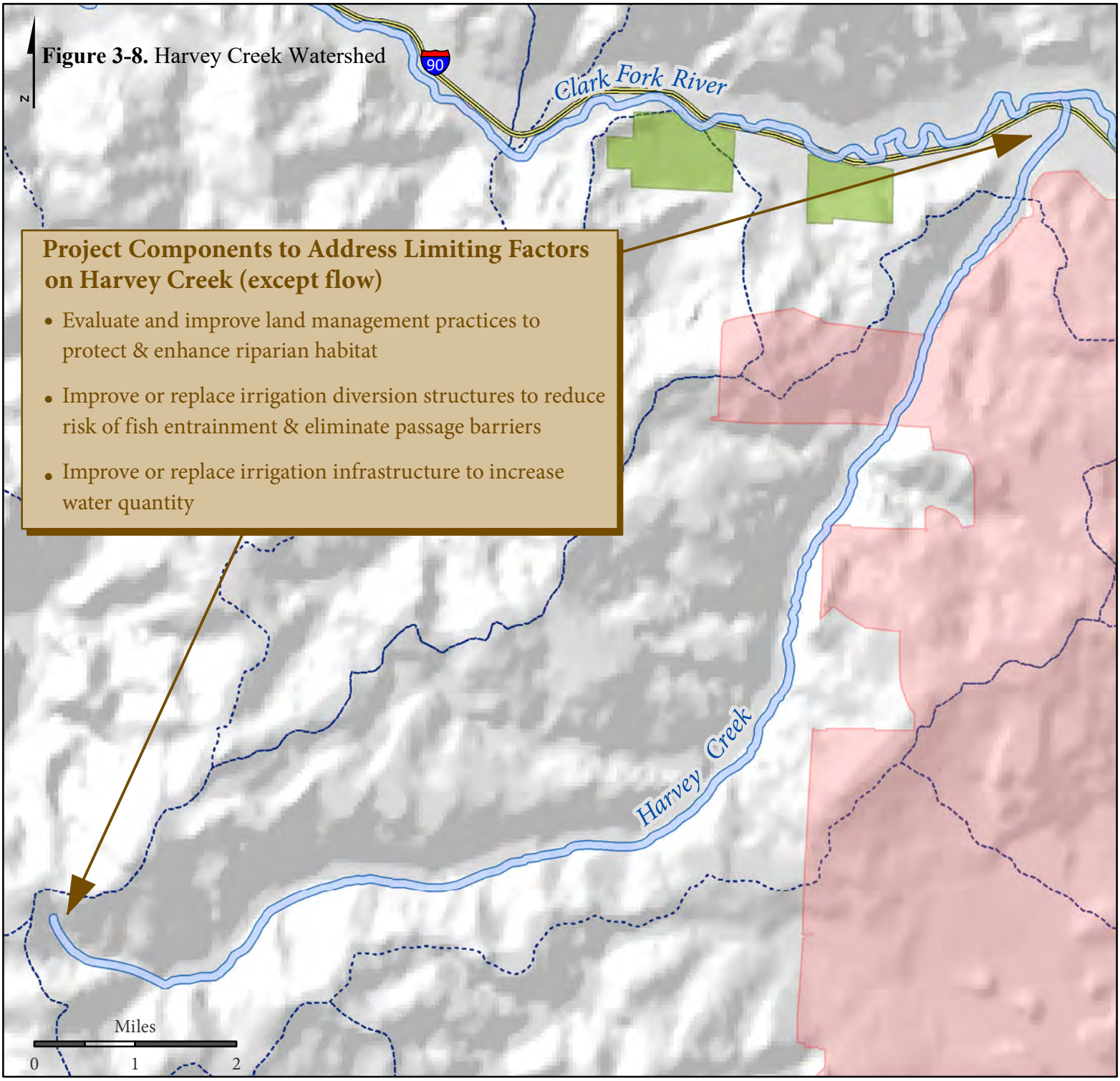
- Monitor restoration actions effectiveness
- Complete irrigation diversion consolidation and remove obsolete diversion structures.
- Eliminate fish entrainment at the diversion located below Mullan Road.

Table 3-9. Relationship of restoration plan components to limiting factors and encouraged activities for Harvey Creek.

Limiting factor	Encouraged activities to address limiting factors	Objectives	Project components to address limiting factor	Data gaps and feasibility issues	Estimated Cost
Riparian Habitat	Riparian habitat improvement including riparian fencing.	Install TBD feet of riparian fencing.	Install riparian fencing on the west side of Harvey Creek.	Evaluate riparian areas near proposed irrigation diversion replacements to refine fence locations.	$20,000
Fish Entrainment	Reduction in fish entrainment at irrigation diversions via ditch screening and siphon installation.	Install 2 fish screens at irrigation diversions and build a siphon at the diversion near the mouth of Harvey Creek.	Install a fish screen and siphon at irrigation diversion near the mouth of Harvey Creek.	Evaluate existing entrainment structures. Completion of design.	$441,902
Fish passage	Fish passage improvement at select irrigation diversion and culvert (e.g., diversion redesign, retrofit).	Implement 2 irrigation diversions replacements or retrofits on Harvey Creek and replace culvert at Mullan Road to protect the upstream fish passage barrier.	Replace existing irrigation and culverts to protect the upstream fish barrier and preserve the native trout population.	Evaluate existing irrigation diversions and culvert for fish passage. Completion of designs.	$100,000
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1.	Further analyses of flows as set forth in Section 3.2.1.	N/A
Data gaps and feasibility questions	Develop overall project work plan.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$25,000
				Total	**$586,902**

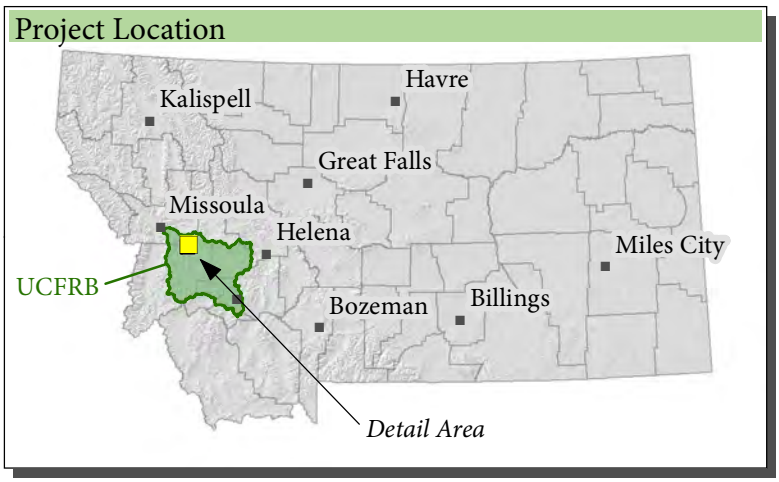
- TBD: To Be Determined as part of the project work plan development.

Figure 3-8. Harvey Creek Watershed



Project Components to Address Limiting Factors on Harvey Creek (except flow)

- Evaluate and improve land management practices to protect & enhance riparian habitat
- Improve or replace irrigation diversion structures to reduce risk of fish entrainment & eliminate passage barriers
- Improve or replace irrigation infrastructure to increase water quantity



NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary

3.2.2.10 Little Blackfoot River Watershed

The Little Blackfoot River is a Priority 1 tributary to the Clark Fork River that drains approximately 413 square miles east of Interstate 90. The channel flows for approximately forty-seven miles before entering the Clark Fork River near Garrison. Dog Creek, Snowshoe, and Spotted Dog Creek are Priority 2 tributaries to the Little Blackfoot River. The *2012 Process Plan* lists the following encouraged activities (listed in order of priority) for these tributaries that, when implemented, will improve the fishery of these tributaries as well as the mainstem of the Clark Fork River.

In 2018, the Restorations Plans re-prioritized the proposed restoration actions based on new data and information gathered and analyzed since 2012. The new order of priority for encouraged restoration actions reflects a better understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The revised order of the proposed restoration actions follows.

Little Blackfoot River – Lower

1. Fish Passage: Fish passage improvement at select irrigation diversions (e.g., diversion redesign or retrofit to allow for fish passage); throughout reach.

2. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; throughout reach.

3. Riparian Habitat: Riparian habitat improvement (e.g., riparian fencing, woody shrub and tree plantings); primarily on private lands downstream of Elliston.

4. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); primarily downstream of Elliston, with greater preference given to projects closer to the mouth or those where flows are protectable to or beyond the mouth.

5. Bank and Channel Stability: Bank stabilization/channel reconstruction in select, localized areas where projects would benefit stream function; primarily on private lands downstream of Elliston.

Dog Creek

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); primarily in lower extent of drainage, with greater preference given to projects where flows are protectable to or beyond the mouth.

2. Fish Passage: Fish passage improvement; if/where found necessary.

3. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; if/where found necessary.

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., riparian fencing, woody shrub and tree plantings); on private lands with reduced quality riparian habitat.

5. Bank and Channel Restoration: Channel or bank reconstruction in select, localized areas where projects would benefit stream function; if/where found necessary.

Snowshoe Creek

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); throughout reach.

2. Fish Passage: Fish passage improvement; if/where found necessary.

3. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; if/where found necessary.

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., riparian fencing, woody shrub and tree plantings); on private lands with reduced quality riparian habitat.

5. Bank and Channel Restoration: Channel reconstruction/bank stabilization in select, localized areas where projects would benefit stream function; throughout reach.

Spotted Dog Creek – Lower

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); throughout reach.

2. Fish Passage: Fish passage improvement; if/where found necessary.

3. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; if/where found necessary.

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., riparian fencing, woody shrub and tree plantings); throughout reach.

5. Bank and Channel Restoration: Channel reconstruction/bank stabilization in select, localized areas where projects would benefit stream function; throughout reach.

Proposed Actions

Actions specific to the Little Blackfoot watershed are set forth below, summarized in Table 3-10, and shown in Figure 3-9.

1. Fish Passage: More than 30 irrigation diversions and road culverts in the Little Blackfoot River, Dog Creek, Snowshoe Creek and Spotted Dog Creek impair fish passage.[20] A watershed evaluation will first be performed to determine the specific locations where fish passage projects will be implemented. Redesign or retrofits of barriers will be completed and implemented where warranted.

2. Fish Entrainment: All irrigation diversions will be evaluated fish entrainment. Screens for diversions will be designed and implemented were warranted.

3. Riparian Habitat Protection/Enhancement Implementation: Riparian habitat protection and enhancement for the Little Blackfoot watershed will focus on the mainstem Little Blackfoot River below Elliston to the confluence with the Clark Fork River; throughout Dog Creek; lower reach of Snowshoe Creek; and the lower 6.6 miles of Spotted Dog Creek. Further data collection and other information gathering will first be performed to determine the specific type and location of the following actions: riparian fencing, off-stream water sources, grazing management strategies, long-term management agreements and/or permanent conservation easements, and roads and railroads erosion occurring along the streams.[21]

4. Water Quantity: Flow needs for Little Blackfoot watershed will be addressed through the Flow Augmentation process set forth in Section 3.2.1.

5. Streambank and Channel Reconstruction: Channel reconstruction will be implemented only after implementation of other actions and subsequent evaluation determines reconstruction is warranted. A study of the lower 32 miles of the Little Blackfoot River found 30,000 feet of eroding streambanks and 5,000 feet of critical sediment sources.[22] Streambank erosion along Dog Creek and Spotted Dog Creek identified active channel bank erosion and poor riparian vegetation health. All reaches will be evaluated the potential for natural recovery or the need for active restoration treatments.

[20] WRC-TU. 2012. Upper Clark Fork diversion inventory. Watershed Restoration Coalition (WRC) and Trout Unlimited. Deer Lodge, MT.

[21] Montana DEQ, 2011, "Little Blackfoot River Watershed TMDLs and Framework Water Quality Improvement Plan," Helena, November.

[22] Land and Water Consulting, 2002,"Little Blackfoot River: Physical Features Inventory and Riparian Assessment," for Deer Lodge Conservation District, Deer Lodge, May.

These actions for the Little Blackfoot River, Dog Creek, Snowshoe Creek and Spotted Dog Creek, when implemented as a watershed project and after complete evaluation of the drainage area, will have high net benefits in terms of accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and will be technically feasible to implement.

These actions were based on activities identified in the *2012 Process Plan*, taking into consideration the concept proposals submitted through the public scoping process. The concept proposals submitted by the public for the Little Blackfoot River watershed are set forth in 2012 abstracts #29, 30, 31, 43, 44,61 and 2018 abstracts 92, 93, 94, and 95. The proposed actions for this watershed generally cover the concepts in the abstracts. These concepts adequately focus on factors within the Little Blackfoot River watershed that limit restoration in the Clark Fork River mainstem, without the need for reliance on additional State generated alternatives. The exception is abstract #G10 for habitat protection and enhancement projects within the Spotted Dog wildlife management unit. 2018 abstract 96 for Trout Creek will be addressed under settlement funding allocated to the Spotted Dog WMA.

Costs

The costs to implement the Little Blackfoot River actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of around $3.75 million (increased by $329,453 in 2018) is preliminary estimated to implement the proposed actions in the Little Blackfoot River watershed.

Implementation Schedule

2018:

- Implement fish passage and fish screens on a side channel of the Little Blackfoot River, Spotted Dog Creek and Snowshoe Creek.
- Complete channel restoration on Spotted Dog Creek.

Post 2018

- Evaluate fish entrainment in Lower Little Blackfoot River.
- Design and implement fish entrainment reduction projects on in the Lower Little Blackfoot River.

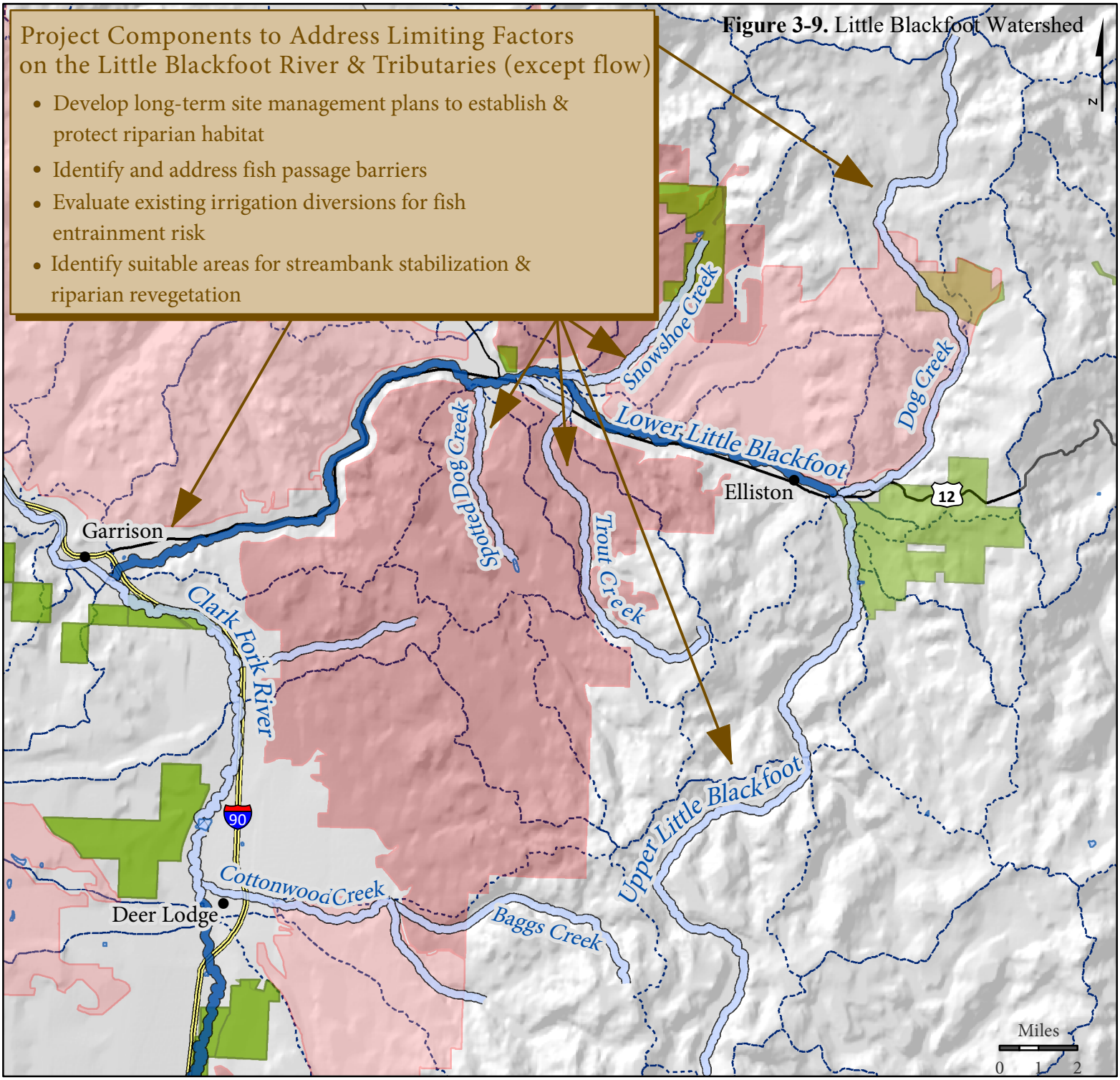
Table 3-10. Relationship of restoration plan components to limiting factors and encouraged activities for the Little Blackfoot watershed.

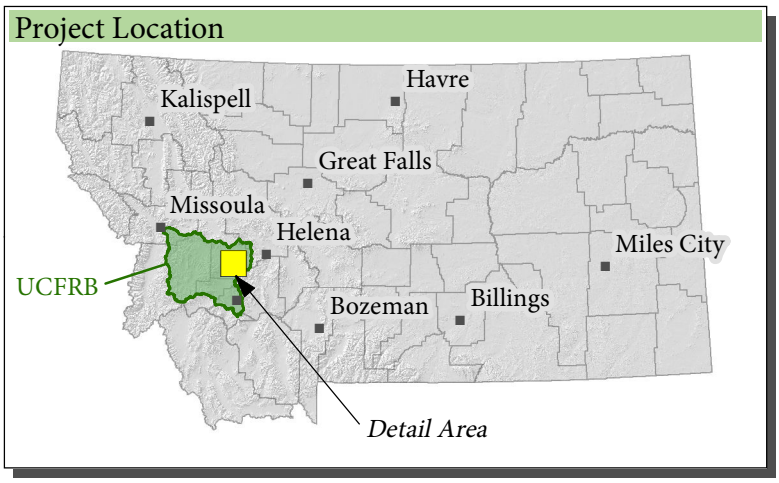
Limiting factor	Encouraged activities to address limiting factors	Objectives	Project components to address limiting factor	Data gaps and feasibility issues	Estimated Cost
Riparian Habitat	Riparian habitat protection/enhancement implementation (e.g., riparian fencing, off-stream water systems, woody shrub and tree plantings, and streambank stabilization); long-term management plans and/or permanent conservation easements.	Identify TBD riparian protection/ enhancement projects.	Habitat management (Fencing, grazing management, and off-stream water systems), establish long-term site management plans and/or conservation easements.	Evaluate riparian areas throughout watershed for specific types and locations of riparian protection/enhancement. Completion of designs.	$1,440,000
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1.	Further analyses of flows as set forth in Section 3.2.1.	N/A
Fish Passage	Fish passage improvement at select irrigation diversions (e.g., diversion redesign or retrofit to allow for fish passage).	Implement TBD diversion or culvert replacements or retrofits in the LBR watershed.	Implementation of diversion and culvert structures for fish passage.	Evaluate existing diversions, culverts for fish passage. Completion of design.	$350,000
Fish Entrainment	Ditch screening to reduce fish entrainment into irrigation ditches.	Implement TBD fish screen projects in the LBR watershed.	Implementation of fish screens on irrigation diversion structures where necessary.	Evaluation of diversion with potential for fish entrainment. Completion of design.	$1,116,482

Limiting factor	Encouraged activities to address limiting factors	Objectives	Project components to address limiting factor	Data gaps and feasibility issues	Estimated Cost
Streambank and Channel Reconstruction	Channel reconstruction in select, localized areas where projects would benefit stream function.	Restore TBD linear feet of streambank and TBD linear feet of channel.	Stream reconstruction.	Evaluations whether stream reconstruction is warranted. Completion of design.	$750,000
Data Gaps and Feasibility Questions	Develop overall project work plan.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$100,000
				Total	$3,756,482

TBD: To Be Determined as part of the project work plan development.

Figure 3-9. Little Blackfoot Watershed





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary
- Lake / Pond

3.2.2.11 Lost Creek Watershed

Lost Creek is a Priority 2 tributary to the Clark Fork River that drains approximately sixty square miles west of Interstate 90. The channel flows for approximately twenty-three miles before reaching the Clark Fork River near Warm Springs. A mixed trout population and brown trout reside in the middle and lower reaches of Lost Creek, respectively. Brook trout and westslope cutthroat trout comprise the trout population in the upper reaches of Lost Creek above a natural waterfall that likely acts as a fish passage barrier.[23] The *2012 Process Plan* lists the following encouraged restoration activities (listed in order of priority) for Lost Creek that, when implemented, will improve the fishery of Lost Creek as well as the mainstem of the Clark Fork River.

In 2018, NRDP (with FWP) evaluated the proposed restoration actions based on new data and information gathered and analyzed since 2012. The original prioritization is still valid and has not changed.

Lost Creek – Lower

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); primarily between Dutchman Dike and mouth.

2. Fish Passage: Fish passage improvement; primarily at Dutchman Dike and Gardiner Ditch.

3. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; throughout reach.

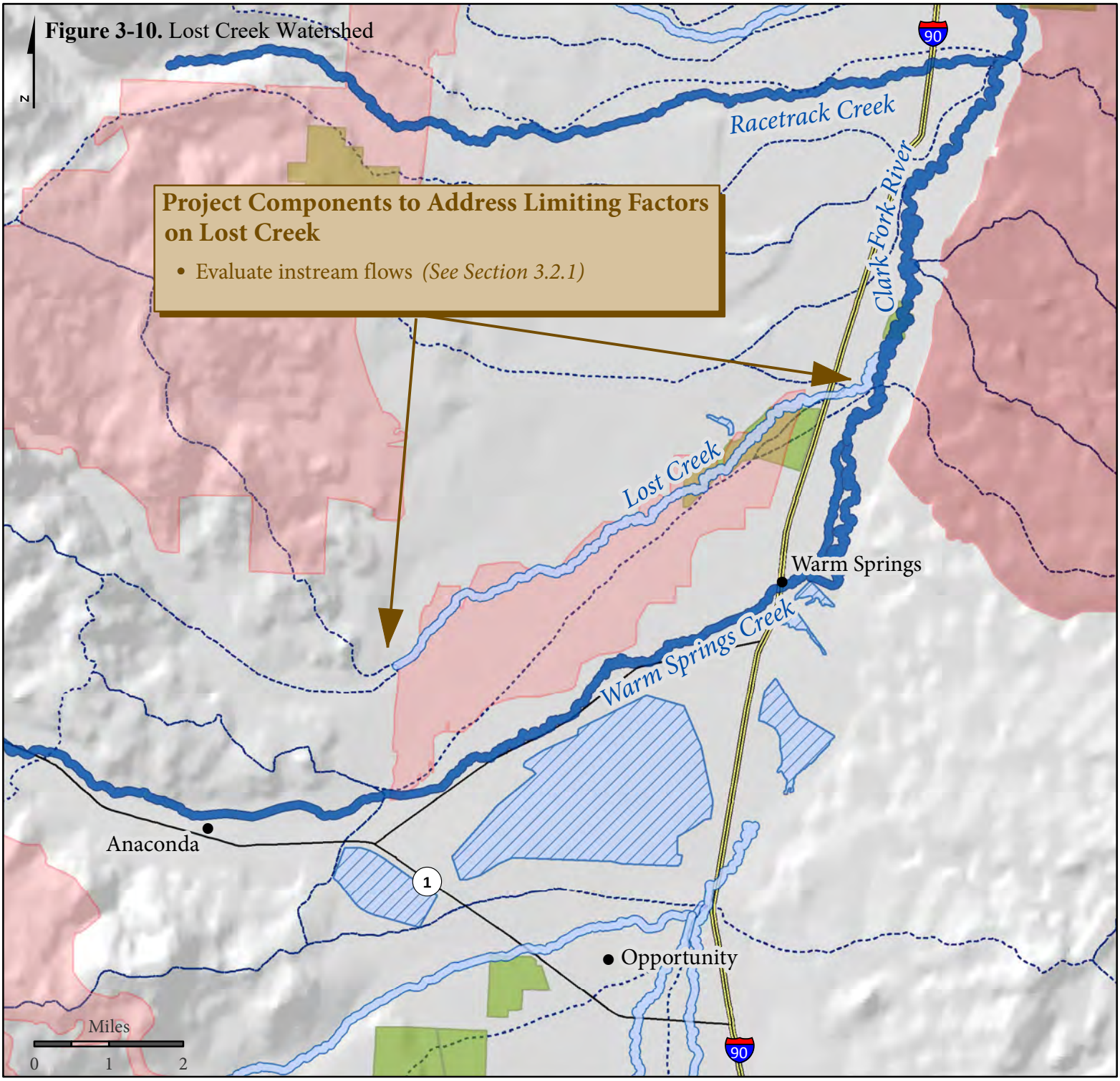
4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., riparian fencing, conservation easements, woody shrub and tree plantings); in locations where protections are not already in place or where additional enhancement would speed riparian recovery.

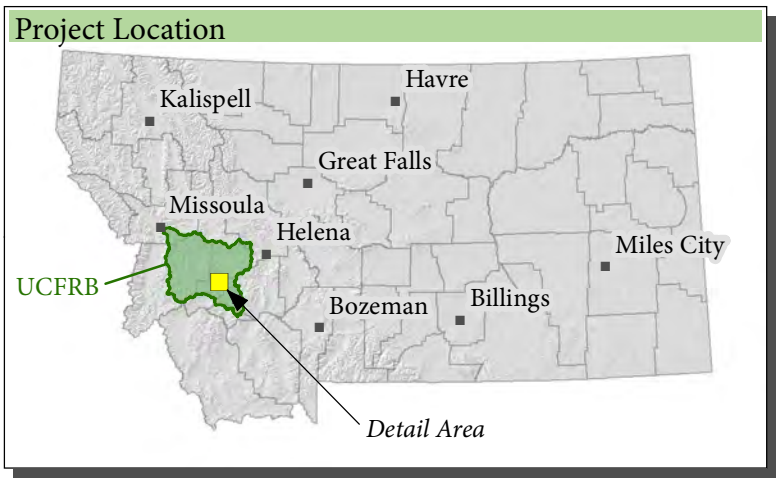
Proposed Actions

Flow augmentation has been identified as a limiting factor for this watershed and flow needs will be considered prior to addressing any other restoration components. Further analyses of flows will be addressed as set forth in Section 3.2.1. The State does not propose actions for Lost Creek due to the limited water quantity issues. No concept proposals were submitted by the public for aquatic actions in the Lost Creek watershed. The Lost Creek watershed is shown on Figure 3-10.

[23] WRC-TU. 2012. Upper Clark Fork diversion inventory. Watershed Restoration Coalition (WRC) and Trout Unlimited. Deer Lodge, MT.

Figure 3-10. Lost Creek Watershed





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary
- Lake / Pond

3.2.2.12 Mill-Willow Watershed

Mill and Willow creeks are Priority 2 headwaters of the Clark Fork River. Mill and Willow creeks are collected into the Mill-Willow Bypass downstream of the town of Opportunity and routed around the Warm Springs Ponds. The twenty miles of Mill creek drain approximately forty-nine square miles of contributing watershed. Willow creek is shorter at thirteen miles from its headwaters to the Mill-Willow Bypass, and its watershed is correspondingly smaller at twenty-nine square miles. Both streams are considered chronically dewatered by Montana FWP.[24] Westslope cutthroat trout are present in both streams, and the westslope cutthroat trout populations in the upper reaches of Mill Creek have 100% genetic purity. The *2012 Process Plan* lists the following encouraged restoration activities (listed in order of priority) for Mill and Willow creeks that, when implemented, will improve the fisheries of these tributaries, as well as the mainstems of Silver Bow Creek and the Clark Fork River.

In 2018, the Restorations Plans re-prioritized the proposed restoration actions based on new data and information gathered and analyzed since 2012. The new order of priority for encouraged restoration actions reflects a better understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The revised order of the proposed restoration actions follows.

Mill Creek – Lower

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); primarily in lower extent of drainage, with greater preference given to projects where flows are protectable to mouth.

2. Fish Passage: Fish passage improvement; if/where found necessary.

3. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; if/where found necessary.

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., riparian fencing, conservation easements, woody shrub and tree plantings); on private lands.

Willow Creek

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); primarily in lower extent of drainage below Wildlife Management Area, with greater preference given to projects where flows are protectable to mouth.

[24] MFISH 2003.

2. Fish Passage: Fish passage improvement; if/where found necessary.

3. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; if/where found necessary.

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., riparian fencing, woody shrub and tree plantings); on private lands below Wildlife Management Area.

5. Instream Habitat: Channel reconstruction/bank stabilization in select, localized areas where projects would benefit stream function; on private lands below Wildlife Management Area.

Proposed Actions

Actions specific to Mill Creek and Willow Creek are set forth below, summarized in Table 3-11, and shown in Figure 3-11.

1. Water Quantity: Flow augmentation has been identified as a limiting factor for this watershed and flow needs will be considered prior to or in coordination with addressing any other restoration components. Further analyses of flows is addressed as set forth in Section 3.2.1.

2. Fish Entrainment: Ten diversions in Mill and Willow creeks have potential to entrain fish. The design and installation of fish screens will be implemented on three diversion structures on Mill Creek and two diversions on Willow Creek. Further evaluation of other structures will be performed, and fish screens designed and installed if warranted.

3. Riparian Habitat Protection/Enhancement Implementation: Further data collection and other information gathering will first be performed to determine the specific types and location of the following actions: fencing, off-stream stockwater development, and other grazing management improvements.

4. Instream Habitat: Channel reconstruction will be implemented only after implementation of other actions and subsequent evaluation determines reconstruction is warranted on Willow Creek.

The actions along Mill and Willow creeks will have high net benefits with respect to accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and are technically feasible to implement.

These actions were based on encouraged activities identified in the *2012 Process Plan*, taking into consideration the restoration concept proposals as part of the public scoping process. The concept proposals submitted by the public for the Mill-Willow watershed are set forth in abstracts #32, 66 and 69. The State's actions, after or in coordination with addressing flow limitations, generally

cover the concepts in the abstracts. These concepts adequately focus on factors within Mill and Willow creeks that limit restoration of the Clark Fork River and Silver Bow Creek mainstems, without a need for reliance on additional State generated alternatives.

No new concept proposals were received in 2018.

Costs

The costs to implement the Mill and Willow Creek actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of $662,730 is preliminarily estimated to implement the proposed actions in the Mill and Willow Creek watershed.

Implementation Schedule

2019:

- Identify and evaluate potential projects

2020 and beyond:

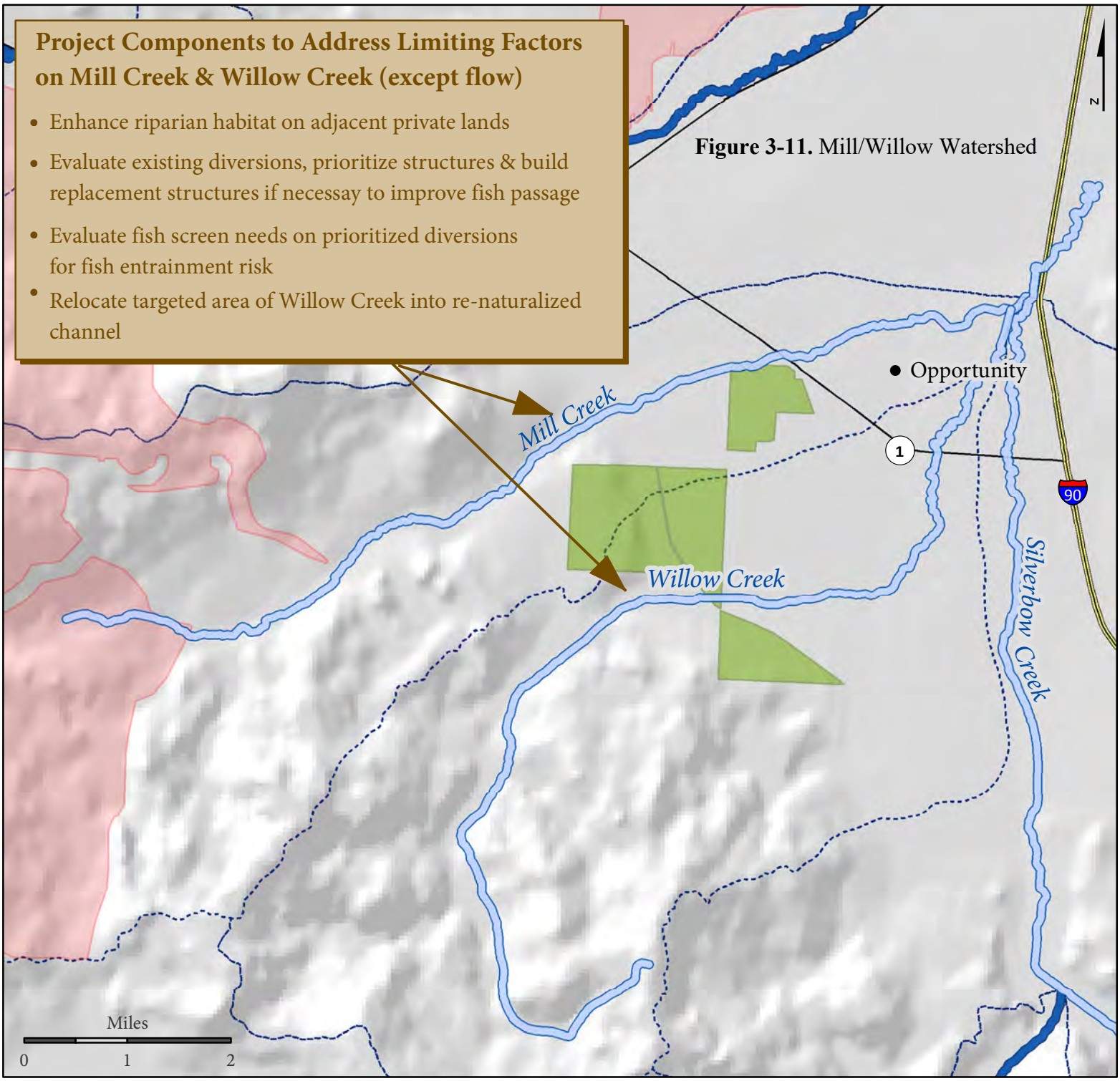
- Design and implement identified projects

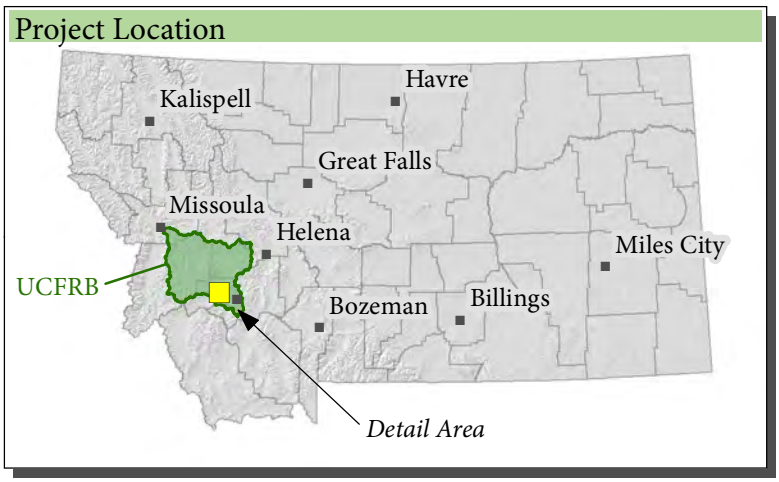
Table 3-11. Relationship of restoration plan components to limiting factors and encouraged activities for Mill and Willow Creeks

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1.	Further analysis of flows as set forth in Section 3.2.1.	N/A
Riparian Habitat	Riparian habitat protection and improvement (e.g., riparian fencing, woody shrub plantings) on Mill and Willow creeks.	Install TBD feet of riparian fencing, revegetate TBD miles of floodplain, and develop land management plan.	Implement riparian habitat enhance though off-stream stockwater development, grazing management, fencing, etc.	Evaluation of specific types and location of riparian protection/enhancement. Completion of design.	$245,000
Fish Entrainment	Ditch screening to reduce fish entrainment into irrigation ditches.	Install five fish screens on Mill and Willow creeks. Confirm that five other diversions are not fish entrainment issues.	Implement fish screen implementation. Evaluate fish screen needs on other diversions.	Evaluation of diversions with potential for fish entrainment. Completion of design.	$255,000
Instream Habitat	Stream channel reconstruction/bank stabilization where project benefit stream function.	Identify locations for TBD instream habitat enhancement projects.	Relocate TFB feet of Willow creek into renaturalized channel.	Evaluate stream bank stabilization needs.	$132,730

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Data Gaps and Feasibility Questions	Develop overall work plans.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each component.	$30,000
				Total	**$662,730**

TBD: To Be Determined as part of the project work plan development.





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary

3.2.2.13 Racetrack Creek Watershed

Racetrack Creek Watershed

Racetrack Creek is a Priority 1 tributary to the Clark Fork River, approximately twenty-three miles long that flows into the Clark Fork River from the west near Galen, Montana. A mixed trout population is present in Racetrack Creek that includes hybridization of rainbow and westslope cutthroat trout.[25] The *2012 Process Plan* lists the following encouraged restoration activities (listed in order of priority) for Racetrack Creek that, when implemented, will improve the fishery of Racetrack Creek as well as the mainstem of the Clark Fork River.

In 2018, the Restorations Plans re-prioritized the proposed restoration actions based on new data and information gathered and analyzed since 2012. The new order of priority for encouraged restoration actions reflects a better understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The revised order of the proposed restoration actions follows.

Racetrack Creek – Lower

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); from Cement Ditch to mouth, with greater preference given to projects where flows are protectable to mouth.

2. Fish Passage: Fish passage improvement at select irrigation diversions (e.g., diversion redesign or retrofit to allow for fish passage); throughout reach.

3. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; throughout reach.

4. Riparian Habitat: Riparian habitat improvement/protection (e.g., riparian fencing, woody shrub plantings); throughout reach.

5. Bank and Channel Restoration: Bank stabilization/channel reconstruction in select, localized areas where projects would benefit stream function, throughout reach.

Proposed Actions

Actions specific to Racetrack Creek are set forth below, summarized in Table 3-12, and shown in Figure 3-12.

[25] Lindstrom, J., B. Liermann, and R. Kreiner. 2008. *An Assessment of Fish Populations and Riparian Habitat in Tributaries of the Upper Clark Fork Basin*. Montana Fish, Wildlife and Parks.

1. Water Quantity: Flow augmentation has been identified as a limiting factor for this watershed and flow needs will be considered prior to or in coordination with addressing any other restoration components. Further analysis of flow is addressed as set forth in Section 3.2.1.

2. Fish Passage: Five of eleven irrigation diversions on Racetrack Creek impair upstream fish passage. Fish passage evaluation for all diversions will be performed and replacement or retrofits will be designed and implemented if warranted.

3. Fish Entrainment: Only one of the eleven irrigation diversions on Racetrack Creek is screened and fish entrainment is documented at six of the other diversions. Data collection and other information gathering will be performed to complete designs and implementation of known entrainment diversions. Further data collection will be performed for the remaining diversions and designs and implementation of screens completed if warranted.

4. Riparian Habitat Protection and Enhancement Implementation: Further data collection and other information gathering will first be performed to determine the specific types and location of the following actions: fencing, off-stream stock water development, and other grazing management improvements.

5. Streambank and Channel Reconstruction: Channel reconstruction will be implemented only after implementation of other actions and subsequent evaluation determines reconstruction is warranted.

These actions along Racetrack Creek will have high net benefits in terms of accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and will be technically feasible to implement.

These actions were based on activities identified in the *2012 Process Plan*, taking into consideration the restoration concepts submitted through the public scoping process. The concept proposals submitted by the public for the Racetrack Creek watershed are set forth in abstracts #33 and 34. These concepts adequately focus on the factors within Racetrack Creek that limit restoration in the Clark Fork River mainstem, without a need for reliance on additional State-generated alternatives.

No new concept proposals were received in 2018.

Costs

The costs to implement the Racetrack Creek actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed

are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of $734,960 is preliminarily estimated to implement the proposed actions in the Racetrack Creek watershed.

Implementation Schedule

- To be determined.

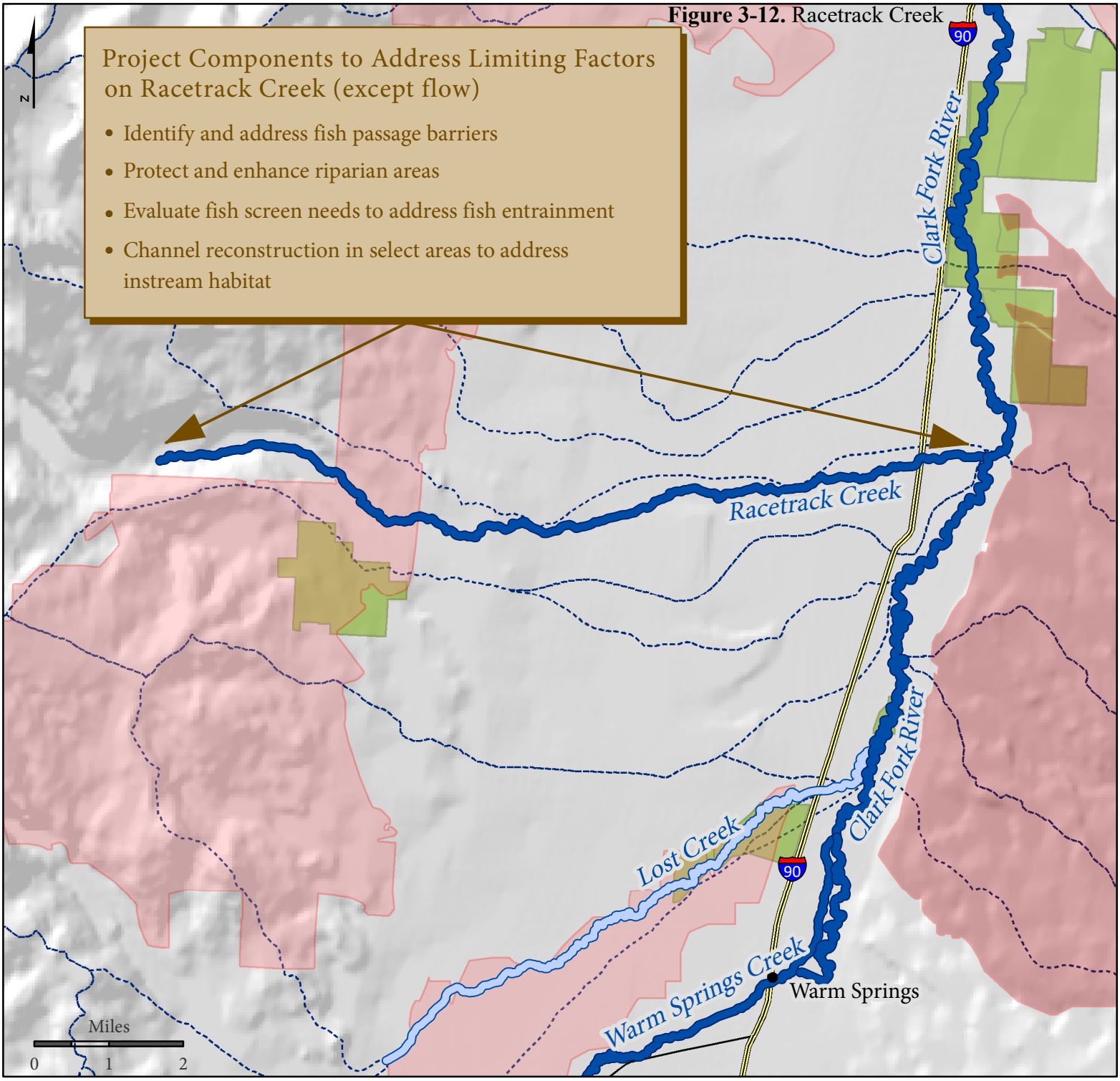
Table 3-12. Relationship of restoration plan components to limiting factors and encouraged activities for Racetrack Creek

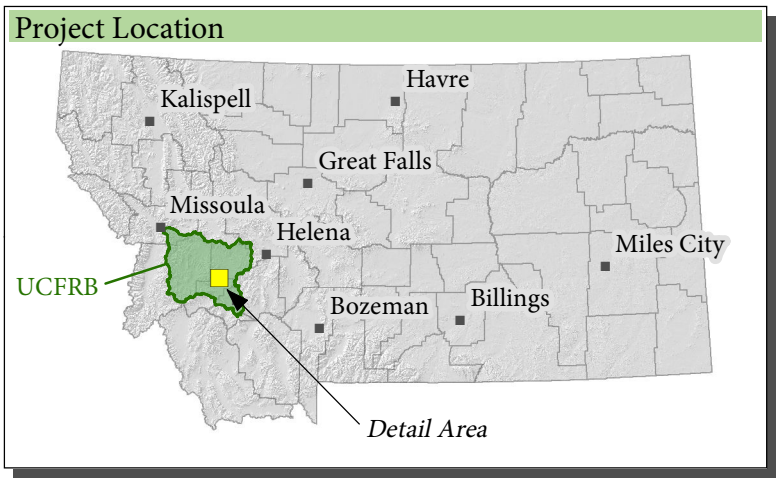
Limiting factor	Encouraged activities to address limiting factors	Objectives	Project components to address limiting factor	Data gaps and feasibility issues	Estimated Cost
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Flow augmentation set forth in Section 3.2.1.	Further analysis of flows set forth in Section 3.2.1.	N/A
Fish Passage	Fish passage improvement at select irrigation diversions (e.g., diversion redesign or retrofit to allow for fish passage).	Replace or retrofit TBD irrigation diversions to improve fish passage.	Evaluation and implementation of diversion replacements or retro-fits for fish passage.	Evaluate all diversions and culverts for fish passage. Completion of designs.	$200,000
Riparian Habitat	Riparian habitat improvement/protection (e.g., riparian fencing, woody shrub plantings).	Identify locations for TBD riparian protection/enhancement projects.	Habitat management (fencing, grazing management, off-stream water development), active revegetation where needed if natural recovery is not possible.	Evaluation of specific types and locations of riparian protection and enhancement. Completion of designs.	$50,000
Fish Entrainment	Ditch fish screening to reduce fish entrainment into irrigation ditches.	Install TBD fish screens on irrigation diversions.	Evaluation and installation of fish screens on diversions where necessary.	Evaluation of diversions with potential for fish entrainment. Completion of designs.	$359,960

Limiting factor	Encouraged activities to address limiting factors	Objectives	Project components to address limiting factor	Data gaps and feasibility issues	Estimated Cost
Streambank and Channel Reconstruction	Bank stabilization/channel reconstruction in select, localized areas where projects would benefit stream function.	Restore TBD linear feet of Racetrack Creek channel and streambanks.	Stream reconstruction.	Evaluate whether stream reconstruction is warranted. Complete channel and floodplain design.	$100,000
Data gaps and feasibility questions	Develop overall project work plan.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$25,000
				Total	**$734,960**

TBD: To Be Determined as part of the project work plan development.

Figure 3-12. Racetrack Creek





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary

3.2.2.14 Warm Springs Creek Watershed

Warm Springs Creek is a Priority 1 tributary to the Clark Fork River, draining a 100-square mile basin. Barker Creek, Twin Lakes Creek, Storm Lake Creek, and West Fork of Warm Springs Creek are listed as Priority 1 tributaries and Foster Creek is listed as Priority 2 tributary to Warm Springs Creek. The Warm Springs Creek watershed contains the farthest upstream population of bull trout in the Upper Clark Fork and is designated as Critical Bull Trout Habitat. In addition to bull trout and westslope cutthroat trout, the Warm Springs Creek fishery includes rainbow trout, brown trout, brook trout, and mountain whitefish.[26] The *2012 Process Plan* lists the following encouraged activities (listed in order of priority) for the Priority 1 and 2 tributaries in the Warm Springs Creek drainage that, when implemented, will improve the fishery of these tributaries, as well as the mainstem of Clark the Fork River.

In 2018, the Restorations Plans re-prioritized the proposed restoration actions based on new data and information gathered and analyzed since 2012. The new order of priority for encouraged restoration actions reflects a better understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The revised order of the proposed restoration actions follows.

Warm Springs Creek – Lower

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); throughout drainage, with greater preference given to projects where flows are protectable to or beyond the mouth.

2. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches; Gardiner Diversion is a priority.

3. Fish Passage: Fish passage improvement

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., conservation easements, riparian fencing); on private grazing lands.

5. Instream Habitat: Channel reconstruction in select, localized areas where projects would benefit stream function; if/where found necessary after remediation efforts are completed.

Warm Springs Creek – Upper

1. Water Quantity: Flow augmentation/protection (e.g., water right purchases, water leases); throughout reach.

[26] Lindstrom, J., B. Liermann, and R. Kreiner. 2008. *An Assessment of Fish Populations and Riparian Habitat in Tributaries of the Upper Clark Fork Basin*. Montana Fish, Wildlife and Parks.

2. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches throughout reach.

3. Riparian Habitat: Riparian habitat protection/enhancement (e.g., riparian fencing, conservation easements, woody shrub plantings); on private grazing lands.

4. Instream Habitat: Fish habitat improvement; in simplified/channelized reaches along Highway 1 corridor. Primarily the accelerated placement of large woody debris into the channel.

Barker Creek

1. Fish Passage: Fish passage improvement; if/where found necessary.

2. Riparian Habitat: Riparian habitat protection (or improvement if appropriate) on private lands near mouth.

Twin Lakes Creek

1. Fish Passage: Selective fish passage structure; at existing Silver Lake diversion.

2. Water Quantity: Flow augmentation/protection; below Silver Lake Diversion.

3. Fish Passage Improvement: At highway/road crossings near mouth.

4. Fish Entrainment: Ditch screening to reduce fish entrainment; at Silver Lake diversion.

5. Riparian Habitat: Riparian habitat protection; on private lands near mouth.

Storm Lake Creek

1. Fish Passage: Selective fish passage structure; at existing Silver Lake diversion.

2. Water Quantity: Flow augmentation/protection; between Storm Lake and Silver Lake.

3. Instream Habitat: Fish habitat improvement; on lower mile where channelized/ditched.

4. Riparian Habitat: Riparian habitat protection; on private lands near mouth.

Foster Creek

1. Fish Passage: Fish passage improvement; if/where found necessary.

2. Riparian Habitat: Riparian habitat protection (or improvement if appropriate); primarily on private lands near mouth.

Proposed Actions

Actions specific to the Warm Springs Creek watershed are set forth below, summarized in Table 3-13, and shown in Figure 3-13.

1. Flow Quantity: Flow needs for Warm Springs Creek watershed will be addressed through the Flow Augmentation process set forth in Section 3.2.1.

2. Fish Entrainment: All diversions in the Warm Springs Creek drainage have a potential for fish entrainment. Entrainment evaluation for all diversions will be performed and fish screens designed and implemented if warranted.

3. Fish Passage Improvement: Active diversion dams and other fish barriers on Warm Springs Creek,[27] Twin Lakes Creek, Storm Lake Creek, and the West Fork of Warm Springs Creek are known to impair fish passage in the Warm Springs watershed. Removal of culvert on West Fork of Warm Springs Creek will be implemented. Further analyses will first be performed on all structures as native trout species protection within this watershed needs to be evaluated prior to implementation of design and implementation of fish passage actions or where appropriate installation of fish barriers are needed to protect native trout within the Warm Springs Creek watershed and to the Clark Fork River.

4. Riparian Habitat Protection/Enhancement: Further data collection and other information gathering will first be performed to determine the specific types and location of the following actions: fencing, off-stream stockwater development, and other grazing management improvements.

5. Instream Habitat Improvement: Channel reconstruction will be implemented only after implementation of other actions and subsequent evaluation determines reconstruction is warranted. Habitat conditions on 6 miles of upstream of Meyers Dam may be improved for through placement of large woody debris.

The actions within the Warm Springs Creek watershed will have high net benefits with respect to accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and are technically feasible to implement.

These actions were based on activities identified in the *2012 Process Plan*, taking into consideration the restoration concept proposals offered the public scoping process. The concept proposals submitted by the public for the Warm Springs Creek watershed are set forth in abstracts #1, 5a, 12, 13, 62, and 63. The proposed actions for this watershed generally cover the concepts in the abstracts. These concepts adequately focus on factors within the Warm Springs Creek watershed which limit restoration in the Clark Fork River mainstem, without the need for reliance

[27] WRC/TU. 2011. Upper Clark Fork diversion inventory. Watershed Restoration Council and Trout Unlimited.

on additional State generated alternatives. Besides the addition of the proposed removal of the culvert on West Fork of Warm Springs Creek (abstract G11).

Several of the ideas included in abstract #1 concerning the diversions at Myers Dam, Twin Lakes Creek and Storm Lake are addressed in Section 3.2.1 on Flow Restoration. Note that abstract #5 was subdivided into three projects and that only the fish trap component (abstract #5a) is included here for further consideration. The concept proposal set forth in abstract #5b for a fish hatchery at Myers Dam is not included because this concept, at this time, does not fit with the goals and objectives for restoring the Clark Fork River and Silver Bow Creek fishery.

Abstract #69 proposes active stream restoration along 35 miles of Warms Springs Creek. Evaluation for stream restoration will be performed for Warm Springs Creek; however, 35 miles of stream restoration is not technically feasible, cost effective or have a high cost benefit. The amount of stream restoration considered by the State in its cost estimate provided is considered adequate for the amount of stream restoration judged to cost-effective at this time.

No new concept proposals were received in 2018.

Costs

The costs to implement the Warm Springs Creek actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of around $1.6 million is preliminarily estimated to implement the proposed actions in the Warm Springs Creek.

Implementation Schedule

2018:

- Implement fish passage and fish screen at the Gardiner Diversion.

2019:

- Implement fish trap/selective passage structures at Myers Dam, Silver Lake, Twin Lakes Creek and Storm Lake Creek diversions.

Table 3-13. Relationship of restoration plan components to limiting factors and encouraged activities for the Warm Springs Creek Watershed

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1.	Further analysis of flows as set forth in Section 3.2.1.	N/A
Fish Passage	Fish passage improvement at select irrigation diversions and structures (e.g., diversion redesign or retrofit to allow for fish passage).	Provide selective fish passage in the Warm Springs Creek watershed.	Implement fish trap/selective passage structures at select diversions or culverts. Other fish passage projects TBD.	Evaluate diversions and road crossings for fish passage. Completion of designs.	$836,900
Fish Entrainment	Ditch fish screening projects at diversions in the Warm Springs Creek watershed.	Implement TBD fish screen projects in the Warm Springs Creek watershed.	Implement fish screening projects at diversions where warranted.	Evaluate need for fish screens at Twin Lakes Creek and Storm Lake Creek diversions, and all other diversions. Completion of designs.	$577,920
Riparian Habitat	Riparian habitat protection/enhancement (e.g., conservation easements, riparian fencing); on private grazing lands along Warm Springs Creek and priority tributaries.	Identify riparian protection and/or enhancement projects.	Habitat management (fencing, grazing management, off-stream water development), active revegetation where needed if natural recovery is not possible.	Evaluate for specific types and locations of riparian protection/enhancement. Completion of designs.	$98,000

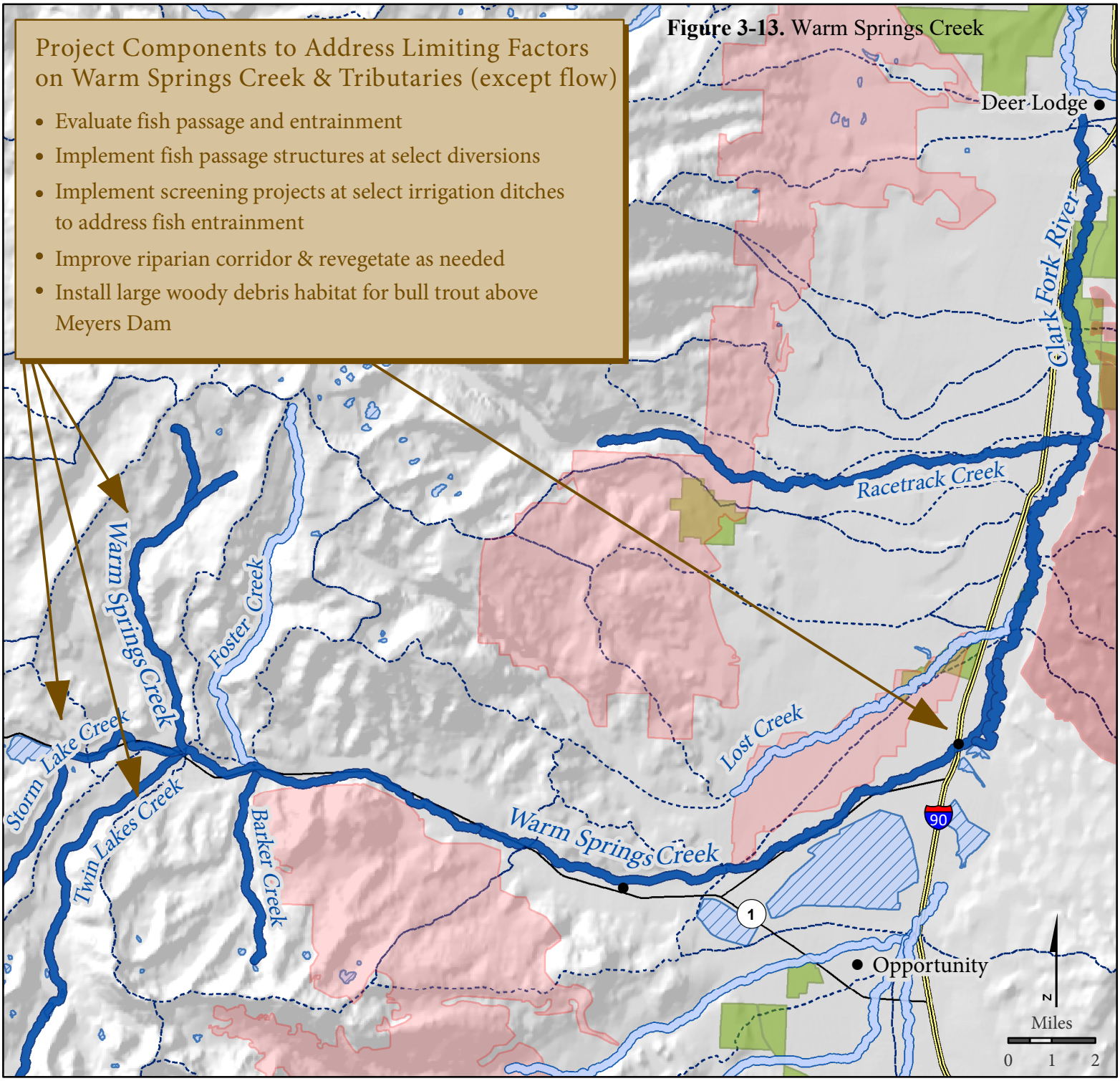
Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Instream Habitat	Channel reconstruction in select, localized areas of lower Warm Springs Creek where projects would benefit stream function.	Improve TBD feet of instream habitat in Warm Springs Creek above Meyers Dam. Other instream habitat objectives TBD.	Install large woody debris habitat in Warm Springs Creek above Meyers Dam. Other reconstruction as warranted.	Evaluation of additional habitat improvements in reaches of Warm Springs Creek Completion of design.	$35,000
Data gaps and feasibility questions	Develop overall project work plan.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$63,546
				Total	**$1,611,366**

TBD: To Be Determined as part of the project work plan development.

Figure 3-13. Warm Springs Creek

Project Components to Address Limiting Factors on Warm Springs Creek & Tributaries (except flow)

- Evaluate fish passage and entrainment
- Implement fish passage structures at select diversions
- Implement screening projects at select irrigation ditches to address fish entrainment
- Improve riparian corridor & revegetate as needed
- Install large woody debris habitat for bull trout above Meyers Dam



Project Location

NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary
- Lake / Pond

3.2.2.15 Basin Creek Watershed

Basin Creek is a headwaters tributary to Silver Bow Creek that drains for approximately 16 miles before joining Blacktail Creek to form Silver Bow Creek within the City of Butte. The upper reach of Basin Creek, upstream of Basin Creek Reservoir, is a Priority 1 area. Upper Basin Creek contains genetically pure Westslope cutthroat trout and no nonnative trout species. In 2018 the proposed restoration actions were prioritized based on available data and information gathered and analyzed by FWP. The order of priority for encouraged restoration actions reflects current understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The following is an encouraged restoration activity for Upper Basin Creek that, when implemented, will improve the fishery of the tributary as well as the fishery in Silver Bow Creek mainstem.

Basin Creek – Upper

1. Fish Passage: Fish passage improvement at select irrigation diversions (e.g., diversion redesign or retrofit to allow for fish passage); throughout reach.

Proposed Actions

Actions specific to the Basin Creek watershed are set forth below, summarized in Table 3-14, and shown in Figure 3-14.

1. Fish Passage: Improve fish passage at sedimentation impoundment near the inlet to the lower reservoir to provide connection to 3 miles of spawning habitat.

The actions within the Basin Creek watershed will have high net benefits with respect to accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and are technically feasible to implement.

These actions were based on activities identified in the 2018 Update to Prioritization of Areas in the Upper Clark Fork River Basin for Fishery Enhancement, taking into consideration the restoration concept proposal offered the public scoping process. The concept proposal submitted by the public for the Basin Creek watershed is set forth in abstract #97. The proposed action for this watershed generally cover the concepts in the abstract. This concept adequately focuses on factors within the Basin Creek watershed which limit restoration in the Silver Bow Creek mainstem, without the need for reliance on additional State generated alternatives.

Costs

The costs to implement the Basin Creek actions are estimated by combining the costs for the concept proposal plus additional funds due to the conceptual nature of project proposal and additional unknown costs associated with project implementation (e.g. engineering, permitting,

fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of $300,000 is preliminarily estimated to implement the proposed actions in the Basin Creek Watershed.

Implementation Schedule

2019:

- Evaluate fish passage issues at sedimentation pond inlet and design fish passage project.

2020:

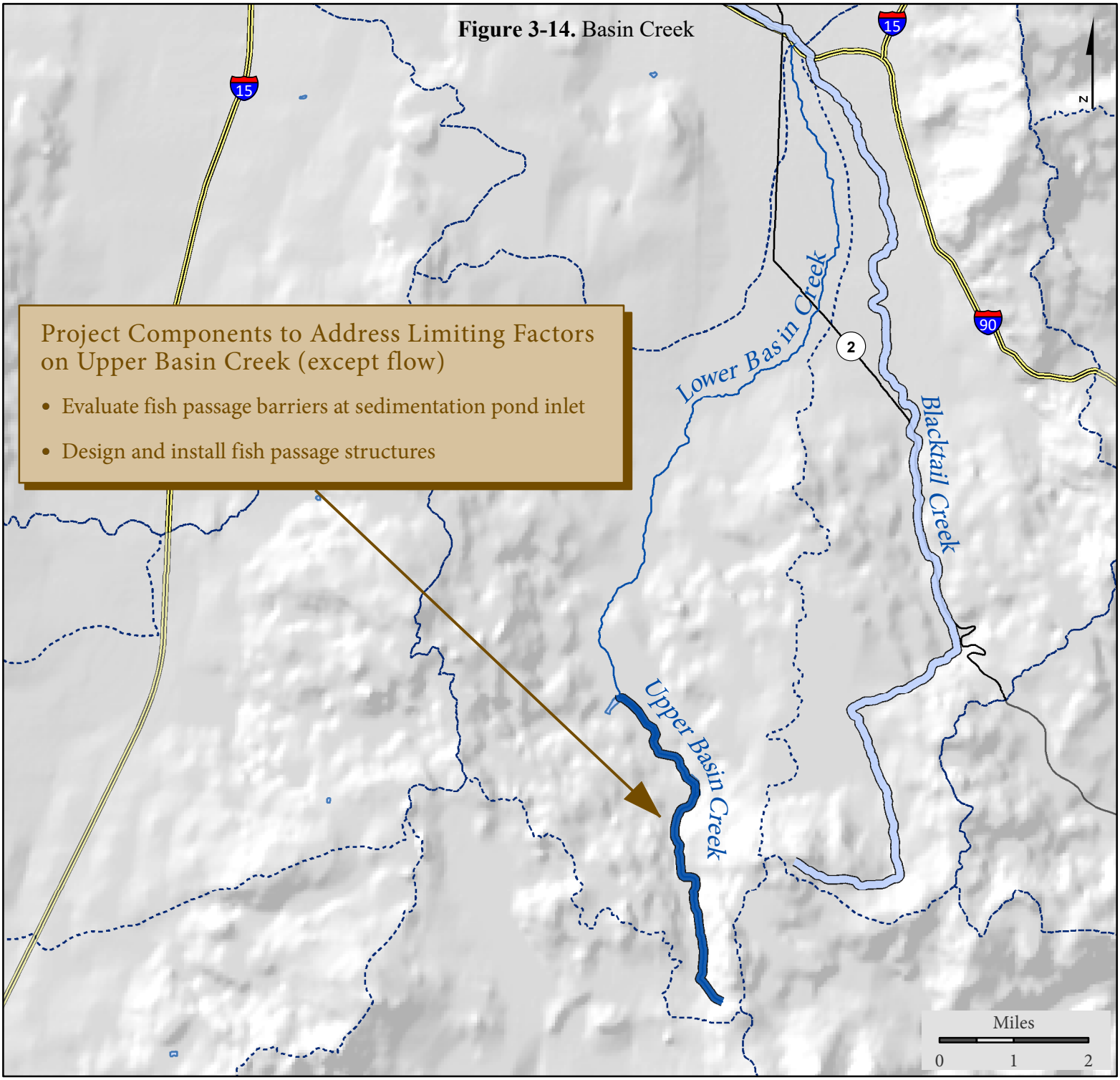
- Implement fish passage project.

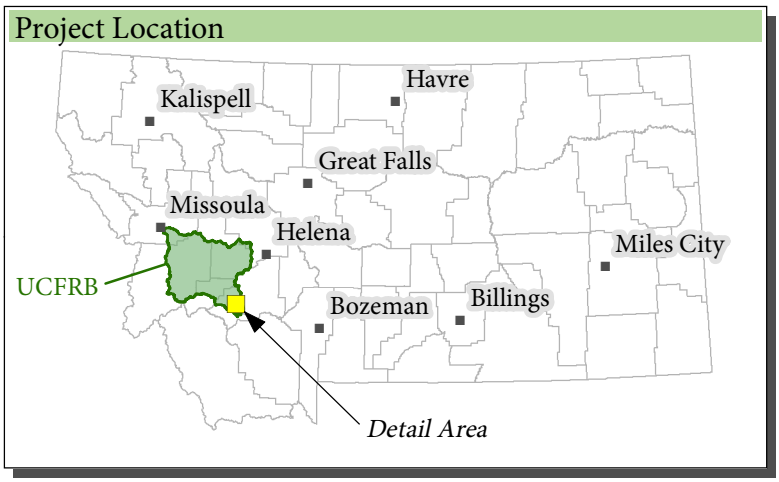
Table 3-14. Relationship of restoration plan components to limiting factors and encouraged activities for the Basin Creek Watershed

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Fish Passage	Fish passage improvement at select irrigation diversions and structures (e.g., diversion redesign or retrofit to allow for fish passage).	Provide fish passage in the Upper Basin Creek watershed.	Implement fish passage structures at Other fish passage projects TBD.	Evaluate barrier to migration. Completion of designs.	$275,000
Data gaps and feasibility questions	Develop overall project work plan.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$25,000
				Total	**$300,000**

TBD: To Be Determined as part of the project work plan development.

Figure 3-14. Basin Creek





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Conservation Easement
- Subwatershed Boundary
- Lake / Pond

3.2.2.16 Gold Creek Watershed

Gold Creek is a Priority 2 tributary to the Clark Fork River that drains for approximately 15 miles before reaching the Clark Fork River. The lower portion of Gold Creek supports high densities of juvenile brown trout and this area has been documented to be a major source of brown trout recruitment to the Clark Fork River. In 2018 the proposed restoration actions were prioritized based on available data and information gathered and analyzed by FWP. The order of priority for encouraged restoration actions reflects current understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The following are encouraged restoration activities for Gold Creek that, when implemented, will improve the fishery of the tributary as well as the fishery in the mainstem of the Clark Fork River.

Gold Creek – Lower

1. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); throughout drainage, with greater preference given to projects where flows are protectable to or beyond the mouth.

2. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches.

3. Fish Passage: Fish passage improvement.

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., conservation easements, riparian fencing); on private grazing lands.

Proposed Actions

Actions specific to the Gold Creek watershed are set forth below, summarized in Table 3-15, and shown in Figure 3-15.

1. Flow Quantity: Flow needs for Gold Creek watershed will be addressed through the Flow Augmentation process set forth in Section 3.2.1.

2. Fish Entrainment: All diversions in the Gold Creek drainage have a potential for fish entrainment. Entrainment evaluation for all diversions will be performed and fish screens designed and implemented if warranted.

3. Fish Passage Improvement: Active diversion dams and other fish barriers on Gold Creek are known to impair fish passage in the Gold Creek watershed. Fish passage evaluation for all diversions will be performed and replacement or retrofits will be designed and implemented if warranted.

4. Riparian Habitat Protection/Enhancement: Further data collection and other information gathering will first be performed to determine the specific types and location of the following actions: fencing, off-stream stockwater development, and other grazing management improvements.

The actions within the Gold Creek watershed will have high net benefits with respect to accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and are technically feasible to implement.

These actions were based on activities identified in the 2018 Update to Prioritization of Areas in the Upper Clark Fork River Basin for Fishery Enhancement, taking into consideration the restoration concept proposal offered the public scoping process. The concept proposal submitted by the public for the Gold Creek watershed is set forth in abstract #84. The proposed action for this watershed generally cover the concepts in the abstract. These concepts adequately focus on factors within the Gold Creek watershed which limit restoration in the Clark Fork River mainstem, without the need for reliance on additional State generated alternatives.

Costs

The costs to implement the Gold Creek actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of $600,000 is preliminarily estimated to implement the proposed actions in the Gold Creek Watershed.

Implementation Schedule

2019:

- Evaluate fish passage and entrainment issues in Gold Creek.
- Evaluate riparian habitat.

2020:

- Design fish passage and entrainment reduction projects.

2021:

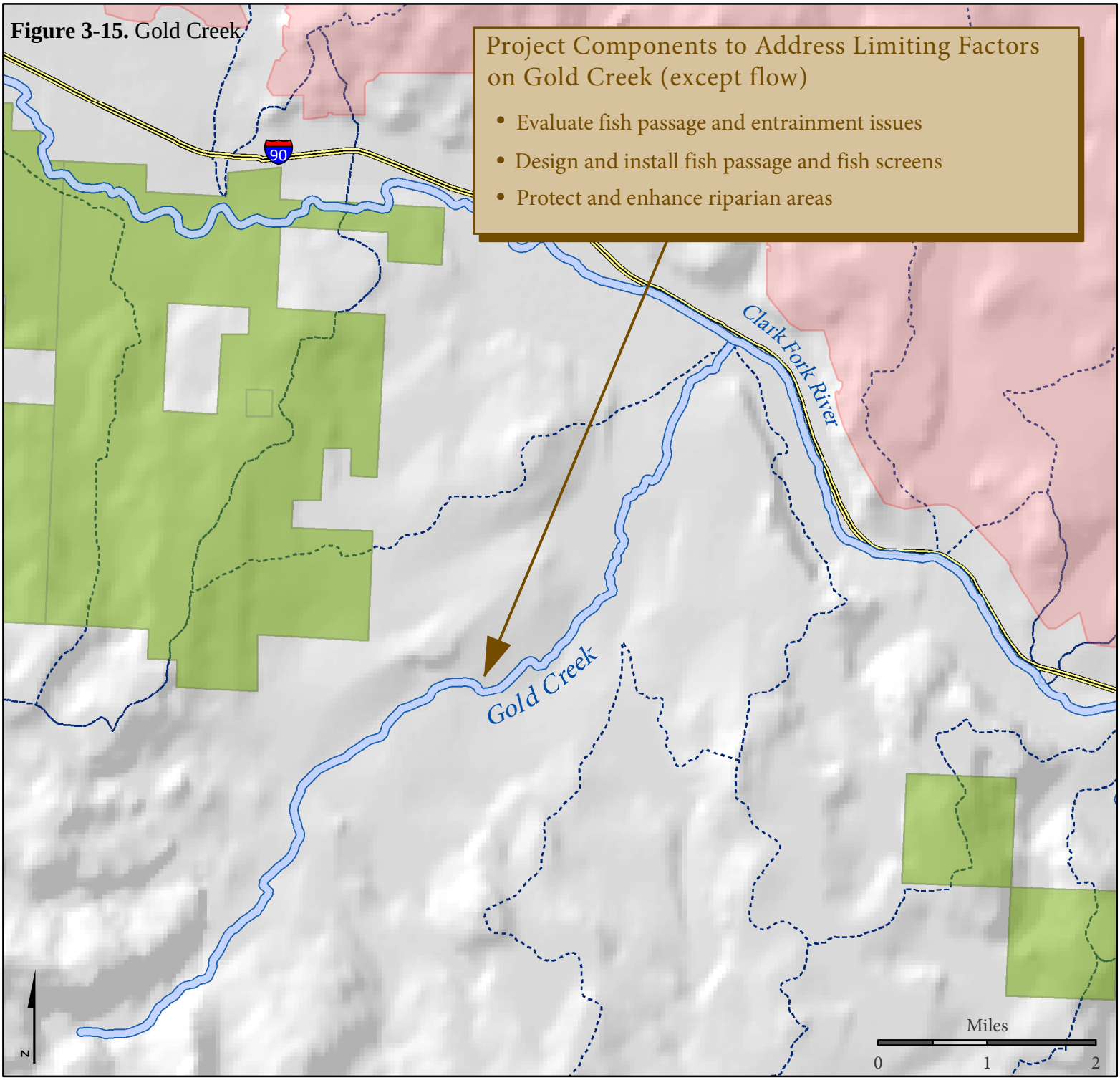
- Implement fish passage and entrainment reduction projects
- Evaluate watershed budget and develop riparian projects based on available funds.

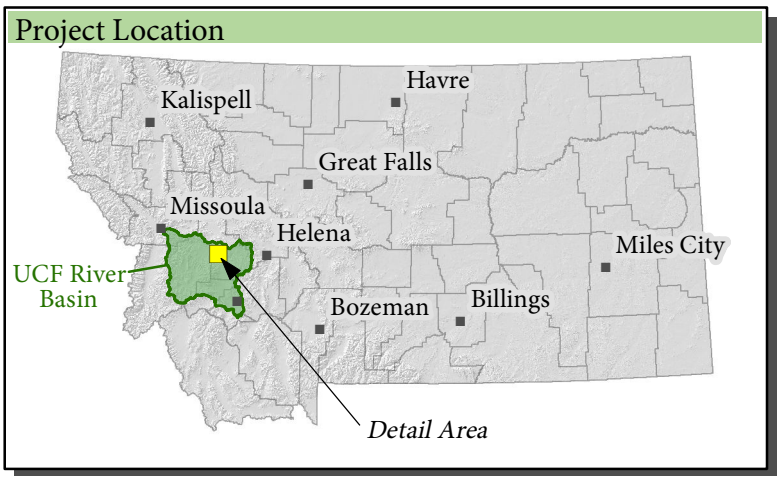
Table 3-15. Relationship of restoration plan components to limiting factors and encouraged activities for the Gold Creek Watershed

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1.	Further analysis of flows as set forth in Section 3.2.1.	N/A
Fish Passage	Fish passage improvement at select irrigation diversions and structures (e.g., diversion redesign or retrofit to allow for fish passage).	Provide fish passage in the Gold Creek watershed.	Implement fish passage structures at select diversions or culverts. Other fish passage projects TBD.	Evaluate diversions and road crossings for fish passage. Completion of designs.	$150,000
Fish Entrainment	Ditch fish screening projects at diversions in the Gold Creek watershed.	Implement TBD fish screen projects in the Gold Creek watershed.	Implement fish screening projects at diversions where warranted.	Evaluate need for fish screens at all other diversions. Completion of designs.	$250,000
Riparian Habitat	Riparian habitat protection/enhancement (e.g., conservation easements, riparian fencing); on private grazing lands along Gold Creek and priority tributaries.	Identify riparian protection and/or enhancement projects.	Habitat management (fencing, grazing management, off-stream water development), active revegetation where needed if natural recovery is not possible.	Evaluate for specific types and locations of riparian protection/enhancement. Completion of designs.	$150,000
Data gaps and feasibility questions	Develop overall project work plan.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$50,000
				Total	**$600,000**

TBD: To Be Determined as part of the project work plan development.

Figure 3-15. Gold Creek.





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary

3.2.2.17 O'Neill Creek Watershed

O'Neil Creek is Priority 2 tributary to the Clark Fork River that drains for approximately 5 miles before entering the Clark Fork upstream of the Little Blackfoot River. Connectivity between the O'Neil Creek and the Clark Fork River is seasonal in most years, with the lower reaches appearing to support flow only during spring runoff. O'Neil Creek supports a genetically pure Westslope cutthroat trout population and this population likely provides a source of recruitment to the Clark Fork River when flows allow. In 2018 the proposed restoration actions were prioritized based on available data and information gathered and analyzed by FWP. The order of priority for encouraged restoration actions reflects current understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The following are encouraged restoration activities for O'Neill Creek that, when implemented, will improve the fishery of the tributary as well as the fishery in the mainstem of the Clark Fork River.

O'Neill Creek

1. Fish Passage: Fish passage improvement.

2. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches.

3. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); throughout drainage, with greater preference given to projects where flows are protectable to or beyond the mouth.

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., conservation easements, riparian fencing); on private grazing lands.

Proposed Actions

Actions specific to the O'Neill Creek watershed are set forth below, summarized in Table 3-16, and shown in Figure 3-16.

1. Fish Passage Improvement: Active diversion dams and other fish barriers on O'Neill Creek are known to impair fish passage in the O'Neill Creek watershed. Further analyses will first be performed on all structures prior to implementation of design and implementation of fish passage actions.

2. Fish Entrainment: All diversions in the O'Neill Creek drainage have a potential for fish entrainment. Entrainment evaluation for all diversions will be performed and fish screens designed and implemented if warranted.

3. Flow Quantity: Flow needs for O'Neill Creek watershed will be addressed through the Flow Augmentation process set forth in Section 3.2.1.

4. Riparian Habitat Protection/Enhancement: Further data collection and other information gathering will first be performed to determine the specific types and location of the following actions: fencing, off-stream stockwater development, and other grazing management improvements.

The actions within the O'Neill Creek watershed will have high net benefits with respect to accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and are technically feasible to implement.

These actions were based on activities identified in the 2018 Update to Prioritization of Areas in the Upper Clark Fork River Basin for Fishery Enhancement, taking into consideration the restoration concept proposal offered the public scoping process. The concept proposal submitted by the public for the O'Neill Creek watershed is set forth in abstract #86. The proposed action for this watershed generally cover the concepts in the abstract. These concepts adequately focus on factors within the O'Neill Creek watershed which limit restoration in the Clark Fork River mainstem, without the need for reliance on additional State generated alternatives.

Costs

The costs to implement the O'Neill Creek actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of $200,000 is preliminarily estimated to implement the proposed actions in the Gold Creek Watershed.

Implementation Schedule

2019:

- Evaluate fish passage and entrainment issues in Lower Gold Creek.
- Evaluate riparian habitat.

2020:

- Design fish passage and entrainment reduction projects.

2021:

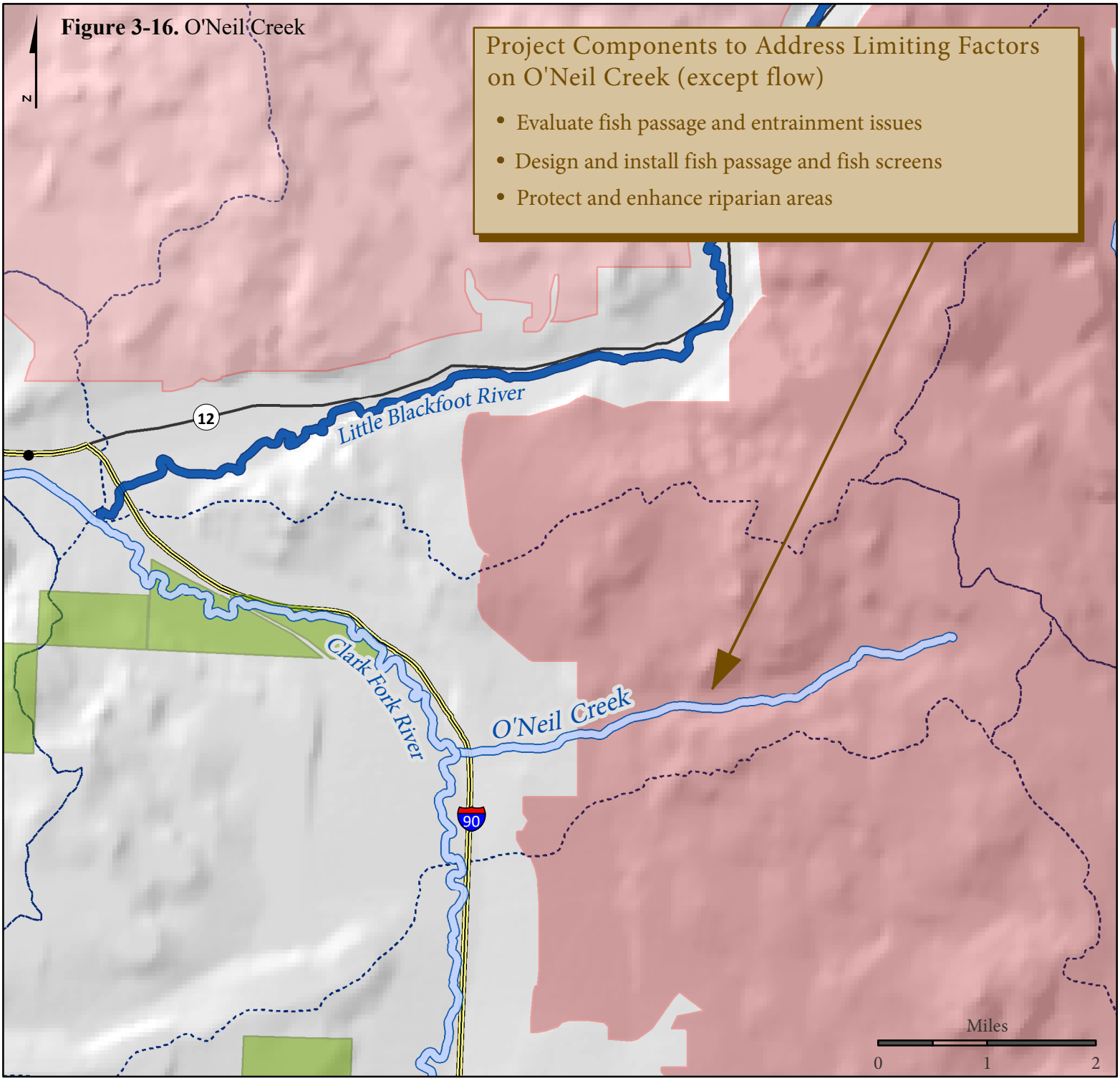
- Implement fish passage and entrainment reduction projects
- Evaluate watershed budget and develop riparian projects based on available funds.

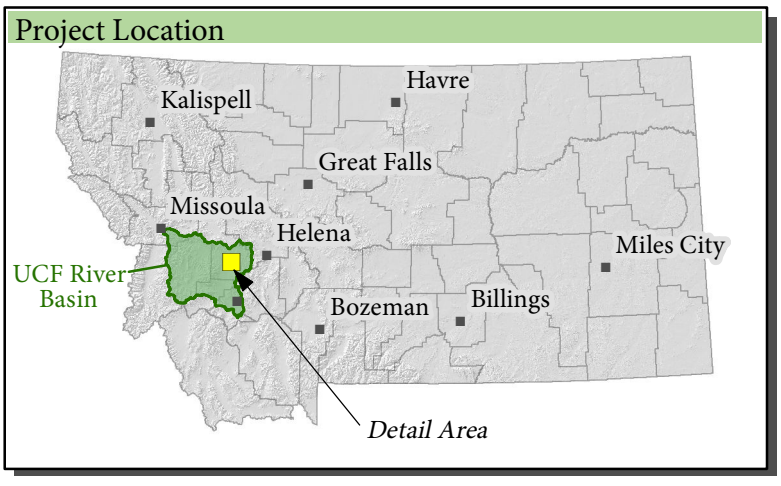
Table 3-16. Relationship of restoration plan components to limiting factors and encouraged activities for the O'Neill Creek Watershed

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1.	Further analysis of flows as set forth in Section 3.2.1.	N/A
Fish Passage	Fish passage improvement at select irrigation diversions and structures (e.g., diversion redesign or retrofit to allow for fish passage).	Provide fish passage in the O'Neill Creek watershed.	Implement fish passage structures at select diversions or culverts. Other fish passage projects TBD.	Evaluate diversions and road crossings for fish passage. Completion of designs.	$50,000
Fish Entrainment	Ditch fish screening projects at diversions in the O'Neill Creek watershed.	Implement TBD fish screen projects in the O'Neill Creek watershed.	Implement fish screening projects at diversions where warranted.	Evaluate need for fish screens at all other diversions. Completion of designs.	$90,000
Riparian Habitat	Riparian habitat protection/enhancement (e.g., conservation easements, riparian fencing); on private grazing lands along O'Neill Creek.	Identify riparian protection and/or enhancement projects.	Habitat management (fencing, grazing management, off-stream water development), active revegetation where needed if natural recovery is not possible.	Evaluate for specific types and locations of riparian protection/enhancement. Completion of designs.	$50,000
Data gaps and feasibility questions	Develop overall project work plan.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$10,000
				Total	**$200,000**

TBD: To Be Determined as part of the project work plan development.

Figure 3-16. O'Neil Creek





NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary

3.2.2.18 Rock Creek Watershed

Rock Creek is a Priority 2 Tributary to the Clark Fork River that flows for 52 miles before joining the Clark Fork River upstream of the town of Clinton and downstream of the town of Drummond. The mainstem of Rock Creek contains robust populations of Westslope cutthroat trout, rainbow trout, and brown trout which, combined with excellent public access, makes Rock Creek one of the most popular fisheries in Montana. Bull trout are found throughout mainstem Rock Creek and comprise a large meta-population with fish moving throughout the drainage and the Clark Fork River to complete their life history. Rock Creek is also a major source of Westslope cutthroat trout and brown trout recruitment to the Clark Fork River. In 2018 the proposed restoration actions were prioritized based on available data and information gathered and analyzed by FWP. The order of priority for encouraged restoration actions reflects current understanding of drainage scale fish population limiting factors and the cost-benefit of proposed actions. The following are encouraged restoration activities for Rock Creek that, when implemented, will improve the fishery of the tributary as well as the fishery in the mainstem of the Clark Fork River.

Rock Creek

1. Fish Entrainment: Ditch screening to reduce fish entrainment into irrigation ditches.

2. Fish Passage: Fish passage improvement.

3. Water Quantity: Flow augmentation (e.g., water right purchases, water leases, irrigation efficiency improvements); throughout drainage, with greater preference given to projects where flows are protectable to or beyond the mouth.

4. Riparian Habitat: Riparian habitat protection/enhancement (e.g., conservation easements, riparian fencing); on private grazing lands.

Proposed Actions

Actions specific to the Rock Creek watershed are set forth below, summarized in Table 3-17, and shown in Figure 3-17.

1. Fish Entrainment: All diversions in the Rock drainage have a potential for fish entrainment. Entrainment evaluation for all diversions will be performed and fish screens designed and implemented if warranted.

2. Fish Passage Improvement: Active diversion dams and other fish barriers on Rock Creek have the potential to impair fish passage in the Rock Creek watershed. Fish passage evaluation for all diversions will be performed and replacement or retrofits will be designed and implemented if warranted.

3. Flow Quantity: Flow needs for Rock Creek watershed will be addressed through the Flow Augmentation process set forth in Section 3.2.1.

4. Riparian Habitat Protection/Enhancement: Further data collection and other information gathering will first be performed to determine the specific types and location of the following actions: fencing, off-stream stockwater development, and other grazing management improvements.

The actions within the Rock Creek watershed will have high net benefits with respect to accomplishing aquatic restoration goals and objectives, provide a cost-effective implementation approach, and are technically feasible to implement.

These actions were based on activities identified in the 2018 Update to Prioritization of Areas in the Upper Clark Fork River Basin for Fishery Enhancement, taking into consideration the restoration concept proposals offered the public scoping process. The concept proposals submitted by the public for the Rock Creek watershed is set forth in abstracts #87 and #88. The proposed actions for this watershed generally cover the concepts in the abstract. These concepts adequately focus on factors within the Rock Creek watershed which limit restoration in the Clark Fork River mainstem, without the need for reliance on additional State generated alternatives.

Costs

The costs to implement the Rock Creek actions are estimated by combining the costs for the concept proposals plus additional funds due to the conceptual nature of project proposals and additional unknown costs associated with project implementation (e.g. engineering, permitting, fluctuating construction material costs, etc.). As costs for individual projects within the watershed are conceptual, funding individual projects within the watershed will be based on identified priorities, cost-effectiveness and cost benefit, rather than concept proposal estimates.

A total cost of $600,000 is preliminarily estimated to implement the proposed actions in the Rock Creek Watershed.

Implementation Schedule

2019:

- Evaluate fish passage and entrainment issues in Rock Creek.
- Evaluate riparian habitat.

2020:

- Design fish passage and entrainment reduction projects.

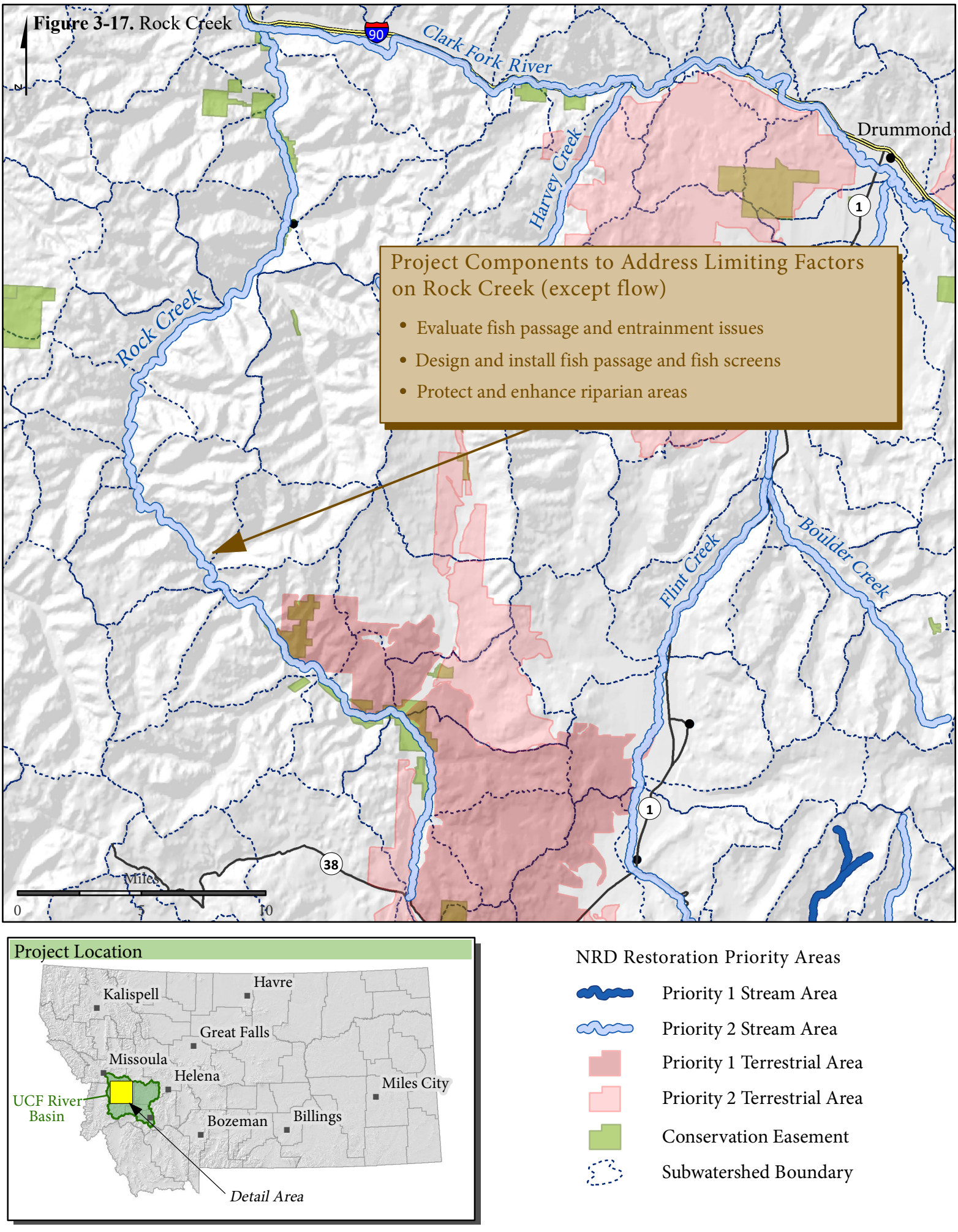
2021:

- Implement fish passage and entrainment reduction projects
- Evaluate watershed budget and develop riparian projects based on available funds

Table 3-17. Relationship of restoration plan components to limiting factors and encouraged activities for the Rock Creek Watershed

Limiting Factor	Encouraged Activities To Address Limiting Factors	Objectives	Project Components To Address Limiting Factor	Data Gaps And Feasibility Issues	Estimated Cost
Water Quantity	Flow augmentation.	Increase instream flows by TBD cfs.	Augmentation of flows as set forth in Section 3.2.1.	Further analysis of flows as set forth in Section 3.2.1.	N/A
Fish Passage	Fish passage improvement at select irrigation diversions and structures (e.g., diversion redesign or retrofit to allow for fish passage).	Provide fish passage in the Rock Creek watershed.	Implement fish passage structures at select diversions or culverts. Other fish passage projects TBD.	Evaluate diversions and road crossings for fish passage. Completion of designs.	$125,000
Fish Entrainment	Ditch fish screening projects at diversions in the Rock Creek watershed.	Implement TBD fish screen projects in the Rock Creek watershed.	Implement fish screening projects at diversions where warranted.	Evaluate need for fish screens at all other diversions. Completion of designs.	$350,000
Riparian Habitat	Riparian habitat protection/enhancement (e.g., conservation easements, riparian fencing); on private grazing lands along Rock Creek.	Identify riparian protection and/or enhancement projects.	Habitat management (fencing, grazing management, off-stream water development), active revegetation where needed if natural recovery is not possible.	Evaluate for specific types and locations of riparian protection/enhancement. Completion of designs.	$100,000
Data gaps and feasibility questions	Develop overall project work plan.	Complete integrated project work plans for each restoration component.	Fill data gaps and answer feasibility questions.	Described above for each restoration component.	$25,000
				Total	**$600,000**

TBD: To Be Determined as part of the project work plan development.



NRD Restoration Priority Areas

- Priority 1 Stream Area
- Priority 2 Stream Area
- Priority 1 Terrestrial Area
- Priority 2 Terrestrial Area
- Conservation Easement
- Subwatershed Boundary

3.2.3 Aquatic Resource Monitoring and Maintenance Plan

Monitoring is a critical component of the UCFRB aquatic restoration. Development of consistent monitoring protocols will allow the State and others to evaluate the effectiveness of the restoration actions being implemented and be able to make adaptive management and maintenance decisions about all the projects. Monitoring provides a mechanism to determine if the restoration projects are trending toward or are meeting the goals of this restoration plan and helps to guide adaptive management actions and site maintenance.

The UCFRB aquatic monitoring and maintenance plan will be tailored to the specific limiting factors that all the projects collectively propose to target: water quantity, riparian habitat enhancement and protection, fish passage, fish entrainment, and instream aquatic habitat improvements. By addressing the limiting factors of the aquatic resources of the UCFRB, measurable improvements to aquatic habitat and biological populations should occur. For consistency, the parameters selected for monitoring will be standardized so the other similar restoration activities within the Basin and the overall performance of all of the restoration activities in the Basin as a whole can be adequately measured. Also, monitoring parameters may need to be modified, if in the future, if they are determined to not adequately measure the success of the restoration activities.

The State proposes to develop an aquatic monitoring and maintenance plan specific to the aquatic restoration projects implemented with NRD funds. This plan will specifically detail the monitoring and maintenance activities and how the monitoring will be consistent throughout the basin (e.g., riparian habitat revegetation monitoring will be consistently monitored at all sites). It will not duplicate other monitoring efforts in the UCFRB, but specifically target the NRD-funded projects so that an adaptive management program can be established to ensure projects are not making the same mistake over and over again.

There are three levels of monitoring that will be developed in the aquatic monitoring and maintenance plan: project performance monitoring, watershed monitoring, and basin monitoring.

1. The project performance monitoring will look at individual projects. Project performance monitoring will be completed to ensure the project was completed as proposed, to determine if the project is functioning as proposed (fencing is up, off stream water is working). Flow augmentation project monitoring activities would include a water commissioner for applicable tributaries projects, as further explained in Section 3.2.1 on flow restoration.

2. The watershed monitoring will assess whether or not the watershed is functioning and if the restoration actions implemented to address the watersheds limiting factors are effective. For example, since improving fish passage is a goal in many of the watersheds, this monitoring plan will evaluate whether fish passage is occurring effectively and whether or not there is conductivity with the Clark Fork River or Silver Bow Creek mainstems. Similarly, since another goal is the preservation of native trout species in some streams, monitoring will be

completed to determine the trout population status within a particular watershed. Aquatic monitoring to measure the response of the acquired additional instream flow that would occur as a result of flow augmentation projects is another example of watershed monitoring.

3. The basin monitoring will measure the effectiveness of all the restoration projects and how they are contributing to the recovery of the Silver Bow Creek and Clark Fork River mainstem fisheries. Where fish come from and how different tributaries are contributing to the mainstems would be investigated with respect to habitat improvements. This monitoring would be implemented twice at five-year intervals (2017 and 2022) in order to assess the overall basin fishery and the effects of the NRD funded and implemented projects. An example of this type of monitoring that may be conducted is the four-year NRD-funded fish movement study by Montana State University completed in 2012.

The maintenance aspect of this monitoring and maintenance plan will be developed to ensure the implemented projects meet the goals and objectives of this restoration plan for the expected life of the project. A decision matrix will be developed following the outline provided below to determine maintenance implementation. Maintenance will only be implemented if work is needed to ensure the project is trending towards the goals and objectives of the specific project and the UCFRB. For example, maintenance will be implemented if fencing is down and the riparian habitat is being effected or a fish screen is not functioning correctly.

Maintenance Process

A. Document visual inspections of changes and identify potential maintenance sites.

B. Hypothesize causes of changes, trends and risk in the context of project objectives.

C. Confirm/reject hypotheses with data and analyses, if needed.

D. Assign risk to potential maintenance sites based on judgment and/or performance criteria.

E. Solicit input from peer reviewers for critical uncertainties.

F. Identify maintenance alternatives and priorities.

The monitoring and maintenance plan would specify how the State would accomplish the specified activities covered in the plan. In most cases, it is best to have an independent entity (i.e., an entity not involved in project implementation) conduct monitoring activities. Some work would be conducted by the State, and other work could be conducted by university entities, by other governmental entities (such as the U.S. Geological Survey), or by competitively-procured contractors under State oversight.

With approximately $41 million dollars to be spent on restoration of the aquatic resources in the UCFRB, this monitoring program will assist the State in its role as the steward of the investment made in the restoration on the ground and focus on maximizing the returns on these investments.

Costs for the basin wide monitoring and maintenance program over a ten-year period are estimated to be about 5% of the total aquatic resources restoration budget ($41 million) or approximately $2 million, with approximately $500,000 specific to flow augmentation projects and $1.5 million specific to other aquatic restoration projects.

Many of the abstracts submitted that proposed specific stream restoration activities included a project monitoring component that will be essentially addressed as part of State's proposed monitoring and maintenance plan. This plan also incorporates the habitat and fish passage maintenance program suggested in abstract #36.

SECTION 4. UCFRB TERRESTRIAL RESOURCES RESTORATION PLAN

This section constitutes the State's final terrestrial resources restoration plan for the UCFRB. Section 4.1 provides the State's analysis of restoration alternatives for terrestrial resources based on achieving restoration goals and on evaluation criteria specified in federal natural resource damage regulations, and identifies the State's preferred alternative. Section 4.2 describes how the State further developed the preferred alternative into a proposed set of restoration actions and budgets.

4.1 Evaluation of Alternatives

4.1.1 Terrestrial Restoration Goals

As explained in Section 2.2, restoration of terrestrial resources and services to baseline condition is not possible in the UCFRB due the widespread injury to natural resources associated with the release of hazardous substances from the mining and mineral processing activities in the Basin. However, the State's previous restoration planning efforts, which are summarized in Section 2.2, make it clear that significant progress can be accomplished with restoration efforts. The *2011 Terrestrial Prioritization Plan* focused on the areas and types of projects most likely to derive the greatest terrestrial benefits for the UCFRB, and in so doing, restore, rehabilitate, replace, or acquire the equivalent of the injured natural resources of the UCFRB. The areas and types of projects set forth in the *2011 Terrestrial Prioritization Plan*, and included in the *2012 Process Plan,* are based not solely on hazardous substances, but are also based on the predicted effectiveness of wildlife habitat protection and enhancement activities to benefit terrestrial resources in the UCFRB. The State used the knowledge gained from terrestrial assessments conducted in 2009[1] to help determine the recommended types of restoration actions and the priority terrestrial areas for UCFRB restoration work identified in the *2011 Terrestrial Prioritization Plan*.

The *2011 Terrestrial Prioritization Plan* identified priority areas for wildlife habitat protection and enhancement activities based on the following terrestrial wildlife restoration or replacement goals:

- Restore the injured terrestrial resources and associated ecological and recreational services (lost hunting, wildlife viewing, bird watching, and other wildlife-related outdoor recreation) covered under the State's natural resource damage lawsuit (Montana v. ARCO).

- Replace injured terrestrial wildlife resources by protecting and enhancing grassland, shrub-steppe, riparian, wetland, and conifer forest habitats in the UCFRB that are similar to those injured. This involves maintaining or improving wildlife species diversity, natural

[1]Upper Clark Fork River Terrestrial Assessment Final Report, prepared by FWP and NRDP, April 2010; available on NRDP website at: https://dojmt.gov/wp-content/uploads/2011/06/2010ucfrbterrestrialresourceassessment.pdf

ecological functions, and habitat connectivity in grassland, forest, and riparian ecological systems.

- Replace lost hunting, wildlife viewing, bird watching, and other wildlife-related outdoor recreational opportunities by enhancing wildlife habitat, and consequently, wildlife populations, and ensuring public access to these wildlife resources.

These goals are all considered to be of substantially equal importance, recognizing that both restoration and replacement are appropriate strategies for increasing wildlife populations and recreational opportunities to compensate for what was lost.

To achieve these goals, the *2011 Terrestrial Prioritization Plan* indicates the following key elements for future wildlife habitat protection and enhancement in the priority areas.

a) A few large projects are generally preferred to many smaller projects because of the lower cost per area and larger footprint on the landscape. Clustering of projects will improve their effectiveness.

b) Other things being equal, projects adjacent to public lands or conservation easements are preferred to projects surrounded by unprotected private land or isolated from good wildlife habitat by large expanses of compromised habitats.

c) Projects that provide protection and enhancement of several targeted habitats are generally preferred over projects that only contain a single habitat.

d) Other things being equal, projects that meet some or all of the fisheries restoration goals are preferred to projects that lack benefits to fisheries.

e) Access for wildlife-related recreation needs to be managed to ensure that increased recreational use does not negatively impact wildlife resources or compromise restoration and enhancement efforts.

These keys elements are also reiterated in the guidance for terrestrial restoration provided in the *2012 Process Plan*. To help further distinguish among the riparian, wetland, and aspen communities in the UCFRB, which are all classified as Priority 1 areas, the *2012 Process Plan* added the following key element:

f) Projects targeting wetland and riparian habitats, but surrounded by low priority uplands, should preferably include no less than 25 percent wetland or riparian habitat, with the surrounding low-priority uplands dominated by native upland habitat.

Combined, these key elements translate to a preference for projects that have a large conservation footprint, that adjoin public lands or lands under conservation easement, that target several

habitats, that complement fisheries goals, and for which recreational use does not compromise conservation values. Similar to the methodology used to identify priority areas for wildlife resource protection and enhancement, these core principles are driven by a preference for habitat enhancement at a landscape scale. Projects that cover small areas, however, can be of high value if they provide connections between landscapes or enhance, or protect, key habitats.

As discussed in Section 2.2, the *2011 Terrestrial Prioritization Plan* was adopted as part of the *2011 Long Range Guidance Plan,* which focused future restoration to the priority areas identified in *2011 Terrestrial Prioritization Plan* and the terrestrial injured resource areas for which the State made its restoration claims. The *2012 Process Plan* further narrowed the universe of terrestrial restoration alternatives by focusing restoration alternatives in terrestrial injured resource areas and in the high Priority 1 and Priority 2 terrestrial areas, consistent with the approach advocated in the *2011 Terrestrial Prioritization Plan*.

As part of the development of a restoration plan, alternatives are considered in selecting a preferred alternative for the plan. As explained above, this process began with the restoration planning efforts that occurred prior to adoption of the *2011 Long Range Guidance Plan*. The previous restoration plans and other pertinent evaluations that contain alternative analyses are described in Section 2.2. The State, through these efforts, has already considered many alternatives for restoration of the injured groundwater, aquatic, and terrestrial resources in the UCFRB.

4.1.2 Description of Alternatives

The State analyzed no action, and two alternative geographic approaches for terrestrial restoration actions in the Basin.

Alternative 1. Alternative 1 is the no action alternative. It is a required alternative under the Natural Resource Damage Assessment regulations and allows for comparison to other alternatives. The no action alternative leaves the terrestrial resources of the UCFRB in its current condition, allowing only natural processes to restore the terrestrial resources and recreational opportunities.

Alternative 2: Restoration of High Priority 1 Terrestrial Areas in the UCFRB. The *2012 Process Plan* required that terrestrial restoration alternatives focus on the high Priority 1 and Priority 2 Terrestrial Areas, consistent with the *2011 Terrestrial Prioritization Plan*. Alternative 2 focuses on restoration of the terrestrial resources in Priority 1 Terrestrial Areas, including priority injured mainstem areas within the UCFRB, as shown on Figure 2-2, and further described in the *2011 Terrestrial Prioritization Plan*. Alternative 2 also includes recreational components associated with the Priority 1 Terrestrial Areas.

Alternative 3: Restoration of Priority 1 and 2 Terrestrial Areas in the UCFRB. As the *2012 Process Plan* required terrestrial restoration alternatives to focus on the high Priority 1 and Priority 2 Terrestrial Areas, Alternative 3 focuses on restoration of the terrestrial natural resources of the

combined Priority 1 and Priority 2, as shown on Figure 2-2, and further described in the *2011 Terrestrial Prioritization Plan*. Specifically, Alternative 3 creates nine Priority Landscape Areas that encompass all Priority 1 and 2 Terrestrial Areas of similar ecological characteristics, similar priority ranking, and proximity to each other, including priority injured mainstem areas, to better improve wildlife resources, as shown in Figure 4-1. Alternative 3 also includes recreational components associated with the Priority 1 and Priority 2 Terrestrial Areas.

4.1.3 Evaluation of Alternatives

Under the DOI NRD regulations, a Trustee's restoration plan needs to evaluate a reasonable number of alternatives for restoring, rehabilitating, replacing, or acquiring the equivalent of injured natural resources based on all relevant considerations, including the DOI legal criteria.[2] Below, the three restoration plan alternatives are evaluated using the ten evaluation criteria set forth in the *2012 Process Plan*. Those include eight legal criteria, seven of which represent the criteria set forth in the U.S. Department of the Interior's NRD assessment regulations,[3] which Trustees are to use when selecting the restoration plan alternatives. The other legal criterion addresses the additional factors the State is to consider under a Memorandum of Agreement with the Confederated Salish and Kootenai Tribes and the Department of the Interior. In addition to these legal criteria, there are two policy criteria of special interest to the State.

The evaluations below provide a summary description of each criterion and how each of the three alternatives meets that criterion. Section 4.1.5 provides an overall summary of these criterion-specific analyses and identifies the State's preferred alternative based on the collective analysis of the ten criteria.

Technical Feasibility: Under this criterion, the State evaluates the degree to which alternative employs well-known and accepted technologies and the likelihood that the alternative will achieve its objectives. Application of this criterion focuses on an evaluation of the alternatives' relative technological feasibility.

Alternative 1 (the no action alternative) is technically feasible. Alternative 2 (Priority 1 Terrestrial Areas) and Alternative 3 (Priority 1 and Priority 2 Terrestrial Areas) would both employ the encouraged activities set forth in the *2012 Process Plan*, which are well-known and accepted technologies, with a reasonable chance of successful completion in an acceptable period of time, and are therefore also technically feasible. For Alternative 2, there is a minor uncertainty that enough access will be allowed on private lands to sufficiently effectuate implementation, since work depends on a willing landowner, and in the case of acquisitions and easements, acceptable title conditions and appraisals. The same minor uncertainty exists for Alternative 3, but to a lesser

[2] 43 CFR §11.93, §11.81, and §11.82.

[3] 43 CFR §11.82(d). These regulations provide a list of "factors" to consider when selecting the alternative to pursue; those factors are referred to as DOI legal criteria in this document.

extent, due to the larger geographical area available for actions and better ability to integrate actions through the Priority Landscape Areas.

Relationship of Expected Costs to Expected Benefits: Under this criterion, the State examines whether an alternative's costs are commensurate with the benefits it provides. In doing so, the State will need to determine the costs associated with the alternative, and the benefits that would result from the plan.

For this criterion, Alternative 3 (Priority 1 and Priority 2 Terrestrial Areas) is superior to Alternative 1 (the no action alternative) and Alternative 2 (Priority 1 Terrestrial Areas). For Alternative 1, there would be no benefit, and no costs would be incurred. As past mining and mineral processing activities have resulted in widespread injury to natural resources in the UCFRB, a lack of benefit would be an unacceptable outcome. Natural recovery would progress slowly at individual injured areas, and some injured areas would likely never reach pre-existing conditions. Arid habitats would likely take over 100 years to recover to pre-existing conditions. The Opportunity Ponds are unlikely to fully recover to pre-existing conditions under any length of time due to the magnitude of the impacts. Services normally provided by wildlife resources would continue to be zero or greatly reduced. Without the proposed conservation easements and acquisitions, terrestrial wildlife habitats would likely decline in the UCFRB due to other human development over the long-term, possibly to the point where limited gains made by natural recovery may be negated.

Alternative 2 offers net expected benefits compared to expected costs, by providing terrestrial resources improvement as well as related services (e.g., hunting, birding, and other recreational services) in Priority 1 Terrestrial Areas. However, Alternative 3, by providing terrestrial resources improvement and related services within the Priority Landscape Areas, will provide significantly more terrestrial resources improvement and related services through its integrative approach (since greater benefits and cost efficiencies can be achieved than would occur by addressing separately), offer a greater opportunity for partnerships and for coordination with aquatic resource projects, and cover a larger geographic area of priority habitat within the UCFRB (325,000 acres, versus 178,000 acres in Alternative 2) for the same costs as Alternative 2, thereby providing higher net expected benefits compared to expected costs.

Cost-Effectiveness: Under this criterion, the State evaluates whether the alternative accomplishes its goal in the least costly way possible. In evaluating this criterion, the State considers whether the alternative is consistent with the guidance for aquatic and terrestrial restoration and recreation projects provided in the *2012 Process Plan*,[4] as well as the likelihood of matching funds, which can enhance cost-effectiveness**.**

[4] This guidance is provided in Attachments 5-2, 5-3, and 5-4 of the *2012 Process Plan*.

For this criterion, Alternative 3 (Priority 1 and Priority 2 Terrestrial Areas) is superior to Alternative 1 (the no action alternative) and Alternative 2 (Priority 1 Terrestrial Areas). Alternative 1 is cost-effective, as no costs would be incurred. However, there is considerable precedence in the UCFRB for cost-sharing with other entities in UCFRB restoration activities. This ability to accomplish more restoration through the use of matching funds is lost under Alternative 1.

Alternative 2 and Alternative 3 are similar in that both would require necessary evaluations, designs, and other project development efforts, such as appraisals and title work related for land acquisitions and easements, before implementing the encouraged activities set forth in the *2012 Process Plan.* Both are consistent with the terrestrial and recreational projects guidance set forth in the *2012 Process Plan*, and not inconsistent with the aquatic guidance.

However, Alternative 3 offers greater opportunities for matching funds due to its greater opportunity for partnerships, and larger geographical area available for actions. In addition, Alternative 3 offers superior cost-effectiveness to Alternative 2 through its integrative watershed approach (which creates efficiencies to reduce costs), plus its larger geographic area offers more selectivity in determining specific locations for actions in order to improve cost-effectiveness. Also, as set forth below, Alternative 3 can also be expected to lessen the recovery period for the UCFRB through its Priority Landscape Areas, thereby leading to further restoration at less cost.

Results of Response Actions: Under this criterion, the State considers the results or anticipated results of response actions underway, or anticipated, in the UCFRB. Numerous response actions are ongoing and additional response actions are scheduled to begin in the next several years, continuing for many years into the future.

Alternative 1 (the no action alternative), Alternative 2 (Priority 1 Terrestrial Areas), and Alternative 3 (Priority 1 and Priority 2 Terrestrial Areas) do not interfere with planned response actions, however, Alternative 1 does not enhance planned response actions. Alternative 2 enhances planned response actions, while Alternative 3 offers further enhancement by addressing its Priority Landscape Areas, and a larger portion of the UCFRB watershed.

Adverse Environmental Impacts: Under this criterion, the State weighs whether, and to what degree, the alternative will result in adverse impacts to both the physical and human environment. Specifically, the State will evaluate significant adverse impacts, which could arise from the alternative, short- or long-term, direct or indirect, including those that involve resources that are not the focus of the project.

Temporary impacts are anticipated for Alternative 2 (Priority 1 Terrestrial Areas) and Alternative 3 (Priority 1 and Priority 2 Terrestrial Areas) due to construction activity. However, these temporary impacts would be offset by positive impacts as projects are fully implemented. Protective measures would be required to assure that impacts to human health and safety would be limited to

the extent practicable. There are no adverse environmental impacts associated with implementation of Alternative 1 (the no action alternative), but lack of restoration would result in some adverse environmental impacts due to the permanent loss of terrestrial wildlife resources.

Recovery Period and Potential for Natural Recovery: Under this criterion, the State evaluates the merits of the alternative in light of whether the resource is able to recover naturally and, if a resource can recover naturally (i.e., without human intervention), how long that will take. (The term "recovery" refers to the time it will take an injured natural resource to recover to its "baseline," i.e., pre-injury condition.)

As noted in the *1995 Restoration Determination Plan*[5], natural recovery to baseline would be anticipated to take thousands of years. Some areas such as the Opportunity Ponds, likely will never fully recover to pre-existing conditions. Therefore, Alternative 1 (the no action alternative) would result in an indefinite recovery period, and extremely poor potential for natural recovery. This would be an unacceptable result.

Alternative 2 (Priority 1 Terrestrial Areas) would advance the recovery period and enhance potential for natural recovery by addressing restoration needs in the Priority 1 Terrestrial Areas, through habitat protection and enhancement in mainstem injured areas and areas in proximity to injured areas. This should significantly shorten the time of recovery for the UCFRB terrestrial resources. Replacement of resources through offsite protection and enhancement actions will offset resources in areas where natural recovery is unlikely. Alternative 3 (Priority 1 and Priority 2 Terrestrial Areas) would be expected to further advance the recovery period and enhance potential for natural recovery through its expanded and integrated approach of addressing the UCFRB through actions within the Priority Landscape Areas.

Federal, State, and Tribal Policies, Rules, and Laws: Under this criterion, the State considers the degree to which the alternative is consistent with applicable policies of the State of Montana and applicable policies of the federal government and Tribes (to the extent the State is aware of those policies and believes them to be applicable and meritorious). In addition, projects must be implemented in compliance with applicable laws and rules, including the consent decrees. As part of the evaluation of this criterion, the State assesses whether the alternative would potentially interfere, overlap, or partially overlap with the restoration work covered under current or planned consent decrees or restoration plans.

All alternatives are compliant with applicable law. The State would require or obtain all needed permits and authorizations.

[5] *Restoration Determination Plan for the Upper Clark Fork River Basin*, prepared by the NRDP, with assistance from Rocky Mountain Consultants, Inc., dated October 1995.

Resources of Special Interest to the Tribes and DOI: Pursuant to the State's Memorandum of Agreement (MOA) with the Department of Interior and Confederated Salish and Kootenai Tribes (Tribes), the State is to pay particular attention to natural resources of special interest to the Tribes and/or DOI, including attention to natural resources of special environmental, recreational, commercial, cultural, historic, or religious significance to either the Tribes or the United States.[6] The MOA also provides for the State to pay particular attention to "Tribal Cultural Resources" or "Tribal Religious Sites," as those terms are defined in the MOA.

Alternative 1 (the no action alternative) does not address resources of special interest to the Tribes and DOI. Alternative 2 (Priority 1 Terrestrial Areas), and Alternative 3 (Priority 1 and Priority 2 Terrestrial Areas) likely enhances resources of special interest, with Alternative 3 expected to provide further enhancement. Alternative 2 and Alternative 3 have the potential for site disturbance of tribal cultural sites, and appropriate evaluation and coordination would be required.

Normal Government Function: The State will not fund restoration activities for which a governmental agency would normally be responsible or that would receive funding in the normal course of events. With this criterion, the State evaluates whether a particular alternative would be implemented if recovered natural resource damages were not available. The Restoration Fund may be used to augment funds normally available to government agencies to perform a particular action if such cost sharing would result in the implementation of a restoration action that would not otherwise occur through normal agency function.

Alternative 2 (Priority 1 Terrestrial Areas), and Alternative 3 (Priority 1 and Priority 2 Terrestrial Areas) do not replace normal government functions, as the State is prohibited from funding restoration activities for which a governmental agency would normally be responsible or that would receive funding in the normal course of events. However, Alternative 2 and Alternative 3 may augment normal government function, if funding is normally available to a government agency to perform a particular action, and such cost sharing would result in the implementation of a restoration action that would not otherwise occur through normal government function. This criterion is inapplicable to Alternative 1 (the no action alternative).

Price: Under this criterion, the State evaluate whether the land, easements, water rights, or other property interests proposed to be acquired are being offered for sale at or below fair market value.

Alternative 2 (Priority 1 Terrestrial Areas), and Alternative 3 (Priority 1 and Priority 2 Terrestrial Areas) are equivalent, as all land, easements, water rights, or other property interests proposed to be acquired under Alternative 2 and Alternative 3 will be require evaluation to assure that all interests are being offered for sale at or below fair market value. Any acquisition or easement effort would normally include a State appraisal and other due diligence, and negotiation of a

[6] This MOA, dated November 1998, is available from the NRDP website at https://dojmt.gov/wp-content/uploads/2011/06/1998moatribes.pdf

purchase price at or below fair market value. This criterion is inapplicable to Alternative 1 (the no action alternative).

4.1.4 Evaluation Summary

The criteria that are most influential in this analysis is cost:benefit relationship and cost-effectiveness. Under the no action alternative (natural recovery), any wildlife resource benefits derived from the proposed terrestrial restoration actions in the Basin would not occur. Natural recovery would progress slowly at individual injured areas, and some injured areas would likely never reach pre-existing conditions. Arid habitats would likely take over 100 years to recover to pre-existing conditions. The Opportunity Ponds are unlikely to fully recover to pre-existing conditions under any length of time due to the magnitude of the impacts. Services normally provided by wildlife resources would continue to be zero or greatly reduced. Without the proposed conservation easements and acquisitions, terrestrial wildlife habitats would likely decline in the UCFRB due to other human development over the long-term, possibly to the point where limited gains made by natural recovery may be negated.

Alternative 3 provides for restoration actions over 325,000 acres in nine separate landscape areas in the UCFRB, whereas alternative 2 provides for restoration actions on 178,000 acres in only five landscape areas of the UCFRB. Greater benefits would be gained to wildlife resources and the public's use and enjoyment of those resources as a whole from allocating restoration actions over the larger area, as proposed in alternative 3, compared to alternative 2. Greater benefits and cost efficiencies gain be gained by addressing Priority 1 and 2 areas together rather than addressing only Priority 1 areas. Alternative 3 also provides for more coordination with aquatic restoration projects that will benefit both aquatic and wildlife resources over a greater area compared to alternative 2. Alternative 3 encompasses more concept proposals submitted by the public, providing greater opportunities for partnerships (which may increase cost-effectiveness).

Alternative 3 also does better than Alternative 2 based on the results of response actions and potential natural recovery criteria. Alternative 3 offers further enhancement and protection of planned response actions by addressing a larger portion of the UCFRB watershed than Alternative 2. Alternative 3 would be expected to further advance the recovery period and enhance potential for natural recovery through its expanded and integrated approach of addressing the UCFRB through actions within the fourteen priority watersheds than Alternative 2.

Based on the better results for Alternative 3 reflected for the four criteria summarized above, the State selects Alternative 3 as the Preferred Alternative. For the other six NRD criteria, Alternative 2 and 3 are comparable.

4.2 Preferred Alternative

4.2.1 Terrestrial Landscape Areas

As set forth in the *2012 Process Plan*, this terrestrial resources restoration plan targets restoration work in terrestrial injured areas and in Priority 1 and 2 areas identified in the *2011 Terrestrial Prioritization Plan*. The Priority 1 and 2 areas are shown on Figure 2-2. Terrestrial-related recreational projects are addressed separately in Section 5.0.

For the preferred alternative, the Priority 1 and Priority 2 areas, plus the Clark Fork River mainstem injured area are grouped into priority landscape areas, based on geography and similarity of restoration opportunities. The nine priority landscape areas are: Philipsburg West, Lower Flint Creek, Garnets, Avon North, Deer Lodge North, Deer Lodge South, East Flints, Anaconda, and Clark Fork Mainstem (Garrison to Milltown). Landscape areas are discussed individually in the sections that follow.

Figure 4-1 shows the nine priority landscape areas in the UCFRB. Table 4-1 provides estimated acreage of Priority 1 and 2 resource areas for each of the nine landscape areas. The amount of land currently protected under conservation easements is estimated for each landscape area using GIS analysis and also shown in Figure 4-1 and Table 4-1. GIS analysis is also used to summarize the land-cover types for each landscape area, to help in the development of terrestrial actions and inform budget estimates for each area (Table 4-2). Riparian information from the National Wetland Inventory is incorporated into the delineation of these nine areas, showing the existence of more wetland/riparian habitat in the landscape areas than shown in the *2011 Terrestrial Prioritization Plan*.

Figure 4-1 also shows United States Forest Service lands that are nearby priority landscape areas. The UCFRB also contains State lands, including lands within the Silver Bow Creek, Smelter Hill Area Uplands, and the Clark Fork River injured areas. These State lands are described in the *2011 Terrestrial Prioritization Plan* (Attachment A to Appendix B).

Landscape area boundaries are simplified due to the groupings of Priority 1 and Priority 2 areas and are approximate. As a result, landscape areas may include within their boundaries some housing developments, ranch homesteads, irrigated agriculture, or features not eligible or targeted for terrestrial actions. In addition, some small areas of Priority 1 or Priority 2 habitats may fall outside the landscape area boundaries (such as small patches or stringers of riparian and wetland habitats), but still eligible for action. As the boundaries are approximate, areas adjacent to boundaries may still be included for action based on cost effectiveness and contribution to restoration goals, including acquisition of an entire property that includes primarily priority areas.

Figure 4-1. UCFRB Priority Landscapes.

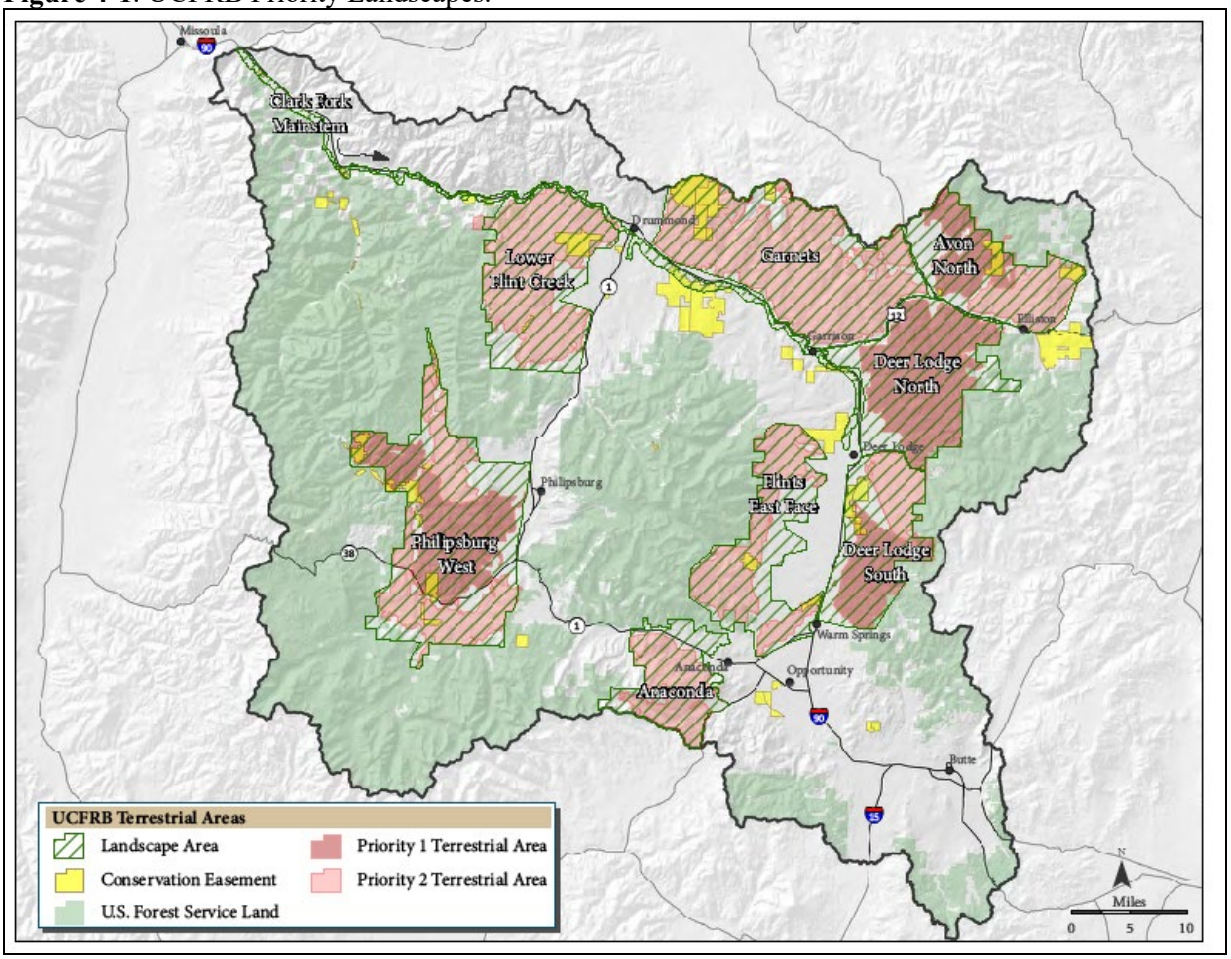


Table 4-1. Priority 1 and 2 acres and conservation easement acres (in 2012) by landscape area

Landscape Area	Total Area (acres)	Priority 1 Acres	Priority 2 Acres	Total Priority 1&2 Acres	Total Priority 1&2 (%)	Conservation Easement acres
Philipsburg West	137,909	51,751	44,828	96,579	70%	6,718
Lower Flint Creek	85,660	0	66,738	66,738	78%	3,852
Garnets	126,735	0	106,470	106,470	84%	9,323
Avon North	62,384	23,416	22,818	46,234	74%	3,958
Deer Lodge North	84,263	63,967	8	63,975	76%	-
Deer Lodge South	59,123	26,290	15,491	41,781	71%	3,454
East Flints	71,752	0	41,751	41,751	58%	1,712
Anaconda	43,592	0	27,005	27,005	62%	-
Clark Fork Mainstem	22,381	12,223	201	12,424	56%	2,777
Totals	**693,799**	**177,647**	**325,310**	**502,957**	**72%**	**31,794**

Table 4-2. 2011 UCFRB Land-cover type acreage for terrestrial landscape areas

LAND-COVER TYPE	LANDSCAPE AREA								
	Philipsburg West	**Lower Flint Creek**	**Garnets**	**Deer Lodge North**	**Deer Lodge South**	**East Flints**	**Anaconda**	**Avon North**	**Clark Fork Mainstem**
Developed	741	450	259	544	1,183	1,542	778	54	1,324
Agriculture	7,822	4,684	1,731	3,618	2,491	3,650	302	4,865	3,021
Cliffs, Bedrock, and Badlands	151	39	20	24	0	286	2,320	37	20
Alpine Bedrock and Ice	0	0	0	0	0	1	630	0	0
Alpine Low Vegetation	0	0	0	0	0	0	2,568	0	0
Subalpine Montane Mesic Meadow	4,106	4,302	1,781	2,840	952	682	792	828	29
Total Alpine	**4,106**	**4,302**	**1,781**	**2,840**	**952**	**683**	**3,991**	**828**	**29**
Montane Dry Mesic Mixed Conifer Forest	966	5,345	1,103	0	0	0	0	0	258
Montane Subalpine Mesic Mixed Conifer Forest	0	0	2	0	0	24	1,054	0	5
Limber Pine Juniper Woodland	838	18	318	98	24	18	2	201	23
Lodgepole Pine Forest	20,118	3,354	17,102	4,624	1,754	6,580	9,697	6,663	3
Ponderosa Pine Woodland and Savanna	2,682	3,792	8,296	2,344	494	618	302	2,342	308
Subalpine Spruce Fir Forest and Woodland	3,420	242	864	233	33	916	2,854	264	0
Douglas Fir Forest and Woodland	9,726	1,967	16,012	13,845	3,857	3,580	4,592	4,584	76
Total Conifer Forest	**37,750**	**14,719**	**43,697**	**21,144**	**6,162**	**11,735**	**18,501**	**14,054**	**672**
Harvested Forest	3,967	4,828	13,324	3,046	144	939	962	1,407	8
Deciduous Shrubland	1,539	2,377	1,971	930	266	467	310	357	12
Montane Sagebrush/Shrub Steppe	41,301	8,768	38,348	38,104	23,393	22,915	8,995	25,943	412
Big Sagebrush Steppe	0	5165	877	0	0	0	0	0	95
Lower Montane Foothill and Valley Grassland	9,477	34,356	20,107	9,755	18,732	21,510	1,536	10,759	4,565
Upper Montane and Subalpine Grassland	13,856	1,075	960	813	708	1,056	1,299	569	0
Total Grassland & Sagebrush	**64,634**	**49,363**	**60,293**	**48,672**	**42,833**	**45,482**	**11,830**	**37,271**	**5,071**
Aspen Forest and Woodland	2,486	228	997	268	438	434	2,481	343	2
Water	2	1	11	18	34	84	13	20	167
Riparian Woodland and Shrubland	3,917	1,826	209	248	332	359	231	250	1,822

LANDSCAPE AREA									
LAND-COVER TYPE	**Philipsburg West**	**Lower Flint Creek**	**Garnets**	**Deer Lodge North**	**Deer Lodge South**	**East Flints**	**Anaconda**	**Avon North**	**Clark Fork Mainstem**
Wet Meadow	689	34	77	60	69	40	14	111	90
Emergent Wetland	14	4	0	0	0	3	0	0	12
NWI Freshwater Emergent Wetland	6,872	1,451	884	1,468	1,871	1,613	412	1,514	3,047
NWI Freshwater Forested Wetland	9	16	0	3	4	4	8	0	6
NWI Freshwater Forested Shrub Wetland	0	0	0	0	0	0	0	0	169
NWI Freshwater Pond	132	32	44	38	56	245	71	43	345
NWI Freshwater Scrub Shrub Wetland	1,136	614	326	500	599	868	824	498	822
NWI Lake	0	154	26	16	121	54	42	42	62
NWI Riparian Emergent	496	35	111	2	30	2,383	2	15	442
NWI Riparian Forested	466	328	291	329	397	387	133	319	2,438
NWI Riparian Scrub Shrub	400	110	261	419	803	371	317	196	1,074
NWI River	566	57	49	70	325	119	42	81	1,308
NWI Riverine	0	0	0	0	0	0	0	0	419
Total Riparian & Wetland	**14,699**	**4,661**	**2,288**	**3,171**	**4,642**	**6,531**	**2,110**	**3,089**	**12,224**
TOTAL ACRES*	**137,894**	**85,650**	**126,361**	**84,255**	**59,110**	**71,749**	**43,584**	**62,304**	**22,384**

***** *Total landscape area acres generated from land-cover raster layer may not exactly match acreage generated from other methods.*

4.2.2 Terrestrial Actions

In assessing restoration needs and determining proposed actions for the nine landscape areas, the State identified measures common among the landscape areas that best meet terrestrial restoration goals.

The protection of high priority lands through perpetual conservation easements or public acquisitions is the clear dominant component of the terrestrial restoration alternative, with an estimated 75% of all terrestrial restoration funding. The *2011 Terrestrial Prioritization Plan* focused primarily on enhancement of private lands, as private lands often provide critical habitat connectivity that cannot be protected by maintaining existing public land. In addition, the overwhelming majority of the terrestrial abstracts submitted in response to the NRDP solicitation for restoration concept proposals involved conservation easements or public acquisitions. Private lands are expected to provide some of the best opportunities for enhancement and protection. As made clear below, any conservation easement or public acquisition will require a subsequent funding decision prior to project implementation. The term "public acquisitions" in this Restoration Plan includes ownership by a State agency, such as DNRC, FWP, DEQ or NRDP, as well as partnerships with partner organizations that may hold the property on behalf of the State.

The measures applied to each of the nine landscape areas, as applicable, are:

1. Protection of high priority lands through perpetual conservation easements or public acquisitions. In portions of the UCFRB, wildlife habitat is threatened by development, primarily residential subdivision, and the conversion of native grasslands to crop production. Perpetual conservation measures can conserve large blocks of high priority habitats and maintain landscape connectivity, provide replacement of resources by offsetting future losses from development. Gaining access for wildlife-related recreational use is also important.

2. The State may perform project development efforts for Priority Landscape Area Plans projects that the State determines may meet the established criteria. For most proposed easement or acquisition efforts included in this plan, significant project development efforts are still needed in order to accomplish such projects. This includes completion of natural resource inventories, other necessary due diligence, title work, and State appraisals for all potential easement/acquisition parcels. Unless otherwise indicated in this Plan, project development efforts for the proposed easement and acquisition efforts would be funded. However, a subsequent funding decision on project implementation would be subject to public comment, consideration by the Advisory Council and Trustee Restoration Council, and final approval by the Governor, as well as any other necessary approvals required under state law, as indicated in Section 6 on Restoration Plan Implementation. The majority of terrestrial actions will fall under this category.

2. Enhancement of riparian and wetland habitats to benefit wildlife by restoring habitat structure, processes, and functions. Riparian widths that provide sufficient protection for fisheries resources are generally not ideal for providing benefits to terrestrial wildlife species. Therefore, enhancement of riparian and adjacent native habitats extending over 300 feet from streams is recommended for terrestrial wildlife enhancement. Riparian enhancements include fencing livestock out of riparian areas, removal of nonnative vegetation, planting native trees or shrubs, and/or the implementation of grazing systems that reduce or eliminate livestock impacts in riparian areas. Along larger streams, removing unused barriers or diversions to restore the natural stream channel will help restore natural processes that enable the establishment and maintenance of riparian vegetation. In some tributaries and headwaters, restoration of beaver into suitable areas can improve riparian habitat condition and create wetlands that provide amphibian breeding sites, waterfowl brood rearing areas, and waterbird feeding sites. Pulling hayfields and agricultural fields away from riparian areas and wetlands provides larger buffers that can enable expansion of riparian vegetation and provide nesting cover for waterfowl. Wetlands can be enhanced in some places through the protection or enhancement of off-stream oxbow ponds, conversion of deeper water fishing ponds to shallow water wetlands, exclusion of livestock grazing, or restoration of previously drained wetlands by providing water.

   Since the UCFRB is a relatively dry landscape, most wetland restoration or enhancement opportunities are in or adjacent to riparian habitats. Potential activities include protection or enhancement of off-stream oxbow ponds, conversion of deeper water fishing ponds to shallow water wetlands, management of livestock in wetlands, restoration of previously drained wetlands by water, or the creation of wetlands by reintroducing beaver or installing small dams and water control structures. Such dams/structures would be designed so that they are not an impediment to fish passage.

   For most priority landscape areas, there are significant gaps in the State's needed knowledge on the condition of the riparian and wetland areas that would be addressed by the proposed actions included in this Plan. More data is needed on this condition to allow the State to better focus activities. Unless otherwise specified herein, proposed actions to enhance riparian areas will first involve further data collection and other information gathering to determine the specific types and locations of these actions prior to implementation.

3. Enhancement of grasslands and shrub-grasslands for wildlife by improving habitat condition. Enhancement activities may include implementation of grazing systems, reducing livestock densities, resting pastures for longer periods of time, restoring native vegetation on heavily degraded sites, and conducting necessary weed management associated with these actions. Standard livestock fences can impair the movement of

wildlife or result in direct mortality from entanglement or collision. Removing unneeded fences and modifying existing fences to more wildlife-friendly designs will benefit wildlife, especially ungulates, songbirds, and raptors. Managing grasslands across the landscape to provide a variety of cover conditions and vegetation height will help maintain a wider diversity of wildlife species.

For most priority landscape areas, there are significant gaps in the State's needed knowledge on the condition of the grasslands and shrub-grasslands that would be addressed by the proposed actions included in this Plan. More data is needed on this condition to allow the State to better focus activities. Unless otherwise specified herein, proposed actions to enhance riparian areas will first involve further data collection and other information gathering to determine the specific types and locations of these actions prior to implementation.

4. Enhancement of forests in priority landscapes for wildlife benefits. Actions include encouraging aspen growth with the use of prescribed fire or excluding livestock, managing forested areas for wildlife by converting industrial timber lands to conservation properties, protecting large-diameter trees from commercial harvest, maintaining large-diameter snags, reducing or removing livestock grazing from forested habitats, active management of conifer forests to reduce the impacts of insect outbreaks and management to recruit and maintain large diameter trees on the landscape over the long-term.

   For most priority landscape areas, there are significant gaps in the State's needed knowledge on the condition of the forested area that would be addressed by the proposed actions included in this Plan. More data is needed on this condition to allow the State to better focus activities. Unless otherwise specified herein, proposed actions to enhance forested areas will first involve further data collection and other information gathering to determine the specific types and locations of these actions prior to implementation.

5. Management activities. A variety of management activities can be implemented to benefit wildlife across all habitats, including removal of roads and trails that are causing resource damage, removal of abandoned fences, providing for properly managing recreational access, and reducing illegal off-road vehicle use. Though the State completes some of these actions as part of normal operations, expensive up-front investments in infrastructure are often needed to allow for success over the long-term. The State does not routinely budget for removing abandoned roads or fences.

   For most priority landscape areas, there are significant gaps in the State's needed knowledge on optimum management activities. More data is needed to allow the State to better focus terrestrial activities. Unless otherwise specified herein, proposed management actions will first involve further data collection and other information gathering to determine the specific types and locations of these actions prior to implementation.

6. Priority Landscape Area Information Gathering. As stated above, the terrestrial actions will greatly benefit from better data on the condition of grassland, shrub grassland, riparian and wetland habitats, forested areas, and on the distribution and abundance of nongame species. All projects will incorporate a biological inventory to help address any Priority Landscape Area gap and provide baseline data to monitor the effectiveness of each project.

4.2.3 Analysis of Priority Landscapes

The State conducted the following steps to develop these proposed actions for each the nine Priority Landscapes:

1. In 2011, the State performed an assessment of each of the nine Priority Landscapes, focusing on terrestrial resource values, current habitat conditions, and current level of habitat protection, and compared existing conditions to the terrestrial restoration goals. For each landscape area, this assessment took into consideration the lands already acquired through the past NRD grant process (Table 4-3) and an analysis of lands protected through existing easements (Table 4-1).

2. The State then assessed the individual concept proposals submitted through the public scoping process to determine whether the concept proposals fit with and addressed the terrestrial restoration goals and key elements, listed in Section 4.1.1. Concept proposals that met all or most of these were incorporated into the State's proposed actions. Alternately, concept proposals that met no or only a few of these elements were not incorporated.

3. The State then identified what areas and activities should be added to further meet restoration needs, beyond those covered through the public scoping process (terrestrial gaps).

4. With the results of steps 2 and 3, the State proposed the UCFRB terrestrial restoration alternative, comprised of terrestrial measures and associated budgets for each Priority Landscape.

5. Separately, as identified in the *2012 Process Plan*, the State assessed the habitat protection and enhancement restoration needs for existing FWP Wildlife Management Areas (WMAs) within the UCFRB, and State lands acquired with NRD funds (Section 4.2.4), and then proposed actions as part of the UCFRB terrestrial restoration alternative beyond the routine operation and maintenance activities for which the State is normally funded through its biennial legislative funding.

6. Lastly, as provided for in the *2012 Process Plan*, the State developed a list of necessary monitoring activities and associated budget, which is described in Section 4.2.5.

The nine landscape analyses in Section 4.2.6 provides a summary of the proposed actions and budget for each of the landscape areas.

Table 4-3. Funded Acquisition/Easement Projects

Project Name	County	Acreage	Year Funded	Amount	Owner*
Z-4 Ranch Conservation Easement	Granite	2,100	2000	$10,000	FVLT
Manley Ranch Conservation Easement	Powell	3,416	2000	$608,048	FWP
Watershed Land Acquisition	Deer Lodge	9,000	2000, 2001	$5,831,904	FWP
Stuart Mill Bay Acquisition	Deer Lodge	363	2002	$2,000,000	FWP
Big Butte Property Acquisition	Silver Bow	350	2005	$687,842	B-SB
Duhame Property Acquisition	Silver Bow	1,800	2005	$1,668,557	FWP
Madsen Easement	Missoula	157	2006	$25,000	FVLT
Stucky Ridge/Jamison Property Acquisition	Deer Lodge	76	2008	$265,335	FWP
Milltown Land Acquisition	Missoula	415	2008	$595,628	FWP
Blue-eyed Nellie Moore Acquisition	Deer Lodge	30	2009	$142,500	FWP
Peterson Ranch Conservation Easement	Granite	3,775	2009	$334,125	FVLT
Paracini Pond Property Acquisition	Powell	272	2009	$1,201,905	DEQ
Spotted Dog Acquisition	Powell	27,497	2010	$16,574,009	FWP
Confluence Project at Rock Creek	Missoula	202	2013	$400,000	FVLT
Garrity WMA addition	ADLC	640	2014	$1,280,000	FWP
DLR & DCC Ranches Easement	ADLC	3,396	2018 (pending)	$2,810,000	CFC
Summary of Projects Involving Acquisitions and other Activities					
Thompson Park Improvement Project	Silver Bow	81	2002, 2004, 2005	$925,712	USFS
Thompson Park Improvement Project	Silver Bow	40	2007	$988,402	B-SB
Silver Bow Creek Greenway	Silver Bow	370	2000-2002; 2005-2009	$15,564,924	GSD
Old Yellowstone Trail Acquisition	ADLC	107	2018	$160,000	Powell Co

***Guide to Owner Category**		
FVLT - Five Valleys Land Trust	DCC - Dry Cottonwood Creek	DEQ - Montana Department of Environmental Quality
FWP - Montana Fish, Wildlife and Parks	DLR – Deer Lodge River	GSD - Greenway Service District
B-SB - Butte-Silver Bow	MLR - Montana Land Reliance	ADLC - Anaconda Deer Lodge County
CFC - Clark Fork Coalition		

4.2.4 Priority Landscape Area Plans

4.2.4.1 Proposed Actions for the Philipsburg West Priority Landscape

Priority Landscape Description

The landscape west of Philipsburg, Montana is defined by the Flint and Rock Creek watersheds and contains Priority 1 lands in the Antelope foothills at the southern periphery of the John Long Mountain Range as well as Priority 2 lands at the headwaters of Rock Creek. Due to its important riparian habitat, extensive high quality native grasslands, and a low level of landscape fragmentation, 51,751 acres (38% of lands in the area) are designated as Priority 1 lands. They account for almost a third (31%) of all Priority 1 lands in the UCFRB.

The West Fork, Ross' Fork, Middle Fork, and East Fork of Rock Creek are the headwaters for Rock Creek. Upper Willow Creek is a major tributary to Rock Creek. Wetlands along its length and sagebrush grasslands in the adjoining foothills are home to sandhill cranes, mountain lion, black bear, bighorn sheep, mule deer, and elk. The streams and associated riparian habitats in this landscape provide important fish habitat, critical nesting/foraging habitat for riparian associated birds, yearlong moose habitat, and water for many species. Prairie pothole wetlands, unique for the generally dry Upper Clark Fork watershed, are found at Potato Lakes.

With 11% of the landscape classified as riparian or wetland, only the Clark Fork River has more riparian habitat than Philipsburg West. Critical winter range for over 1,500 elk lies on private lands south and west of Philipsburg. Private lands near Philipsburg, the West Fork Buttes, along the tributaries of Rock Creek, and in the Upper Willow Creek drainage; provide critical winter ranges or movement corridors for big game and support a high diversity of riparian and wetland bird species, yet, are especially vulnerable to development.

Restoration Needs/Objectives

Over 6,500 acres are protected from development by conservation easements (Table 4.2), but most of the area, including the core Priority 1 area, is unprotected. Grassland and riparian habitats in this landscape are in fair to excellent condition. The majority of this landscape is composed of large private ranches. Subdivision risk is highest south of Highway 38 (the Skalkaho Highway), and north of Highway 348 (the Marshal grade).

Terrestrial habitats will benefit from the conservation of extensive areas of native grasslands, and by protecting, and enhancing, riparian and wetland habitats. Upper Willow Creek, the Potato Lakes, and the Antelope Hills contain rough fescue grasslands, riparian, and emergent wetlands, all of which are priority habitats targeted for conservation. Conservation of these lands will ensure terrestrial habitats benefit and help meet the goals of this restoration plan.

Proposed Actions

The State's proposed actions for this area are to:

1. Protect high priority habitats through conservation easements or acquisitions. Perpetual land conservation within the landscape west of Philipsburg will conserve high priority lands and – if large enough – would be cost effective with high net benefits.

2. Enhance riparian areas for wildlife benefits. Riparian enhancements could include excluding livestock from stream banks, planting riparian trees and shrubs, or the implementation of better grazing systems.

3. Enhance native grasslands for wildlife benefit.

The concept proposals submitted by the public for this area included riparian habitat protection and enhancement along Flint Creek (abstract #8); the development and implementation of conservation easements, or acquisitions, in the John Long Mountains (abstract #49); the improvement of wildlife winter range through removal of conifers and weed control (abstract #74), and Zeke's Meadow acquisition proposed by the Rocky Mountain Elk Foundation (2015 abstract). The State's proposed actions cover the concepts suggested in two of these abstracts (abstracts #8 and 49), but with lower costs and allocation of effort than proposed. These concepts fit well with the State's priorities and guidance.

The State does not propose actions involving proposed conifer removal and weed control to improve winter range as proposed in abstract #74. Depending on the site and prescription, conifer removal may, or may not, benefit elk winter range and may adversely impact other wildlife species. Since juniper has an important ecological role, the wholesale prescription may not be the most appropriate. Weed control is only considered appropriate for restoration funding when done in conjunction with other approved restoration actions, and when the intensity is beyond weed control actions normally completed by managing agencies. Another concept proposal (abstract #67) suggested an investigation of the impacts from mercury contamination caused by scattered abandoned mines the Flint Creek drainage. This concept proposal is addressed in the section on terrestrial monitoring (Section 4.2.6).

In addition to the areas and actions suggested through the public scoping process, the State identified the upper reaches of Rock Creek and its tributaries, including Upper Willow Creek, as an area to pursue the development and implementation of riparian enhancements.

Restoration Budget

Riparian enhancement costs in Philipsburg West will be funded with both the aquatic and terrestrial restoration funds since both resources will benefit. Due to the large amount of Priority 1 terrestrial lands and riparian habitat west of Philipsburg, the State recommends up to $3.2 million

dollars for actions within this landscape, including $130,000 for riparian habitat enhancements on Flint Creek that are further outlined in Section 3.2.2.7. As indicated in Section 4.2.2 and Section 6, following completion of needed project development efforts, easements or acquisitions will require a subsequent approval of the proposed transaction, once it is fully developed, by the Trustee, following consideration of input from the public, Advisory Council, and Trustee Restoration Council. As also indicated in Section 6, funding of individual projects within terrestrial landscape areas will be based on cost-effectiveness and cost:benefit, rather than on concept proposal estimates.

4.2.4.2 Proposed Actions for the Lower Flint Creek Priority Landscape

Priority Landscape Description

This landscape area west of Hall is defined by Lower Willow Creek and its tributaries. It is lower in elevation than other landscapes in the UCFRB and as a result supports productive range and agricultural lands. It has the highest acreage, 34,345 acres, of lower montane foothill and valley grasslands, and the second highest acreage of Ponderosa pine woodlands. Ranches are smaller in north Granite County than in the south, yet, still contain relatively un-fragmented grasslands. Seventy eight percent of the area – 66,738 acres – have been designated as Priority 2 lands for restoration planning.

Long billed curlews, grassland songbirds, and wintering elk reside in the areas' grasslands. Riparian habitats support painted turtles, beaver, white-tailed deer, moose, black bear, and a high diversity of birds. Around five hundred wintering elk are typically observed during winter elk survey flights. Mule deer, white-tailed deer, mountain lion, and wolf are present. Flint Creek is considered to be Priority 2 for aquatic resource conservation.

Restoration Needs/Objectives

Residential development in this area is mostly confined to the Highway 1 corridor and traditional ranches. Since at this time the area is not well known by recreationists, and is lightly settled, there may be reasonably inexpensive opportunities to purchase conservation easements, or lands outright, for the benefit of wildlife. On some ranches, grazing intensity has been strong, and sustained, and range would benefit from implementation of grazing systems. There are 3,852 acres held under a conservation easement and Forest Service lands adjoin the area to the south and west. Former industrial timber lands in the area were conveyed into private ownership.

Proposed Actions

The State's proposed actions for this area are to:

1. Protect high priority lands through conservation easements or, where appropriate, public acquisitions. Avoiding the subdivision of the landscape or conversion of native grasslands to crops or hay production will conserve high priority native habitats.

2. Enhance riparian habitats for fish and wildlife benefits. Many of the riparian areas near Lower Willow Creek are narrow due to the impact of cattle grazing or farming to their edge. The greatest benefit to wildlife will accrue where protections exceed 300 feet on either side of the stream or wetland.

3. Enhance native grassland habitats by implementing grazing systems that provide better habitat for wildlife. Range in declining or degraded condition may benefit from rest or weed control, where associated with other terrestrial activities.

Three of the concept proposals offered for Lower Flint Creek and Philipsburg West – Flint Creek Aquatic Habitat Conservation (abstract #8), John Long Mountain Terrestrial Habitat (abstract #49), and Granite County Wildlife Winter Range Replacement (abstract #74) – included both landscapes. Two proposals – the Mentzer Ranch Conservation Easement (abstract #51) and the Henderson Ranch Conservation Easement (abstract #53) – are outside of the priority landscape area, but include some riparian areas.

The conservation of Flint Creek (abstract #8) and lands near the John Long Mountains (abstract #49) are congruent with the State's proposed actions and are included. The Mentzer and Henderson Ranch proposals (abstracts #51 and #53) do not meet guidance from the *2012 Process Plan* that, when a project is not located in a priority 1 or 2 area, 25% of the project area be riparian or wetland habitat. These projects would have a small conservation footprint because they do not adjoin other conserved lands, would only conserve one targeted habitat, and have a small geographic scope in an area dominated by non-native habitats. As such, these proposals are not deemed to be cost-effective.

Direct habitat alteration like conifer removal and weed control (abstract #74) will only be considered appropriate for restoration funding when done in conjunction with other approved actions, such as riparian enhancements and land acquisitions/easements.

Conservation of terrestrial habitats west of Hall and along Flint Creek were identified by the public as being important. The enhancement and conservation of Lower Willow Creek and its tributaries is also a restoration need in this landscape and priority for the State (abstract #G15). Another gap, consistent with restoration goals, is to enhance wildlife related outdoor activities and provide for public access to them. Public access for wildlife viewing, fishing, and hunting to public and private

lands in Lower Willow Creek is low, and declining, and as such public access to enhanced wildlife resources will be important to secure in this landscape.

Restoration Budget

Lower Flint Creek has productive native grasslands, exceptional ponderosa pine woodlands, moderate landscape fragmentation, and few formal habitat protections; 66,738 acres are classified as Priority 2 and there has been no investment of NRDP restoration funds in the area so far. Actions in the Lower Flint Creek South will occur on Priority 2 habitat lands and along riparian areas in this landscape. The State, recommends up to $1.4 million dollars for actions within this landscape, including $130,000 for riparian enhancements in lower Flint Creek that are further outlined in Section 3.2.2.7. As indicated in Section 4.2.2 and Section 6, following completion of needed project development efforts, easements or acquisitions will require a subsequent approval of the proposed transaction, once it is fully developed, by the Trustee, following consideration of input from the public, Advisory Council, and Trustee Restoration Council. As also indicated in Section 6, funding of individual projects within terrestrial landscape areas will be based on cost-effectiveness and cost:benefit, rather than on concept proposal estimates.

4.2.4.3 Proposed Actions for the Garnet Priority Landscape

Priority Landscape Description

The eastern portion of the Garnet Mountains lies northeast of Drummond and northwest of Avon. At 126,735 acres, it is the second largest landscape prioritized by the State and 84% of it is classified as Priority 2 for restoration planning. The Little Blackfoot River and mainstem of the Clark Fork River form its southern boundary. Multiple creeks – Bert, Hoover, Carten, Brock, and Warm Springs – run from the crest of the Garnets southwest to the Clark Fork River.

Habitats and land-use follow an elevational gradient with developed/cultivated lands transitioning to grasslands/shrub grasslands into conifer forest/harvested forest. Drainages incise this landscape and form a number of ridges and benches. Pockets of aspen and deciduous shrubs are interspersed throughout. Coniferous forest is more extensive here (43,697 acres) than in any other landscape. Montane sagebrush steppe and juniper woodlands are prevalent on the southern face of the Garnets and provide key habitat for the largest concentration of wintering mule deer in the Upper Clark Fork.

Bird diversity is high due to the presence of multiple habitat types (aspen/riparian, coniferous forest, deciduous shrublands, grasslands, and sage brush steppe). Rattlesnakes, found in cliffs and rocks along the river, are unique to this landscape. All big game species in Montana are present except mountain goat (bighorn sheep are transient), including black bear, mountain lion, and wolf. Grizzly bears dispersing south from the Blackfoot watershed also live in the Garnets. The landscape connects the Blackfoot and Upper Clark Fork watersheds, the Flint Creek and Garnet Mountain Ranges, the Continental Divide, and the Spotted Dog Hills. Elk from both the Blackfoot

and the Clark Fork watersheds winter on south face of the Garnets below Saddle Mountain and Limestone Ridge.

Restoration Needs/Objectives

The Garnets comprise a large landscape with a diversity of habitats. Private lands dominate the lower elevations – though there are some sections owned by the Department of Natural Resources (DNRC) – with Bureau of Lands Management (BLM) land at higher elevations to the north. Subdivision of land has occurred at the head of Hoover Creek, north of Garrison, as well as, close to the Clark Fork River and Interstate 90. It is especially important to maintain landscape connectivity for wildlife movement between watersheds and priority landscapes here.

It is feasible to protect a large portion of this landscape through a combination of existing and future conservation easements and public acquisition of private timber land. Stimson Timber Company owns 9,587 contiguous acres northeast of Drummond in close proximity to conservation easements held by the Rocky Mountain Elk Foundation (RMEF) and Montana Fish, Wildlife and Parks. Saddle Mountain, which is critical elk winter range, is situated between Stimson lands in Hoover Creek and 9,323 acres held under conservation easement. The eastern part of the Garnets is northwest of the Spotted Dog WMA and the Little Black Foot River which is a priority for both terrestrial and aquatic conservation.

Purchase of conservation easements, or land, in either the western or eastern portion of the Garnet landscape would conserve a large area adjoining other protected areas and conserve multiple habitats.

In the uplands grazing and forest management could improve habitat for wildlife. Conservation of the sagebrush steppe and juniper woodlands which distinguish the Garnet foothills from other areas in the Upper Clark Fork is a priority. Many of the creeks would benefit from riparian enhancements. Enhancements to riparian and aquatic habitat in the Little Blackfoot River may be especially beneficial to the UCFRB since it is a major tributary to the Upper Clark Fork River.

Proposed Actions

The State's proposed actions for this area are to:

1. Protect large blocks of high priority lands using conservation easements or, where appropriate, public acquisitions.

2. Enhance riparian habitats for fish and wildlife benefits. Work along the Little Blackfoot River is a priority for both aquatic and terrestrial benefits.

3. Enhance grasslands and shrub/grassland habitats for wildlife benefit.

4. Enhance forests for the benefit of wildlife.

In the Garnets, placement of a conservation easement on two ranches north of Garrison encompassing 8,300 acres was the only concept project proposed by the public for the uplands (abstract #50). Two projects were proposed that with a variety of tools would enhance riparian habitat along the Little Blackfoot River (abstracts #30 and 43). These concept proposals align with the both terrestrial and aquatic actions proposed by the State. Elements of the two proposals for the Little Blackfoot River would be combined during implementation, but with lower costs and allocation of effort than proposed.

Purchase of conservation easements on the western end of the Garnets near Saddle Mountain, or purchase of Stimson Lands in Hoover Creek, were not suggested by the public during scoping, but fit with the State's restoration goals. Landowners and conservation partners have expressed a shared interest in working north of Drummond and terrestrial efforts there would fill a gap (abstracts #G7 and G8).

Restoration Budget

Actions in the Garnet landscape area will occur within 106,470 acres of Priority 2 habitat lands. The State recommends up to $2.2 million dollars for actions within this landscape, including $360,000 for riparian habitat enhancements on the Little Blackfoot River that are further outlined in Section 3.2.2.10. As indicated in Section 4.2.2 and Section 6, following completion of needed project development efforts, easements or acquisitions will require a subsequent approval of the proposed transaction, once it is fully developed, by the Trustee, following consideration of input from the public, Advisory Council, and Trustee Restoration Council. As also indicated in Section 6, funding of individual projects within terrestrial landscape areas will be based on cost-effectiveness and cost:benefit, rather than on concept proposal estimates.

4.2.4.4 Proposed Actions for the Avon North Priority Landscape

Priority Landscape Description

The Avon North priority landscape consists of grasslands and foothills rising up to the Continental Divide, northeast of Avon. This landscape priority area includes a patch designated Priority 1 and another Priority 2; some adjacent grasslands were designated a lower priority due to interspersion with agricultural fields. Native grasslands bisected by narrow riparian stringers dominate the western half of this landscape. Patches of conifer forest on north-facing slopes are found in the western portion. The higher elevations in the eastern portion of this area are dominated by conifer forest. Riparian habitats dominate the Little Blackfoot at the southern border of this area.

This landscape is lightly altered from ranching, farming, and some past mining activity. It is a very important area for connectivity. High-quality grasslands provide connectivity between the Deer Lodge Valley, the upper Blackfoot Valley, and lands east of the Divide over McDonald Pass. The forests and riparian stringers provide connectivity between mountain ranges to the north and south of Highway 12 and to the Garnets farther west.

The high-quality grasslands in this area support large grassland birds such as long-billed curlew, upland sandpiper, and short-eared owl. Grizzly bears use the Continental Divide corridor and the rolling grasslands near Avon and Birdseye as spring-fall habitat and as a north-south travel corridor. The area includes elk and deer winter range with on average 200 to 250 elk counted during spring aerial surveys. Mule deer, moose, black bears, mountain lions, mountain grouse, and wolves are also common and provide important public hunting opportunities.

Most at risk from subdivision are lands along the Little Blackfoot River and along the highway corridors. Subdivisions have been expanding from the Avon and Elliston, in part from commuters who work in Helena. Past mining activities have damaged some of the riparian areas. The condition of riparian areas ranges from good to poor, with most impacted in varying degrees by livestock grazing. The potential for residual heavy metals contamination from past mining activities in this area is unknown. Condition of the grassland habitat overall appears to be good, but little of it has been surveyed.

There are significant gaps in the State's knowledge of this landscape. More information on wildlife and on-the-ground assessments of grassland habitat condition would allow the State to better focus terrestrial activities.

Restoration Needs/Objectives

The majority of the landscape is private land, with only a few state school sections scattered within. Three properties totaling 3,962 acres are protected by conservation easements within this area. Thousands of acres are annually enrolled in FWP's Block Management Program which facilitates public hunting access to private land. Preserving the dominant land use of livestock grazing would likely protect the grasslands of this area. Riparian habitats would benefit from both protection and enhancement through better livestock management.

Proposed Actions

The State's proposed actions for this area are to:

1. Protect extensive grassland habitats through conservation easements or acquisitions.

2. Protect and enhance riparian and wetland habitats for wildlife, especially along the Little Blackfoot River.

3. Enhance native grassland habitats.

Two concept proposals were submitted by the public for this landscape: Dog Creek Riparian and Aquatic Habitat (abstract #31) and Little Blackfoot River Riparian Protection and Enhancement (abstract #43). The Dog Creek Riparian proposal is on the far east of this priority area. Only the livestock grazing management portion of this proposal would yield benefits for terrestrial wildlife

and is therefore included. The Little Blackfoot River Riparian Protection and Enhancement proposal would likely yield significant benefits to riparian habitats and associated terrestrial wildlife species along the Little Blackfoot River, including the portion within this landscape area, and is part of the proposed actions. Purchase of land or conservation easements in Priority 1 and 2 habitats north of Avon will be pursued (abstract #G9).

Restoration Budget

Actions in the Avon North landscape will occur within 23,400 acres of Priority 1 habitat and 22,800 acres of Priority 2 habitat lands. The State recommends up to $1.4 million dollars for actions within this landscape, including $360,000 for riparian habitat enhancements on the Little Blackfoot River and Dog Creek that are further outlined in Section 3.2.2.10. As indicated in Section 4.2.2 and Section 6, following completion of needed project development efforts, easements or acquisitions will require a subsequent approval of the proposed transaction, once it is fully developed, by the Trustee, following consideration of input from the public, Advisory Council, and Trustee Restoration Council. As also indicated in Section 6, funding of individual projects within terrestrial landscape areas will be based on cost-effectiveness and cost:benefit, rather than on concept proposal estimates.

4.2.4.5 Proposed Actions for the Deer Lodge North Priority Landscape

Priority Landscape Description

The North Deer Lodge priority landscape includes all of FWP's Spotted Dog WMA as well as DNRC, USFS, and private ranchlands. North Deer Lodge sits between the Garnet, North Avon, and South Deer Lodge priority areas and as such it is a focal point for landscape connectivity. Spotted Dog, and its tributaries, flow north into the Little Blackfoot River; Fred Burr, Jake, Freeze-out, and O'Neill Creeks drain east to the Clark Fork River.

North Deer Lodge is characterized by extensive foothill grasslands, broken by Douglas fir forests, riparian stringers, and pockets of aspen. Of the 9 priority landscapes, the highest proportion of acres within Priority 1 is found in Deer Lodge North. Antelope bitterbrush – high quality forage for wintering elk and mule deer – is found to the west near Beck Hill. North Deer Lodge is predominately rangeland though extensive timber harvest has occurred in the last decade. Livestock have been on the landscape for over a century in significant numbers.

The area supports the highest concentration of wintering elk in the UCFRB, with 1578 observed during winter surveys in 2012. Mule deer, white-tailed deer, moose, and antelope, plus the full range of terrestrial predators are found in the vicinity. Grizzly bears have been documented and multiple wolf packs have used the area for over a decade. The area supports golden eagles, long-billed curlews, and numerous songbird species.

Restoration Needs/Objectives

The conservation goals for Deer Lodge North are retaining and enhancing native grasslands, ensuring the migratory movement of elk, keeping landscape connectivity, protecting a large central block of native habitats, and providing for wildlife related recreation. The purchase and conveyance of 28,616 acres from Rock Creek Cattle Company to FWP in 2009 protected the core of the area and its ecological attributes. Residential development from the north and east, and potentially within the core of the landscape, may compromise landscape conservation.

The purchase of in-holdings, or development rights, within Spotted Dog WMA, would protect the interior of Spotted Dog WMA from subdivision or conflicting management goals. Range management on both the uplands and riparian areas would enhance terrestrial resources. Most riparian areas, especially Trout Creek, would benefit from riparian fencing to exclude cattle. Portions of the Little Blackfoot River that adjoin or run through this landscape area and would also benefit from riparian enhancement.

Proposed Actions

The State's proposed actions for this area are to:

1. Protect the core of North Deer Lodge by purchasing private in holdings or conservation easements.

2. Enhance riparian habitats for fish and wildlife benefits.

3. Enhance grasslands and shrub/grassland habitats for wildlife benefit.

One idea (abstract #29) was presented by the public for North Deer Lodge, as proposed riparian and aquatic habitat as well as water flow would be improved on 6 miles private land along Lower Spotted Dog Creek. This proposal makes sense given the identified need to improve riparian habitat. Two conceptual proposals (abstracts #30 and #43) were put forth for riparian enhancement in the Little Blackfoot River that is addressed within the Garnet and North Avon plans. The State finds that habitat enhancement work within the Spotted Dog WMA is a gap (abstract #G10) within restoration planning.

Restoration Budget

Deer Lodge North has 63,967 acres of Priority 1 habitat. This is by far the highest acreage of Priority 1 habitat in the UCFRB; however, the landscape has also had the greatest investment of restoration funds as a result of the purchase of the Spotted Dog WMA. The WMA provides for FWP management and public use on almost half of the landscape. Since Deer Lodge North has already received significant funding from NRDP, the State recommends only $1.2 million be allocated to terrestrial actions for actions within this landscape. As indicated in Section 4.2.2 and

Section 6, following completion of needed project development efforts, easements or acquisitions will require a subsequent approval of the proposed transaction, once it is fully developed, by the Trustee, following consideration of input from the public, Advisory Council, and Trustee Restoration Council. As also indicated in Section 6, funding of individual projects within terrestrial landscape areas will be based on cost-effectiveness and cost:benefit, rather than on concept proposal estimates.

4.2.4.6 Proposed Actions for the Deer Lodge South Priority Landscape

Priority Landscape Description

The South Deer Lodge priority landscape has 26,290 acres of Priority 1 and 15,491 acres of Priority 2 habitats with 7,640 acres of DNRC lands intermixed with private ranchlands. Warm Springs Ponds, which are managed jointly by FWP and ARCO, and the Clark Fork River are adjacent to this landscape and enhance its value to wildlife. These large wetlands support nesting waterfowl, grebes, herons, cormorants, and osprey. They provide the most important bird migration stopover habitat in the UCFRB. On any given day 5,000 to 7,000 birds use Warm Springs Ponds during migration, including waterfowl, shorebirds, coots, and grebes.[7]

South Deer Lodge is bounded by the Deer Lodge North priority landscape and the Clark Fork River to the west. A series of creeks and gulches – Dry Cottonwood, Sand Hollow, Orofino, Caribou, Peterson, and Cottonwood – drain west into the Clark Fork River. Between these drainages are long benches of native grasslands and shrub grasslands – 43,099 acres in total. There is a high interspersion of plant communities within these habitats with a mix of rabbit brush, sage brush, native grasslands, and weeds not uncommon. Grassland communities range from very dry at the low elevations, to mesic in higher elevations.

About 200 antelope, along with mule deer, elk (400 elk are observed some years on winter range) and white-tailed deer use this area. Wolves and grizzly bears have been sighted recently. Avian species and small mammals tied to grasslands and sagebrush grasslands are present.

Restoration Needs/Objectives

The conservation goals for Deer Lodge South are conserving native habitats, retaining and enhancing native shrub grasslands, enhancing riparian area condition and integrity, and providing for wildlife related recreation. Better grazing management on both the uplands and riparian areas is especially important in this area.

[7] Swant, G. 2009. Fall Shorebird, Waterbird, and Waterfowl Migration Counts at Warm Springs Wildlife Management Area in 2009. Go Bird Montana LLC; for Montana Fish, Wildlife & Parks. 32 pp.

Proposed Actions

The State's proposed actions for this area are to:

1. Protect native grasslands and grass/shrub lands by purchasing private in holdings or conservation easements.

2. Enhance riparian habitats for fish and wildlife benefits.

3. Enhance grasslands and scrub/grassland habitats for wildlife benefit.

Two concept projects (abstracts #52 and 73) were submitted for this area. The Dry Cottonwood Neighbors' Conservation project would protect via conservation easement up to 11,844 acres within the South Deer Lodge priority landscape. The Anaconda Sportsmen's Association suggested purchase of the 10,964-acre Big Easy Ranch. Purchase of conservation easements – or land – is a priority terrestrial action within this area. The Dry Cottonwood Neighbor's Conservation project is in a Priority 1 area, while, the Big Easy Ranch is just to the south. Based on equivalent resources within the Big Easy Property, its immediate proximity to a Priority 1 area, and the fact that protection of the ranch would address all of the State's guidance relative to encouraged terrestrial actions, purchase of the Big Easy, or placement of a conservation easement on, the property is appropriate and could be considered a unique circumstance. Enhancement of grassland habitats is a restoration need not addressed by the public and is included this terrestrial action.

Restoration Budget

The State recommends up to $1.4 million dollars for actions within this landscape. As indicated in Section 4.2.2 and Section 6, following completion of needed project development efforts, easements or acquisitions will require a subsequent approval of the proposed transaction, once it is fully developed, by the Trustee, following consideration of input from the public, Advisory Council, and Trustee Restoration Council. As also indicated in Section 6, funding of individual projects within terrestrial landscape areas will be based on cost-effectiveness and cost:benefit, rather than on concept proposal estimates. The State notes that additional funding may be available for future actions from the Silver Bow Creek remediation remainder.

4.2.4.7 Proposed Actions for the Anaconda Priority Landscape

Ongoing Efforts

The State acknowledged the significant restoration needs of the Smelter Hill Area Uplands injured area and the Opportunity Ponds injured area in the State's 1995 *Restoration Determination Plan*. For the Smelter Hill Area Uplands injured area, separately funded integrative remediation / restoration actions are either occurring or completed, and include removal, re-vegetation,

stabilization, and/or treatment actions, which should jump start recovery of vegetation conditions, with further natural recovery to occur over time. These actions are summarized in Appendix B of the *2011 Terrestrial Prioritization Plan*. Based on current information, the State believes that the specific settlement funding for the Smelter Hill Area Uplands injured area should continue to be used to address terrestrial restoration needs, without a requirement for further action under this Anaconda priority landscape plan.

For the Opportunity Ponds injured area, the injury is so severe that the injured riparian and wetland resources cannot be cost-effectively returned to a baseline condition. Further terrestrial actions during ongoing remediation are not warranted, and it remains unclear whether any actions would be cost-effective in the future. For those reasons, there is no requirement for further action under this Anaconda priority landscape plan. The State has also, through its restoration grant process, already acquired large areas for conservation purposes within this landscape, for example in Garrity Mountain.

Priority Landscape Description

The Anaconda priority landscape is 43,592 acres of which 27,005 (62%) is classified as Priority 2. It differs from other priority areas because it is higher in elevation, includes less private property, and adjoins an urban area. FWP owns four WMAs (Garrity, Stucky, Blue-eyed Nellie, and Mount Haggin) that lie partly or entirely within this area. Anaconda has three times as many aspen woodlands than the average landscape area (2,481 acres vs. 854 acres) and is the only landscape with a higher percent cover of coniferous forest than grasslands and shrub grass lands.

The Continental Divide is the southern boundary and USFS lands form the western boundary. Mill Creek and Warm Springs Creek flow east towards the Clark Fork River confluence at Warm Springs. Residential subdivision exists adjoining Anaconda and in Anaconda's West Valley. Subdivision of the foothills below Stucky Ridge has increased over the last decade. Residential development, recreational use, and some timber harvest and grazing occur in the Anaconda area.

Below Mount Haggin there is an extensive aspen forest, and, patches of aspen woodland occur throughout the landscape. Cultivated lands and homes are in the valley, grass shrub lands in the foothills, and coniferous forests lead to the alpine zone. Abundant wildlife populations, Mount Haggin, and Hearst Lake, all in proximity to a city, make the Anaconda area unique.

Big game species include bighorn sheep, mountain goat, elk, mule deer, white-tailed deer, mountain lion, and black bear. Wolves are using the area intermittently. Avian species found in aspen and coniferous forest are present. Wintering elk numbers in and adjoining Anaconda range from 250 to 450 and the bighorn sheep population ranges from 100 to 300 sheep.

Restoration Needs/Objectives

The primary conservation goals for Anaconda are to secure protections for priority habitat and maintain access to wildlife related recreational activities. While riparian and terrestrial enhancements are important everywhere, this landscapes' proximity to Anaconda, high elevation habitats, and presence of FWP managed lands allow the State to focus on public acquisition of wildlife habitat. With local support for FWP ownership of land, there are opportunities to complete projects with a large geographic footprint, adjoining protected lands that encompass multiple habitats, that have a benefit to fisheries, and that provide for recreational use.

Proposed Actions

The State's proposed action for this area is:

1. Protect native habitats, from subdivision and other development, via the acquisition of lands on properties adjoining or complementing existing areas managed for wildlife and natural resources.

The Anaconda Sportsmen's Association presented two concept proposals (abstract #73) for conservation in this area as well as a concept for the Flints and a concept for lands to the south of Deer Lodge. The later proposals are discussed in the plans for the East Flints and Deer Lodge South. The Sportsmen's Association request that the State purchase, or encumber with a conservation easement, the Hearst Lake (4,744 acres) and/or Brickley (720 acres) properties. Abstract 5b proposes the creation of a Block Management Area for the Hearst Lake property for public use and management of the area. The properties adjoin the Garrity WMA, provide winter range for elk and deer, provide opportunities for wildlife related recreational use, and contain native grasslands and aspen forest. These proposals are in line with state restoration goals and guidance, and appropriate for restoration funding.

Anaconda-Deer Lodge County estimated that $6.7 million for re-vegetation of smelter impacted lands is needed here (abstract #69). Restoration needs in the area are expected to be covered by 2008 settlement funding for the Smelter Hill Area Uplands injured area, as discussed above. A State identified gap in restoration planning is purchase of 88 acres of private land adjoining the Blue-eyed Nellie WMA (abstract #G12). Acquisition of this parcel would protect NRDP's investment in the Blue-eyed Nellie WMA by avoiding development of bighorn sheep winter range adjoining an existing WMA, and maintain connectivity through this area in the face of increasing housing development. The Montana Wild Sheep Foundation proposes to acquire 224 acres from YT Timber adjacent to the Garrity Mountain WMA (2015 abstract).

Restoration Budget

The Anaconda area is small, and consequently has less priority acreage than other landscapes. It also has unique resources in proximity to Anaconda and at the headwaters of the UCFRB. These

factors have led the State to recommend more funding than the acreage of priority lands would suggest. The State advises that up to $1 million be available for the conservation of habitat in the Anaconda Landscape area. As indicated in Section 4.2.2 and Section 6, following completion of needed project development efforts, easements or acquisitions will require a subsequent approval of the proposed transaction, once it is fully developed, by the Trustee, following consideration of input from the public, Advisory Council, and Trustee Restoration Council. As also indicated in Section 6, funding of individual projects within terrestrial landscape areas will be based on cost-effectiveness and cost:benefit, rather than on concept proposal estimates.

4.2.4.8 Proposed Actions for the East Flint Priority Landscape

Priority Landscape Description

On the eastside of the Flint Creek Mountain Range is the East Flint landscape which totals 71,752 acres of which 58% are Priority 2 for restoration planning. The area is bounded roughly by Rock Creek to the north, Lost Creek to the south, and the Flint Mountains to the west. It has the second highest proportion of riparian/wetlands and the second highest proportion of grasslands/shrub grasslands of the nine landscapes. A total of 6,447 acres are classified as riparian/wetlands with 2,383 acres of riparian emergent wetlands. Lost, Racetrack, and Dempsey Creeks flow east from the Flint Mountains to the Clark Fork River.

The majority of the landscape is privately owned, with rangeland, cultivated crops, remediation activities, residential development, recreation, and timber harvest all influencing terrestrial resources. FWP owns Lost Creek WMA (1,403 acres) and Lost Creek State Park. There are 1,126 acres held in conservation easement by the RMEF. Residential subdivision is encroaching on wildlife habitat with the result being direct and indirect loss of habitat and conflicts between home-owners and wildlife.

Native grasslands transition into Douglas fir and lodge pole forests as elevation increases, down-slope lands either degrade into weedy pastures or become productive cultivated fields and wetlands. A mix of land uses results in a mix of habitat types and range condition. Public access to both public and private land for recreation is a source of contention with large groups of wintering elk sometimes within view of hunters, but inaccessible.

Up to 1,400 elk have been observed on winter range within in the East Flint foothills during FWP survey flights. The Anaconda bighorn sheep herd resides in this area as do mule deer, white-tailed deer, moose, black bear, and mountain lion. Wolves have been reported in the last five years. Avian species associated with grasslands, shrub grasslands, coniferous forests, and riparian/wetlands live in this landscape. Although more waterfowl use occurs on the Warm Springs Ponds to the east, multiple species of waterfowl, including sand hill cranes, rear young and stage here during fall migration on the Warm Springs WMA and adjacent wetlands.

Restoration Needs/Objectives

In the East Flint landscape, the State's goals are to minimize additional habitat fragmentation, retain and enhance native grasslands, retain and enhance riparian and wetland habitats, keep migratory corridors for elk and other species open, and provide for wildlife related recreation. Residential development, weed infestation, and land compromised by smelter emissions are some of the barriers to meeting these goals.

The potential exists to conserve an over 11,000-acre block of grasslands and forest that would protect critical elk winter range, allows for elk migration, and provides significant recreational opportunity. In addition, there are a number of smaller parcels whose protection via acquisition, or the placement of conservation easements, would allow for continued movement of wildlife from the uplands to riparian areas and wetlands. The purchase of lands adjoining the Lost Creek WMA would protect winter range for elk, bighorn sheep, and mule deer. Range management on both the uplands and riparian areas would enhance terrestrial resources.

Proposed Actions

The State's proposed actions for this area are to:

1. Protect by purchase or with conservation easements, parcels of high priority native grasslands, shrub grassland, and riparian and wetland habitats.

2. Enhance riparian habitats for fish and wildlife benefits.

3. Enhance grasslands and shrub/grassland habitats for wildlife benefit.

An individual and a sportsman's group proposed conservation actions for the East Flints. Conservation easements, weed control, biological monitoring, and research were all mentioned (abstract #75). Purchase, or encumbrance with a conservation easement, was proposed for the 11,197-acre Letica Ranch by the Sportsmen (abstract #73). Elements of these actions overlap with the State's proposed actions and will be included, but with lower costs and allocation of effort than proposed. Purchase of land would be the most cost-effective way, over the long term, to assure conservation, enhancement of, and public access to land. Conservation easements and cooperative projects with land-owners to enhance habitat would also benefit natural resources.

The State has identified terrestrial gaps in the East Flints. Foremost is a long-term plan for management of the Dutchman wetlands which is currently owned by ARCO. This issue is outside of the scope of this planning effort, however, it may benefit from FWP management in a manner similar to the Warm Springs Ponds WMA. ARCO lands whose acquisition by the State may be beneficial are 1,922 acres near Modesty Creek as well as USFS and private lands adjoining the Lost Creek WMA. ARCO, USFS, and private land-owners have all expressed interest in land transfers within this area (abstracts G13 and G14).

Restoration Budget

As in most priority landscapes, the cost of completing all terrestrial actions will exceed the available funds. At this time the State proposes an allocation of $1.4 million for actions within this landscape. The State anticipates that purchase of land will be the most desired outcome by the public. As indicated in Section 4.2.2 and Section 6, following completion of needed project development efforts, easements or acquisitions will require a subsequent approval of the proposed transaction, once it is fully developed, by the Trustee, following consideration of input from the public, Advisory Council, and Trustee Restoration Council. As also indicated in Section 6, funding of individual projects within terrestrial landscape areas will be based on cost-effectiveness and cost:benefit, rather than on concept proposal estimates.

4.2.4.9 Proposed Actions for the Clark Fork Mainstem Priority Landscape

Ongoing Efforts

The State acknowledged the significant restoration needs of the Upper Clark Fork River mainstem injured area and the Silver Bow Creek mainstem injured area in the State's 1995 *Restoration Determination Plan*. For both of these injured areas, separately funded integrative remediation / restoration actions are either occurring or completed, and include major removal, re-vegetation, stabilization, and/or treatment actions, which should jump start recovery of vegetation conditions, with further natural recovery to occur over time. These actions are summarized in Appendix B of the *2011 Terrestrial Prioritization Plan*. There have also been significant land acquisition efforts successfully implemented within the Silver Bow Creek mainstem injured area to protect these areas and offer recreational opportunities, as discussed in Section 5.2.1.

Based on current information, the State believes that the specific settlement funding for each of these injured areas should continue to be used to address terrestrial restoration needs, without a requirement for further action under the Terrestrial Plan, except as provided below for the Clark Fork River mainstem injured area.

For the Clark Fork River mainstem injured area, the vast majority of the integrative remediation / restoration for the Clark Fork River mainstem injured area will occur above Deer Lodge. For this reason, the priority landscape plan focuses its actions on the Clark Fork River from Deer Lodge to Milltown.

Priority Landscape Description

The Clark Fork Mainstem priority landscape consists of the Clark Fork River bottom and associated riparian and wetland habitats from Deer Lodge downstream to Milltown. This landscape priority area was designated to focus actions on critical riparian habitats in the UCFRB. Over half of this landscape area is designated as Priority 1 riparian and wetland habitat. Confluences at major tributaries of Rock Creek, Flint Creek, and the Little Blackfoot River

increase the width of riparian habitat in those areas and provide connectivity with riparian habitats up those tributaries. The Clark Fork River below Deer Lodge has sections that retain much of its natural function and channel migration area, while other sections have been severely constricted by roads, railroads, housing developments. Although the discussion and actions for this landscape are focused from Deer Lodge to Milltown, some actions are appropriate upstream of Deer Lodge, particularly land acquisition/easements.

This priority landscape area has been impacted by human activities. It is a major transportation corridor, supporting an interstate highway, frontage roads, ranch roads, and both abandoned and active railroad beds. Subdivisions impinge into portions of the landscape area. In spite of increasing urban sprawl fueled by proximity to Missoula, most of the landscape area is in agricultural production. All sections of the Clark Fork are vulnerable to further subdivision, with the area from Rock Creek to Missoula especially vulnerable.

In spite of high human impacts, the Clark Fork landscape area near Drummond supports some of the best cottonwood riparian habitat in the UCFRB. The Clark Fork river channel is active in places, supporting a wide river bottom with numerous side channels and islands. In contrast, most of the tributary streams support narrower riparian zones with fewer side channels and islands. A number of small oxbow ponds and wetlands remain in areas where they were cut off from the main river channel by road or railroad construction. Some of these ponds provide excellent riparian and wetland habitat and function as important breeding sites for amphibians or feeding sites for great blue herons and other birds in this dry watershed.

The Clark Fork landscape area supports the majority of nesting bald eagles, osprey, and great blue herons in the UCFRB. Numerous migrating and wintering bald eagles use the river corridor. The wide diversity of riparian and wetland types found in this area supports a high diversity of songbirds. Waterfowl and other waterbirds that use the Clark Fork for nesting, wintering, or migrating include Canada geese, mallards, sandhill cranes, American white pelicans, trumpeter swans, and a wide variety of ducks. This area supports a high density of white-tailed deer and smaller populations of moose and black bear. Elk use the Clark Fork River bottoms at various times of year and high numbers can be found in some areas during calving season. Aquatic furbearers include beaver, muskrat, mink, and a recovering otter population. The dense vegetation in the bottom in places provides secure travel corridors between mountain ranges for bear, lion, and other large mammals.

Restoration Needs/Objectives

Protection of riparian habitat from subdivision is the most important need in this area. Eight properties located within this landscape are already protected by conservation easements (2,777 acres within the landscape area), but most of the Clark Fork landscape area remains under private ownership and is at high risk of future subdivision or other habitat conversion.

Land values in this landscape area are relatively high due to the desirability of river frontage property, and the productivity of river bottom lands for hay and livestock production. Current agricultural use of the Clark Fork has for the most part maintained riparian and wetland habitats along with livestock and hay production. However, without the permanent protection afforded by easements or acquisition, habitat enhancement activities are unlikely to be sustained over the long term on private lands in this area. Therefore, protection from subdivision by conservation easements or acquisition will provide the most cost-effective benefits to riparian and wetland habitat, and contribute the most towards meeting restoration goals over the long term, even though it will be the most expensive activity in terms of up-front costs.

Protection of undeveloped habitat between Milltown State Park and Turah is important to protect cottonwood nesting birds and add value to habitat restoration efforts at the former Milltown Reservoir area. Other critical areas to protect include the confluence areas and other large wide patches of riparian and wetland habitat that remain undeveloped, especially in river sections that are the least constricted. Protection for areas as small as 30 acres can provide significant value to wildlife if located adjacent to other protected lands, but protection of habitat blocks over 90 acres in size is most desirable. In addition to the main river channel, some oxbow wetland ponds would benefit from riparian enhancement activities. There may be opportunities to create or enhance emergent wetlands in former hayfields in the river bottom.

Proposed Actions

The State's proposed actions for this area are to:

1. Protect riparian and wetland habitats through conservation easements or acquisitions, especially in the river sections described above.

2. Enhance riparian and wetland habitats for wildlife in areas that are protected from subdivision.

3. Manage public use in specific areas to protect riparian vegetation or wildlife from damage or disturbance by improper or excessive public use.

Two concept proposals were submitted for the Clark Fork landscape area that could protect riparian habitat. The Confluence Project at Rock Creek (abstract #48) proposes to protect riparian habitat along the Clark Fork River and a small area along Rock Creek, as part of a 201-acre conservation acquisition. The Clark Fork Meadows Ranch Land and Water Conservation project (abstract #7) would conserve, via purchase of the land or a conservation easement, 151 acres, with 70 acres of wetlands, along ¾ of a mile of the Upper Clark Fork River while also increasing water flow to the Clark Fork River and implementing riparian protections. Both of these concept projects would contribute towards meeting restoration needs in this landscape, and are included. The State has identified the need to protect additional riparian habitat in the river section above Milltown State

Park, and to solicit partners for additional riparian habitat protection in other portions of the Clark Fork (abstract #G6).

The concept proposal submitted by Montana Tech for restoring native plant diversity along Silver Bow Creek and the Clark Fork River (abstract #47), is not included as a proposed action because revegetation along both Silver Bow Creek and the Clark Fork River is expected to be competitively procured as has been done for the last decade, with expected lower costs and allocation of effort than as proposed in the abstract.

Restoration Budget

The State proposes to allocate $2.5 million for habitat protection and enhancement work in this landscape, which includes up to $0.8 million for the potential Confluence and Clark Fork Meadows acquisitions (abstract #48 and 7). The conservation needs of this area exceed the available funding, so developing projects that have other funding sources and partners will be essential for protecting a significant amount of riparian habitat along the Clark Fork River. As indicated in Section 4.2.2 and Section 6, following completion of needed project development efforts, easements or acquisitions will require a subsequent approval of the proposed transaction, once it is fully developed, by the Trustee, following consideration of input from the public, Advisory Council, and Trustee Restoration Council. As also indicated in Section 6, funding of individual projects within terrestrial landscape areas will be based on cost-effectiveness and cost:benefit, rather than on concept proposal estimates.

4.2.5 Terrestrial Habitat Enhancement

Separately and as identified in the 2012 *Process Plan*, the State assessed the habitat protection and enhancement restoration needs for existing FWP Wildlife Management Areas (WMAs) and other lands already acquired with NRD funds within the UCFRB.

Funding for habitat protection and enhancement is earmarked for existing FWP WMAs or other lands already acquired with NRD funds in the UCFRB. These areas and approximate acreage include:

- Spotted Dog WMA: 28,616 acres
- Garrity WMA: 8,969 acres
- Blue-eyed Nellie WMA: 164 acres
- Stucky Ridge WMA: 296 acres
- Warm Springs WMA: 5,811 acres
- Mount Haggin WMA: 25,000 acres (part of WMA within UCFRB)
- Lost Creek WMA – 1403 acres

The proposed actions for these areas are those that are beyond the routine operation and maintenance activities for which the State is normally funded on routine basis through its biennial funding. These activities include riparian fencing, riparian restoration, acquisition of key private in holdings, biological and other weed control, road removal, wetland restoration and enhancement. The amount of terrestrial funding allocated for these efforts is $2 million.

As indicated in Section 4.2.2 and Section 6, following completion of needed project development efforts, any easements or acquisitions project that would enhance these WMAs will require a subsequent approval of the proposed transaction, once it is fully developed, by the Trustee, following consideration of input from the public, Advisory Council, and Trustee Restoration Council.

4.2.6 Terrestrial Resource Monitoring

Monitoring is a critical component of terrestrial resource restoration to ensure that: terrestrial projects are completed as planned; projects deliver the intended benefits to wildlife, and projects are properly managed over time to maintain those benefits. Monitoring is necessary for adaptive management of projects to ensure that implementation or management can be changed if needed to address unforeseen problems.

Monitoring will be focused primarily on acquisitions, conservation easements, and terrestrial habitat projects. Terrestrial wildlife monitoring may be needed on some recreation projects to assist with development of management plans for those areas, to ensure that wildlife resources, such as important bird nesting areas or big game wintering areas are not negatively impacted by recreational use.

Habitat availability and condition are primary factors that determine population density and diversity for most wildlife species, so vegetation monitoring will be an important component of terrestrial resource monitoring. Monitoring will be coordinated with other monitoring efforts in the UCFRB, to prevent duplication of effort. These proposed monitoring activities will be in addition to the terrestrial wildlife survey and monitoring activities conducted annually by FWP for setting hunting seasons and other purposes.

Terrestrial resource monitoring proposes to accomplish the following objectives:

1. Compliance monitoring on individual projects to ensure they are completed and maintained as specified or modified if needed to achieve project goals.

2. Habitat monitoring, including vegetation type and habitat condition assessments, to ensure that targeted habitats are maintained or enhanced over time.

3. Wildlife monitoring, to document changes in wildlife diversity and population size, to ensure that wildlife actually benefits from restoration activities.

4. Contaminant monitoring of biota, water, or sediments in specific areas as needed to ensure that project sites are clean from contamination that could prevent wildlife populations from responding to restoration efforts.

Monitoring activities will be conducted annually, but the intensity, focus and locations will shift from year to year in response to planning and completion of terrestrial projects. For example, more intensive sampling may be conducted on a new acquisition to establish baseline conditions. Some areas, such as the Spotted Dog WMA, were not sampled adequately for vegetation condition and wildlife species during the terrestrial wildlife assessment, due to lack of ground access allowed by prior landowners. These areas will require more intensive baseline surveys than project areas that were sampled during the terrestrial wildlife assessment. Necessary monitoring of conservation easements will be incorporated into the easement terms.

Habitat Monitoring

Habitat monitoring will be done at various scales to characterize vegetation extent and condition over time. Standardized methods will be employed, including a combination of vegetation sampling plots, photo points, watershed level condition assessments for riparian areas, and wetland condition assessments. Exclosures may be installed and monitored on one or more WMAs, to assess the impacts of big game herbivory on habitat condition.

Wildlife Monitoring

Terrestrial wildlife monitoring methods will generally follow methods used during the terrestrial wildlife assessment, with some differences. Most wildlife monitoring will be focused on specific project sites, rather than the entire UCFRB.

FWP proposes to monitor the following wildlife species or groups as part of terrestrial resource monitoring:

1. Big game species distribution and habitat selection in relation to terrestrial projects. Monitoring for big game species will be more intensive than the annual surveys typically done by FWP to inform season-setting for these species.

2. Songbird diversity and relative abundance. Songbirds are very useful indicators of habitat quality and quantity, since most species are territorial, have small territories and are tied to specific habitats during the nesting season. They are easy to survey using standard point count methods. The State proposes songbird point count monitoring to determine changes in songbird populations over time on terrestrial projects.

3. Raptor nest monitoring focused on bald eagles and osprey in the UCFRB.

4. Waterbird monitoring, focused on great blue heron rookeries in the UCFRB, and on waterbird and waterfowl use of wetland projects.

5. Aquatic furbearer monitoring along the Clark Fork River and major tributaries. FWP proposes to monitor river otter in the UCFRB, to ensure that otter populations continue to expand in response to improving fish populations and habitat conditions. Also beaver populations can be good indicators of riparian condition.

6. Amphibian distribution and occurrence, especially breeding sites.

7. Bat activity and species occurrence.

8. Small mammal monitoring may be conducted at specific terrestrial sites.

Contaminant Monitoring

Contaminant monitoring of biota, water, or sediments may be needed in specific areas, to ensure that project sites are clean from contamination that could prevent wildlife populations from responding to restoration efforts. For example, mercury contamination from past mining activities in the Flint Creek drainage may be impacting osprey production in some portions of the UCFRB. Further studies are needed to determine the extent of mercury contamination, and determine if impacts on osprey and other fish-eating birds are limiting production in these areas.

Public concept proposals related to monitoring include a mercury study (abstract #67),[8] and a mapping study of suitable habitat where beavers could be transplanted for passive stream restoration purposes (abstract #54), and are included for restoration funding. The beaver habitat suitability study could provide a metric to compare beaver presence in relation to expected their distribution.

Conservation Reserve Enhancement Program (CREP)

In 2016, the Farm Service Agency approved a CREP for the UCFRB. This FSA program requires matching state funding of 25% for the implementation of various conservation practices on private land. In 2018, $500,000 from the Terrestrial allocation is budgeted to provide the required match for the implementation of CREP projects. These CREP projects are limited to all private lands within the UCFRB, including Aquatic and Terrestrial Priority 1, 2, 3, and 4 areas. The State estimates the FAS match to the $500,000 State funding will be approximately $10 million initially.

[8] NRDP staff contacted representatives of the DEQ TMDL, State Superfund, and Abandoned Mine Programs as to whether their programs had plans and or funding to conduct further investigation into the mercury contamination issues that have been documented through water and osprey tissue sampling. NRDP has contracted with Granite County and this effort has successfully launched a sampling program for mercury contamination in the Phillipsburg area and has resulted in the allocation of DNRC funding for this investigation.

The CREP provides payment to landowners for their participation in the implementation of conservation practices.

Monitoring Implementation and Budget

The State estimates a terrestrial monitoring budget of $360,000 to be spent throughout the UCFRB over 10 years. The State will produce a biennial terrestrial monitoring plan that provides the scope and budget for monitoring. This document will specify how the State would accomplish the specified activities. In some cases, it is best to have an independent entity conduct monitoring activities; so, while, some work would be conducted by the State, other work could be conducted by university entities, by other governmental entities, or by competitively-procured contractors under State oversight.

4.2.7 Summary of Terrestrial Restoration Budget

The Terrestrial Budget Allocation totals about $18 million, after deduction of the terrestrial recreation service allocation (Section 5.2).[9] Following is a breakdown of this budget for each landscape area, along with the budget for habitat enhancements at FWP wildlife management areas (Section 4.2.4) and terrestrial monitoring (Section 4.2.5). The total funding for proposed actions is the nine landscape areas is approximately $16 million.[10] As further explained in Section 6, final allocations for each landscape area may vary as projects are considered.

- Philipsburg West Landscape Area ..... $3.2 million
- Lower Flint Creek Landscape Area ..... $1.4 million
- Garnets Landscape Area ..... $2.2 million
- Avon North Landscape Area ..... $1.4 million
- Deer Lodge North Landscape Area ..... $1.2 million
- Deer Lodge South Landscape Area ..... $1.4 million
- Anaconda Area Landscape Area..... $1.0 million

[9]See Section 2.3 and Table A-3 in Appendix A.

[10] Funding is allocated by quantity of Priority 1 and 2 lands in each Landscape area. In most areas, Priority 1 lands were given a higher qualitative percent of allocation than Priority 2 lands. Final allocations for each landscape area may vary as projects are considered. Because conservation easements and public acquisitions are dependent upon a willing landowner, the State will evaluate any property that becomes available for sale or a conservation easement within the Priority 1 or Priority 2 areas.

- East Flint Landscape Area ..... $1.4 million
- Clark Fork River Landscape Area ..... $2.5 million
- Habitat Enhancements and Monitoring .. $2.36 million[11]

TOTAL.....$18.36 million

Table 4-4 summarizes the proposed actions and budgets for each landscape area.

[11] Funding for monitoring and habitat enhancement is estimated to occur over a 10-year period.

Table 4-4. Summary of proposed actions for priority landscape areas

Landscape Area	Priority Level (% of Landscape Area)	Primary Existent Habitat Values	Current Level of Protection	Proposed Actions	Restoration Budget
Philipsburg West	Priority 1-38% Priority 2-32%	Extensive native grasslands, pothole wetlands, habitat is in good condition.	A few conservation easements are in place. The core of the landscape area is unprotected.	Land protection by acquisitions or easements Riparian enhancement Grassland enhancement	$3.2 M
Lower Flint Creek	Priority 2-78%	Native grasslands, riparian, ponderosa pine woodlands.	One conservation easement is located in the area, mostly protecting native grassland.	Land protection by acquisitions or easements Riparian Enhancement Grassland Enhancement	$1.4M
Garnet	Priority 2-84%	Native grasslands, forests, riparian, landscape connectivity.	Several conservation easements are in place, abutting a large block of unprotected Stimson timber land.	Land protection by acquisitions or easements Riparian enhancement Grassland enhancement Forest management	$2.2M
Avon North	Priority 1-38% Priority 2-37%	Native grasslands, riparian along Little Blackfoot River. Landscape connectivity.	Three small conservation easements around fringes of area, and very little public land. Core of area is unprotected.	Land protection by acquisitions or easements Riparian enhancement Grassland enhancement	$1.4M
Deer Lodge North	Priority 1-76%	Large un-fragmented landscape area, native grasslands, riparian habitat, landscape connectivity.	Much of the landscape area has been protected by the purchase of Spotted Dog WMA.	Riparian enhancement Land protection by acquisitions or easements Grassland enhancement	$1.2M
Deer Lodge South	Priority 1-44% Priority 2-26%	Native grasslands. Aspen stands. Riparian stringers. Adjacent to Warm Springs Ponds.	There are two conservation easements. A ranch managed by a conservation organization.	Land protection by acquisitions or easements Grassland enhancement Riparian enhancement	$1.4M

Landscape Area	Priority Level (% of Landscape Area)	Primary Existent Habitat Values	Current Level of Protection	Proposed Actions	Restoration Budget
Anaconda	Priority 2-62%	High diversity of wildlife values, more timber and aspen, higher elevation.	Large amount of public land, several wildlife management areas form the core of protected areas.	Land protection by acquisitions or easements	1.0M
East Flint	Priority 2-58%	High amount of riparian and wetland habitat adjacent to Warm Springs, native grasslands.	Montana State Prison owns extensive acreage, but it is not managed for wildlife. Some land under conservation easement.	Land protection by acquisitions or easements Riparian and wetland enhancement or restoration Grassland enhancement	1.4M
Clark Fork Mainstem	Priority 1-56%	The most extensive riparian and wetland habitat in the UCFRB, including wide cottonwood gallery reaches. Except for the areas of worst contamination between Warm Spring Ponds and Garrison, this area has very high species diversity.	Several conservation easements protect about 12% of the area. Little public land is in this area.	Land protection by acquisitions or easements Riparian enhancement Wetland enhancement and restoration	2.5M

SECTION 5. RECREATIONAL PROJECTS

By improving fisheries or wildlife populations and habitats, the proposed actions in the aquatic and terrestrial resources restoration plans (Sections 3 and 4) will improve associated fishing, hunting, wildlife viewing, and other recreational services. This section separately covers the funding, proposed actions, and implementation of recreation-dominant projects, or those for which recreational features and benefits are the major focus of the project scope and budget. Section 5.1 covers the determination of the budget for recreation projects and Section 5.2 covers the proposed recreational actions and implementation. The analysis of alternatives for recreational services was covered in the analysis of aquatic and terrestrial resource alternatives contained in those plans (Sections 3.1 and 4.1, respectively). Thus, recreational projects are focused in the same injured areas and Priority 1 and 2 resource areas as covered in the aquatic and terrestrial preferred alternative identified in those plans.

5.1 Recreation Project Funding

Based on provisions in the *2011 Long Range Guidance Plan* and *2012 Process Plan*, the following are the key factors specific to recreation projects that the State relied on in developing its proposed plan for the enhancement of recreational services:

- That by restoring or replacing the injured natural resources of the UCFRB, some of the recreational services lost due to those injuries will also be restored.

- That recreational projects must be natural-resource based and offer resource benefits in addition to recreational benefits.

- That general preferred types of recreational projects that offer resource benefits include those that: 1) prevent resource degradation by the user public; 2) enhance existing recreational projects; and 3) provide fishing and hunting access in a resource-protective manner.

The secondary nature of recreation projects to resource projects reflected in these key factors is also reflected in the policies and guidance of the past UCFRB Restoration Fund Grants Program, which gave strong preference to restoration projects over replacement projects.[1] Consistent with those policies and guidance, about $16.3 million of the UCFRB Restoration Funds approved for past projects, or 12%, was approved for funding recreation projects.[2] The results of the public

[1] The preference for restoration over replacement was reflected in the policy criteria specified in the NRDP's *UCFRB Restoration Plan Procedures and Guidance* document (originally published in 2000 and revised in 2002, 2006, 2007) that served as the framework document for the grants program and also in the NRDP's 2003 guidance for recreational grant projects (https://dojmt.gov/wp-content/uploads/2011/06/guidancerecreationalprojects.pdf).

[2] See Table 4-2 contained in Appendix A. While a similar table summary of past funding in the *2011 Long Range Guidance Plan* indicated recreational projects totaled 8% of approved project funding through 2011, this percentage

scoping process reiterated this secondary nature, as judged by the comparatively low number of recreation-dominant proposals, which had budgets totaling less than 5% of the total estimated budget of all abstracts through the public scoping process.[3]

In 2012, based on the secondary importance of recreation projects to resource projects, that aquatic and terrestrial restoration needs far exceed available funds, and on the low proportion of funding for recreation projects reflected in past and prospective future expenditures summarized above, the State proposed that the total budget allocated for recreational projects be about 10% of the available funds, or $6.5 million.

In 2018, the State solicited for projects with recreation component associated with aquatic and terrestrial Priority 1 and 2 areas or in the aquatic and terrestrial injured resource areas for which the State made restoration claims, with a focus on restored or remediated areas. The funds available for allocation in 2018 were more limited than 2012, so eligible projects with a strong preference to projects with a focus on restored or remediated areas were funded to the extent possible. The total amount of funding awarded to projects with recreation component was $0.00 in 2018.

5.2 Proposed Actions and Implementation

In 2012, of the 74 concept proposals submitted by the public that met legal and project location eligibility requirements, only three were recreation-dominant projects (abstracts #3, 25, and 37), with an estimated budget of $8.3 million (see Appendix A).[4] Three other abstracts offered general ideas that included recreational enhancement features (abstracts #69, 73, and 75), but without specific budgets. In addition to ideas offered by the public, FWP suggested seven other recreational projects (abstracts #G2a, b, c and #G3a, b, c), which are summarized in Attachment 5-1, with an estimated total budget of about $7 million for consideration. In addition, several of the public scoping abstracts that are incorporated into the State's proposed resource restoration actions involve fishing access as part of easement or acquisition efforts (abstracts #7, 48, 50 and possibly #52).

In 2012, working within the $6.5 million budget limit, the State determined its proposed actions for recreational enhancement by considering how well these concept proposals matched the key aspects of desirable recreational projects identified in Section 5.1, plus further consideration of the NRD evaluation criterion, particularly technical feasibility, costs-effectiveness, and cost:benefit relationship. Due to limited funding, work in injured areas was given the highest priority.

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increased to 12% after adding the additional $8 million approved to complete the Silver Bow Creek Greenway project in that *Plan*, of which $5.5 million was for recreational access features.

[3] The $6.8 million total estimated budget in the concept proposals for these recreational-dominant projects is 4% of the estimated total budget of $163 million for the abstracts submitted through the public scoping process.

[4] Two other abstracts that were recreation-focused (#5a and #70) did not meet eligibility screening criteria.

In 2018, concept proposals submitted by the public that met legal and project location eligibility requirements, only four were recreation-dominant projects (abstracts #102, 103, 104, and 105), with an estimated budget of $1.3 million (see Appendix A).

The State determined its proposed actions for recreational enhancement by considering how well these concept proposals matched the key aspects of desirable recreational projects identified in Section 5.1, plus further consideration of the NRD evaluation criterion, particularly technical feasibility, costs-effectiveness, and cost:benefit relationship. Due to limited funding, projects associated with aquatic and terrestrial Priority 1 and 2 areas or in the aquatic and terrestrial injured resource areas for which the State made restoration claims, with a focus on restored or remediated areas were given the highest priority.

5.2.1 Recreational Enhancements in Injured Areas

Silver Bow Creek Mainstem

The State does not propose any additional recreational enhancements along the Silver Bow Creek mainstem due to the sufficiency of past funding. The *2011 Long Range Guidance Plan* approved an additional $8 million for completion of the Silver Bow Creek Greenway project, which will provide a passive recreational corridor and access features and associated recreational services along 22 miles of Silver Bow Creek between Butte and Warm Springs Ponds. Of the total $23.6 million approved for the Greenway project, approximate $11.2 million, or 47%, is for recreational enhancement features and the other 53% is for ecological enhancement features and acquisitions. The sufficiency of past funding for recreational service projects along the Silver Bow Creek mainstem is also somewhat reflected by the lack of any public or state-generated concept proposals for recreational enhancements in this area.

Clark Fork River Mainstem

Milltown State Park: In 2012, funding was approved of up to $2.45 million for additional recreational enhancements at the Milltown State Park located at the confluence of the Clark Fork and Blackfoot Rivers.[5] Of this, $1.2 million is for completion of the basic park development and infrastructure needs at the Confluence and Gateway portions of the Park (abstract #G3a). Another $1.2 million is for additional construction of the trail and other recreational features in the reservoir area, for easements/acquisitions that would provide access to recreational and education features along the Blackfoot River, and for five years of additional operation and maintenance beyond the 5-year start-up operation and maintenance funds provided via an earlier grant (abstract #G3b). These enhancements are considered to be cost-effective and vital aspects to completion of the Park and fit the key aspects of desirable recreational projects specified in the *2012 Process Plan*. These

[5] Past approved UCFRB Restoration Funds for recreational access features at the Milltown State Park total about $1.6 million (see Table B-2, Appendix B) of the total $2.7 million approved for the Park.

proposed public access and management components compliment the restoration objectives at the Milltown site by assisting in the management of public access/use. The remaining $50,000 would be for removal of the remaining portions of the Stimson Dam at Bonner to eliminate this recreational hazard to river floating (abstract #G3b).

The $3 million proposed pedestrian bridge (abstract #G3a) is not included in this restoration plan because it offers minimal, if any, resource benefits, is high cost with uncertain recreational benefits, and is not considered cost-effective at this time because of remaining uncertainties.

In 2018, FWP proposed funding for additional recreational enhancements at the Milltown State Park (#105). These enhancements are access at the Bonner Development Group property that is being acquired by FWP Parks, development of access through the abandoned railroad tunnel near to the location of the former dam, and development of water supply at the Confluence area. These projects will increase public access to the restored reservoir area and are considered to be cost-effective, are important aspects to increase access to the Park and fit the key aspects of desirable recreational projects requested in 2018. Due to lack of available funds to allocate, in 2018, the State does not propose funding to assist with completion of this project.

Fishing Access Sites: In 2012, funding was approved for $1 million to be allocated for the construction of or upgrade of up to ten fishing access sites along the Clark Fork River mainstem from Warm Springs Ponds to Milltown, with about $850,000 for site developments such as park areas, latrines, and boat launches, and $150,000 for land acquisitions/easements (abstract #G2a). Of the ten sites, six are already located on publicly-owned lands. These fishing access sites were all identified in the State's guidance of encouraged recreational projects in the *2012 Process Plan*. The criteria used for site selection and funding estimates are well-founded based on other State fishing access sites statewide. While FWP has the ability to acquire and manage fishing access sites, FWP is not required by law nor funded through its legislatively appropriated budget for these proposed activities. The FWP plans to complete 1 to 3 FAS per year.

In 2018, due to complications, delays, permitting and social issues, increases in construction costs and underestimating the 2012 actual costs of acquisition and development of FASs FWP requested an additional $600,000 to complete the FASs along the Clark Fork River (#102). Due to lack of available funds to allocate, in 2018, the State does not propose funding to assist with completion of the FASs originally proposed in 2012.

Deer Lodge Trestle Community Park: The State proposes funding of up to $1.4 million to develop a river side recreational park and trail system within Deer Lodge as proposed by Powell County (abstract #37). Funding would be contingent upon DEQ's determination of adequate completion of site remediation activities associated with the old Milwaukee Roundhouse and that these enhancements do not conflict with DEQ's planned Clark Fork River remediation activities. A possibility of cost-savings exists as part of the coordination with these remediation activities. Major features to be funded include: riverside park development, construction of a pedestrian

bridge and boat ramp, and repairs to the trestle bridge. These funded components fit the guidance provided in the *2012 Process Plan* for recreational projects and the end-use as a riverside park fits well with the State's integrated remediation and restoration work in this area.

Drummond Riverside Park: The State proposes funding of up to $100,000 for the acquisition and trail development proposed by the Drummond Kiwanis Club of the 38-acre property located along the Clark Fork River at Drummond for use as a fishing access and wildlife viewing site (abstract #3). State approval is needed of the due diligence, the title work, and an appraisal documenting a purchase price at or below fair market value. In addition, funding would also be dependent on FWP's involvement in developing a management plan for the property to ensure protection of the nearby great blue heron rookery from disturbance. While a nearby fishing access does exist, the expanded recreational and resource benefits of this acquisition are considered commensurate with costs.

2018 Trails Master Plan

The Powell County Planning Department proposes funding $120,000 to be allocated to for the development of a trails master plan for Powell, Anaconda Deer-Lodge and Granite counties (#103). The County would hire a contractor to manage the project across the tri-county region. The contractor would evaluate existing recreational-focused master plans, interview stakeholders and potential partners, conduct an inventory of current developments and proposed restoration activities to produce a visionary document with different options and alternatives to enhance existing recreational projects. The final document would highlight potential linkages and high-priority areas, as well as increase coordination and dialogue between partners and stakeholders. Potential project partners may include the Anaconda Sportsmen, Powell County Parks Board and Trails Subcommittee, Anaconda Trails Society, Granite County, Deer Lodge County, MT DEQ, MT FWP, MT DNRC, the National Park Service. Due to lack of available funds to allocate, in 2018, the State does not propose funding to assist with completion of this project.

2018 Anaconda Trail

The Anaconda Valley Trail Assoc. proposes funding $200,000 to be allocated to the West Valley Trail in Anaconda (#104). The trail will be located on the remediated railroad bed, now owned by Montana Department of Transportation (MDT) that is parallel to Montana Highway 1. The trail is a $500,000 project and is included in the MDT plan. MDT will grant the West Valley Trail an indefinite easement and complete the construction. The $200,000 requested from the Restoration Fund would be for supplies and materials. Due to lack of available funds to allocate, in 2018, the State does not propose funding to assist with completion of this project.

5.2.2 Recreational Enhancements in Priority 1 and 2 Resource Areas

Hafner Dam and Washoe Parks: The remaining funding of $1.5 million would be allocated to recreational improvements at the Hafner Dam or Washoe Park that were proposed by Anaconda Deer Lodge County and the Washoe Park Foundation (abstract #25). The State worked with these entities to identify which of the requested $6.8 million in recreational enhancements for these two areas could be funded with this $1.5 million.[6] This required an analysis of what enhancements best fit the funding requirements of being natural-resource based and of resource benefit. This project was completed in 2017.

The other recreational projects proposed via the concept proposals submitted by the public or generated by the state for Priority 1 and 2 resource areas were proposed fishing access sites on the Little Blackfoot River and Flint Creek. FWP proposed one fishing access site on the Little Blackfoot River for an estimated budget of $82,000 (abstract #G2b), and four fishing access sites on Flint Creek for an estimated $328,000 (abstract #G2c). The State believes that this conceptual project is of lower priority than the Hafner/Washoe proposal given the latter project's proximity to a large community and substantial project development efforts already completed. Funding of this fishing access site could be accomplished with any leftover funds that remain from the $1 million proposed for development/implementation of the fishing access sites on the Clark Fork River.

5.2.3 Summary of Proposed Recreation Projects and Funding

Pursuant to provisions of the *2011 Long Range Guidance Plan* and the *2012 Process Plan*, funding of recreational projects will come from either the Aquatic or Terrestrial Priority Funds based on the proportion of the project costs attributable to aquatic or terrestrial restoration. Table 5-1 provides a further budget breakdown for each of the proposed recreational enhancement projects based on the State's judgment of these proportional benefits. All of the proposed recreational enhancement projects were primarily aquatic-related, rather than terrestrial-related.

[6] The proposed budget for Washoe/Hafner proposals was not provided in the initial 2012 abstract submittal. Via supplemental information provided to the NRDP dated 8/13/12, ADLC/Washoe Park Foundation outlined $2.7 million for potential NRD funding for the Hafner Dam project and $4.1 million for the Washoe Park area.

Table 5-1. Summary of Proposed Recreational Enhancements

2012 Abstract ID #	**Proposed Recreational Enhancements**	**Proposed Funding Amount**	**Aquatic Priority Funds**	**Terrestrial Priority Funds**
G3a, b, c	Milltown State Park	$2,450,000	75% - $1,837,500	25% - $612,500
G3a	Bonner Dam Removal	$50,000	100% - $50,000	$0
G2a	Clark Fork River Mainstem Fishing Access Sites*	$1,000,000	100% - $1,000,000	$0
37	Deer Lodge Trestle Park	$1,400,000	75% - $1,050,000	25% - $350,000
3	Drummond Riverside Park	$100,000	50% - $50,000	50% - $50,000
25	Washoe and Hafner Dam Parks	$1,500,000	50% - $750,000	50% - $750,000
	TOTAL	**$6, 500,000**	**$4,737,500**	**$1,762,500**
2018 Abstract ID#				
102	FWP FAS	$0	$0	
103	Trail Master Plan	$0	75% - $0	25% - $0
104	Anaconda Trail	$0	50% - $0	50% - $0
105	Milltown State Park	$0	75% - $0	25% - $0
	TOTAL	**$0**		

**As set forth in Section 5.2.2, fishing access site locations could be considered on the Little Blackfoot River and Flint Creek, should leftover funds be available after development/ implementation of suitable fishing access sites on the Clark Fork River mainstem.*

Implementation of Proposed Recreational Projects

The State will coordinate with the entities that proposed the recreation projects listed in Table 5-1 to accomplish project development and implementation of those projects. All of these entities, with the exception of the Drummond Kiwanis Club, are county or state governmental entities. Section 6 provides further details on how this work would be accomplished through contractual agreements with these entities. For most of the proposed projects, the cooperating entity only sought NRD funding for the project implementation components, with project management costs to be covered by other funds. Consistent with the acquisition process set forth in Section 6, easement/acquisitions would require subsequent consideration by the Advisory Council, Trustee Restoration Council, and public, and then approval by the Governor following completion of needed title and appraisal work.

Attachment 5-1 FWP's Supplemental Information on Recreational Enhancement Needs

A. Recreational Projects (Fishing Access Site Developments) In The Clark Fork River Basin For NRDP Funding Consideration

Main Criteria In Producing A List Of Potential Sites Or Projects:

- establishing reasonable float distances between sites
- selecting sites that already exist to some extent
- choosing sites to formalize access for the public
- selecting sites where anticipated use is greatest (Deer Lodge to Missoula)
- establishing access on tributaries of the Clark Fork where none exist

Beneficial Value of Developed Recreational Sites:

- planned development will decrease resource degradation
- shows intent of active stewardship
- planned development will help prevent pioneered use in the future
- planned development potentially avoids impacts in sensitive locations
- local communities benefit from increased economic activity
- public is provided safe and enjoyable recreational opportunities

The following is a listing of potential recreational projects that should be considered for NRDP funding. The desired end results would be to provide a quality access road, parking, and latrine at all sites. Boat launches would also need to be developed at most sites with the exception of a site or two that a launch already exists or a site that does not require a launch. Other needed components of development would include signing and fencing considerations. On the Little Blackfoot River and Flint Creek, two tributaries to the Clark Fork, wade access would be the goal; therefore boat launches would not be necessary.

Clark Fork River – Reach A (Warm Springs to Garrison)

Racetrack Pond [Gravel Access 45k, Parking 25k, 2 Latrines 24k = 94k]

State Land Downstream of Dear Lodge [Gravel Access/Parking 30k, Latr 12k, Launch 35k = 77k]

Kohr's Bend FAS [Parking 20k, Latr 12k, Launch 35k = 67k]

G2a

Little Blackfoot River near Garrison [Parking 45k, Latr 12k, Launch 35k = 92k]

Clark Fork River – Reach B (Garrison to Drummond)

Gold Creek [Parking 35k, Latr 12k, Launch 35k = 82k]

Jens Bridge [Parking 30k, Latr 12k, Launch 30k = 72k]

Clark Fork River – Reach C (Drummond to Missoula)

BLM Access Site [Parking 35k, Latr 12k, Launch 35k = 82k]

Bear Gulch [Parking 45k, Latr 12k, Launch 35k = 92k] **G2a**

Bearmouth FAS [Parking 45k, Latr 12k, Launch 35k = 92k]

Beavertail Hill [Parking 45k, Latr 12k, Launch 35k = 92k]

Tributaries:

Little Blackfoot River between Avon and Elliston (1 site) [Parking 20k, Latr 12k = 32k] **G2b**

Flint Creek above Maxville (2 sites) and below Maxville (2 sites) [Parking 20k, Latr 12k = 32k x 4 = 128k] **G2c**

TOTAL SITES = 15

TOTAL ESTIMATED CONSTRUCTION COST = $1,002,000 **G2a, b, c**

POTENTIAL LAND PURCHASE COST or LEASE COST = $120,000 - $400,000 based on 8 potential purchase/lease sites X 5 acres/site X (3k-10k/acre) = $120,000 - $400,00

Warm Springs Ponds Wildlife and Recreation Management Area

In addition to existing FWP fishing access sites or potential future fishing sites, FWP has entered into a 10-year management agreement with Atlantic Richfield Company (ARCO) to manage the recreational opportunities at Warm Springs Ponds on the Upper Clark Fork River. Through this management agreement, FWP receives adequate funding from ARCO for maintenance, operations and personal services necessary for the management of the recreational opportunities at Warm Springs Ponds. The agreement was initiated in 2010 and is in effect until December 31, 2019. Near the end of the agreement term, it is anticipated that the overall situation and management of Warm Springs Ponds will be reevaluated and addressed accordingly.

MONTANA STATE PARKS
stateparks.mt.gov

Montana State Parks NRDP Restoration Fund Request
July 10, 2012

Montana State Parks is requesting funding from the NRDP Restoration Fund to complete basic park development and infrastructure needs at Milltown State Park.

Priority # 1 – Completion of Park Development
Montana State Parks # 1 priority and focus of this grant proposal is the completion of the basic park development and infrastructure needs, much of which were included in the original grant proposal but could not be completed due to significant budget constraints.

The current cost of completing state park site development, based on engineering estimates, is $1.2 million. That amount would allow for the completion of vital park components, including the gateway trailhead area; the confluence interpretive shelter; park boundary and safety fencing; standard directional, regulatory and interpretive signage; and a park visitor contact station. **G3a**

Full funding for park development will help bring to fruition the state park envisioned by Montana State Parks and its partners, Missoula County and the Milltown Superfund Redevelopment Working Group, an effort nearly a decade in the making. The successful completion of basic park development and infrastructure needs is essential to the establishment of a park management presence that will protect the NRDP's substantial investment in the Milltown resource remediation and restoration effort and allow for safe public access and enjoyment of the area.

Additional Needs
Montana State Parks has identified the following additional projects worthy of additional funding through the NRD program after priority 1 is met:

Support for re-vegetation projects: Montana State Parks is working on building our volunteer base, likely through a friends group, and with NRDP guidance and support we could carry out re-vegetation, weed management and other natural resource projects for years to come. NRDP funding would give material support for re-vegetation projects, e.g. a tool cache, plant stock, soil amendments, fencing and browse protectors. Estimated cost: $50,000. **G3b**

Acquire easement/property on BFR. Develop connecting trail and the gateway trailhead: Ensure public access to the Blackfoot River and to Milltown State Park land acquired with NRDP funds. It would offer access to educational sites highlighting Blackfoot River restoration efforts such as the removal of the Big Blackfoot Railroad piers, the Bonner Dam and the Stimson cooling pond. Estimated cost: $100,000 for the acquisition and trail development.

Operations Funding: Once additional grant funds are available, Montana State Parks has identified the need for additional operations support when the current grant expires in 2015. The greatest future benefit to natural resources at the Milltown Superfund site will come from managed use of the new state park. With adequate resources, the new state park will help ensure restored and recovering areas are protected from public overuse. Montana's urban state parks receive far greater visitation than most parks. Annual park visitor counts from 2011 suggest the range of visitation Milltown State Park could receive once open:

- Spring Meadow State Park (Helena) -- 78,000
- Lake Elmo State Park (Billings) -- 134,000
- Giant Springs State Park (Great Falls) -- 324,000

G3b

Milltown has greater statewide significance than either Spring Meadow Lake State Park or Lake Elmo State Park. Given the anticipated use of the park, with its proximity to Montana's second largest city, an on-the-ground staffed presence is essential. Managed use requires personnel and materials, the tools necessary and a facility from which to base operations. The Parks Division of FWP has advocated for the need for operations and management funding if the agency were to sustain Milltown State Park beyond 2015.

Montana State Parks currently manages 54 parks from a finite budget that receives neither general fund support, nor funds from hunting and fishing license fees. Montana State Parks cannot divert funds from existing units in order to fund new ones, however desirable they may be. The cost of five years of additional O&M is estimated at $1,040,280 (with $926,000 in personal services and $114,280 for contracted services, supplies and communications etc.).

Build trails, benches, kiosks, interpretive signage, fencing in floodplain and riverfront: Manages public use in the recovering floodplain and protects plantings. The project would promote public understanding of river ecology and restoration. Estimated cost: $50,000.

Clark Fork River Pedestrian Bridge: The Clark Fork River has had a bridge crossing near Deer Creek for more than a century. The state's conceptual restoration plan included a bridge to replace the old Duck Bridge. In the intervening years, NRDP suggested during planning efforts to move it downstream, in order to keep piers out of the floodplain, a clear restoration benefit. Consequently, the bridge grew much longer and costlier with the move downstream. Construction of the bridge, first proposed in the 2009 NRDP grant, would make a vital link that would connect all of Milltown State Park to all local communities, Missoula and beyond. Estimated cost: $3,000,000.

G3c

One final project that is not included on our project list is the removal of the Bonner Dam. We're operating on the assumption that this is already a NRDP priority project, given previous work on the dam itself, past log removal projects, and the recent removal of the old Big Blackfoot Railway bridge piers. At certain water levels in the summer, the remaining timber cribbing from the dam could pose a serious entrapment hazard for floaters, which will be many, particularly with the Weigh Station Fishing Access Site immediately upstream. The recent tragedy on the Blackfoot only highlights the importance of this effort. We support this project and believe it is of a time critical nature as the FWP Commission has set July1, 2013, as the date for reopening the Blackfoot River.

SECTION 6. RESTORATION PLAN IMPLEMENTATION

This section explains the process that will be followed in the development, design and implementation of this Restoration Plan, as identified in Sections 3, 4, and 5 of this document and summarized in Table 6-1, which provides a funding breakdown for the Aquatic and Terrestrial Priority Funds. These procedures are based, in large part, on following provisions from the *2012 Process Plan*:[1]

- Some approved projects will be developed and implemented by the State, and other approved projects will be developed in partnership with the State in a manner consistent with State procurement requirements.

- Some partners may be identified early in the restoration planning through the public scoping process described above; other partners may be identified later after the Aquatic and Terrestrial Restoration Plans have been adopted.

- Compliance with State procurement regulations will affect how and what entities implement projects.

For each project or conceptual proposal included in this Restoration Plan, the State will initiate the following process.

Project Development and Design:

- Consistent with past guidance approved by the Trustee Restoration Council, the project administration activities will be capped at 5% of the total estimated project development and design costs, whichever is less.

- The State may coordinate and contract with government entities or landowners, or competitively-procured contracted consultants and non-profits, as needed, for managing project development and design or related activities. All services to the State under the *Restoration Plans*, including subcontractors, engineering, non-construction services, and construction services, will be competitively procured consistent with State law.

- Where consistent with state procurement requirements, the partnering entities will be funded and responsible for general management of the project development and design activities. Many of these entities indicated the possibility or likelihood of matching funds in their abstracts. As part of the project development efforts, opportunities to obtain matching funds for the full project should be pursued to increase the project's cost-effectiveness.

[1] See Section 5.3.3 (pp. 17 and 18) on Implementation of Restoration Plan Projects in the *2012 Process Plan*.

- The contracted entities will be required to use subcontractors competitively procured for all services, environmental consulting, engineering, and design activities, consistent with State procurement guidance to be provided by NRDP.

Project Implementation

- The State will separately procure contractors for the project implementation phase, involving preparation of construction design and bid specifications, construction oversight and construction of a developed project. For this subsequent procurement, the State would consider the responsibility, responsiveness, knowledge, skills, abilities, and cost in selecting the appropriate entity/person for this activity. Each project may require a different skill set to supply the needed project management or construction oversight, thus separate procurement for implementation is needed. These procurement activities will follow all relevant State law requirements.

The development, design, and implementation of the final *Restoration Plans* will focus on the actions set forth for each aquatic priority area and priority landscape, rather than a set dollar amount required for each area or landscape. Funding of individual projects within aquatic priority areas and terrestrial priority landscapes will be based on cost-effectiveness and cost:benefit, rather than on concept proposal estimates.

Funding for all project management, development, design, and implementation will be on a reimbursement basis. Reimbursement will occur following the submittal of a completed and correct invoice, with proper cost documentation of and a progress report on the activities covered under the invoice, pursuant to provisions of the contract agreement. Prior to paying any subcontracted services, the contractor (including non-profits) must provide documentation of the NRDP-approved procurement process.

Each project involving property and/or water rights acquisitions will require a subsequent approval of the proposed transaction, once fully developed in accordance with the *Restoration Plans*, by the Trustee following consideration of input from the public, Advisory Council and Trustee Restoration Council.

Restoration Implementation Updates and Reporting

The State will provide quarterly updates and issue annual reports that will describe the status of all project development and implementation conducted pursuant to the proposed actions covered in this plan and summarized in Table 6-1.

Restoration Plan Revisions and Updates

The Aquatic and Terrestrial Restoration Plans were reviewed and revised two years after the Governor's approval of the 2012 plans and the 2016 plans. The State proposes at least four years

after approval of the 2018 Update before another review and revision to allow development and completion of restoration projects and interest earnings to accrue. The frequency of later reviews/revisions can be addressed in subsequent plans. The revisions to the restoration plans will include a public solicitation of conceptual restoration proposals.

Table 6-1. Cost Summary of Proposed Actions
Updated 10/28/18 *2018 Proposed Changes Red, Italic and Aligned Right*

Action

Aquatic Flow	% Split Aquatic/Terr.	2012 Aquatic Fund Beginning Allocation	2018 NRDP Proposed allocation	2018 Aquatic Fund Beginning Allocation
Flow		$ 20,000,000.00		$ 20,000,000.00
Monitoring / Maintenance		$ 500,000.00		$ 500,000.00
Total Flow		**$ 20,500,000.00**		**$ 20,500,000.00**

Aquatic Priority Area Specific Plans	% Split Aquatic/Terr.	2012 Aquatic Fund Beginning Allocation	2018 NRDP Proposed allocation	2018 Aquatic Fund Beginning Allocation
Watersheds				
Silver Bow Creek		$ 250,000.00		$ 250,000.00
Cottonwood Creek (#82)		$ 1,686,636.00		$ 1,686,636.00
Blacktail Creek		$ 957,245.00	*$ 200,000.00*	$ 1,157,245.00
Browns Gulch		$ 773,403.00	*$ 150,000.00*	$ 923,403.00
Flint Creek (#85, 90, 91)	*50/50	$ 2,280,750.00	*$ 2,500,000.00*	$ 4,780,750.00
Harvey Creek (#)		$ 286,902.00	*$ 300,000.00*	$ 586,902.00
Little Blackfoot River (#92, 93, 94, 95)	*50/50	$ 2,707,029.00	*$ 329,453.00*	$ 3,036,482.00
Lost Creek		$ -		$0.00
*Dempsey Creek**		$ 716,550.00	*$ (716,550.00)*	$0.00
*German Gulch**		$ 429,242.00	*$ (100,000.00)*	$ 100,000.00
Mill / Willow Creek		$ 662,730.00		$ 662,730.00
Racetrack Creek		$ 734,960.00		$ 734,960.00
Warm Springs Creek		$ 1,611,366.00		$ 1,611,366.00
Basin Creek (above reservoir) (#97)			*$ 300,000.00*	$ 300,000.00
Gold Creek (#84)			*$ 600,000.00*	$ 600,000.00
O'Neil Creek (#86)			*$ 200,000.00*	$ 200,000.00
Rock Creek (#87, 88)			*$ 600,000.00*	$ 600,000.00
Aquatic Operation / Maintenance			*$ 1,000,000.00*	$ 1,000,000.00
Contingency/		$ 2,816,614.00	*$ (500,000.00)*	$ 2,316,614.00
Total Watershed		**$ 15,913,427.00**	**$ 4,862,903.00**	**$ 20,547,088.00**

*Indicates budgets reduced based on project status, completed, no longer viable project etc.

Mainstem CFR	% Split Aquatic/Terr.	2012 Aquatic Fund Beginning Allocation	2018 NRDP Proposed Aquatic Allocation	2018 NRDP Proposed Terrestrial Allocation	2018 Fund Beginning Allocation
CFR Mainstem (inc study Flint - Rock Cr. and actions)		$ 1,500,000.00	*$ 500,000.00*		$ 2,000,000.00
Milltown Monitoring	**75/25	$ 300,000.00	$0.00		$ 300,000.00
*CFR Meadows**	**50/50	$ 389,074.00	*$ (191,031.00)*	$ (191,031.00)	$0.00
*Confluence Project**	**20/80	$ 80,000.00	*$ (15,227.00)*	$ (60,910.00)	$0.00
*Dry Cottonwood**	**35/65	$ 595,000.00	*$ (206,645.00)*	$ (383,769.00)	$0.00
CFR Mainstem Diversions (#83)			$0.00		
Monitoring		$ 1,500,000.00	$0.00		$ 1,500,000.00
Total Mainstem CFR		**$ 4,364,074.00**	**$ 500,000.00**	**$0.00**	**$ 4,864,074.00**

*Indicates budgets reduced based on project status, completed, no longer viable project etc.
** Aquatic/Terrestrial Split

Aquatic Summary		2012 Aquatic Fund Beginning Allocation	2018 NRDP Proposed allocation	2018 Aquatic Fund Beginning Allocation
Total Flow		$ 20,500,000.00	$0.00	$ 20,500,000.00
Total Aquatic Priority Area Specific Plans		$ 20,277,501.00	*$ 5,362,903.00*	$ 25,640,404.00
Total Aquatic		**$ 40,777,501.00**	***$ 5,362,903.00***	**$ 46,140,404.00**

Landscape Projects	% Split Aquatic/Terr.	2012 Terrestrial Fund Beginning Allocation	2018 NRDP Proposed allocation	2018 Terrestrial Fund Beginning Allocation
West Philipsburg (inc. 1/2 of riparian habitat protection for Flint Creek $127,500*)		$ 3,200,000.00		
North Avon (inc. 1/2 Little BFR riparian habitat protection $360,000*)		$ 1,400,000.00		
Garnetts (inc. 1/2 Little BFR riparian habitat protection $360,000*)		$ 2,200,000.00		
Lower Flint Creek (inc. 1/2 of riparian habitat protection for Flint Creek $127,500*)		$ 1,400,000.00		
Anaconda Area		$ 1,000,000.00		
Deer Lodge South		$ 1,400,000.00		
Deer Lodge North		$ 1,200,000.00		
Flints East Face		$ 1,400,000.00		
CFR Mainstem (inc. CFR Meadows, Confluence acquisition)	See Aquatic Mainstem Split	$ 2,500,000.00		
Habitat Enhancement / Montioring (inc. Milltown monitoring split**)		$ 2,360,000.00		
CREP Match (from Terr Interest)			*$ 1,135,711.00*	
Total Terrestrial		**$ 18,060,000.00**	***$ 1,135,711.00***	**$ 19,195,711.00**

*Aquatic/Terrestrial Split for Riparian Enhancement only
** Aquatic/Terrestrial Split

Recreation	% Split Aquatic/Terr.	2012 Aquatic Fund Beginning Allocation	2012 Terrestrial Fund Beginning Allocation	2012 Total Aquatic and Terrestrial Beginning Allocation	2018 NRDP Proposed Allocation
Milltown State Park (#105)	75/25	$ 1,837,500.00	$ 612,500.00	$ 2,450,000.00	$0.00
Bonner Dam Removal		$ 50,000.00	$0.00	$ 50,000.00	
CFR Mainstem FAS(#102)		$ 1,000,000.00	$0.00	$ 1,000,000.00	$0.00
Deer Lodge Trestle Park	75/25	$ 1,050,000.00	$ 350,000.00	$ 1,400,000.00	
Drummond Park, Riverside Park	50/50	$ 50,000.00	$ 50,000.00	$ 100,000.00	
Washoe / Hafner Dam Parks	50/50	$ 750,000.00	$ 750,000.00	$ 1,500,000.00	
Proposed 2018 Projects					
Trails Master Plan for UCFRB (#103)	75/25				$0.00
Anaconda Trails (#104)	50/50				$0.00
Recreation Total		**$ 4,737,500.00**	**$ 1,762,500.00**	**$ 6,500,000.00**	**$0.00**

Appendix A

Summary Table of Concept Proposals Submitted by the Public or Generated by the State

Appendix A Final Restoration Concept Summary Table
UCFRB Concept Proposals

Idea #	Submitted by	Project Idea	Location	Aquatic Categories						Terrestrial Categories					Recreation Categories			Section # in Draft Plan	Estimated Cost	Eligibility Y / N	Included in Plan?** (See Explanation)
				Priority Stream	Flow	Fish Passage	Rip Habitat	Stream Construction	Other	Priority Area	Land Acquisition	Conservation Easement	Habitat Improvement	Other	FAS/ Access	Trails	Other				
1	Butte Silver Bow	Aquatic improvements to the Silver Lake Water System: BSB proposes numerous activities to repair the Silver Lake water system in exchange for instream flow augmentation in Warm Springs Creek via releases of stored water.	Warm Springs Creek	1	X													3.2.1 3.2.2.14	$20,000,000.00	Y	Included
2	William Wohlers	Pikes Peak Creek Water Enhancement: Pipe water around and past the "Crater Area" that currently takes almost all of the water. In the past when miners worked this area the water was piped around the "Crater Area" and there was a viable fish population downstream in Pikes Peak Creek.	Powell County., Gold Creek area															2.3	$90,000.00	N	Not Included
3	Drummond Kiwanis Club	Drummond Riverside Park Project: Construct park on purchased land: a three step project. 1) acquire property; 2) acquire legal access to property; and 3) develop trail system and walk in fishing access.	Granite Co., Drummond	INJ						INJ					X	X		5.2	$94,285.00	Y	Included
4	TU, Patrick Byorth	SBC Stream flow augmentation investigation and acquisition: determine need, survey existing rights, identify waters, purchase rights.	SBC	2, INJ	X													3.2.1	$617,500.00	Y	Included
5a	ADLC, Mark Sweeney	Fish trap at Myers Dam to be operated by FWP for cutthroat and bull trout passage during spawning season.	ADLC, Warm Springs Creek	1		X												3.2.2.14	$500,000.00	Y	Included
5b	ADLC, Mark Sweeney	Fish hatchery for cutthroat and bull trout located at Myers Dam, operated by FWP using BSB Silver Lake water. Will provide native fish to CFR basin waters.	UCFRB	1,2					X									3.2.2.14	$1,000,000.00	Y 1	Not Included
5c	ADLC, Mark Sweeney	Create an urban fishery near Anaconda. Land would be owned by Washington Corp and FWP would manage a block management area that would control access to Hearst Lake.	ADLC, Hearst Lake															2.3 4.2.4.7	$1,500,000.00	N	Not Included
6	CFC, Andy Fischer	Emergency Drought Response Fund for CFR. Develop, design and implement drought fund to ensure CFR flows are maintained for fish during drought years.	CFR Mainstem	1 2, INJ	X													3.2.1	$1,957,239.00	Y	Not Included
7	CFC, Andy Fischer	Clark Fork Meadows Ranch Land and Water conservation easement or purchase.	CFR Mainstem, south of Deer Lodge		X					1, INJ	X							3.2.1 3.2.2.1 4.2.4.9 5.1	$778,148.00	Y	Included
8	Granite Headwaters Watershed Group, Jim Dinsmore	Flint Creek aquatic habitat conservation (upper and lower). Proposes to seek opportunities to work with landowners to implement aquatic restoration projects - flow augmentation, riparian habitat protection/enhancement, fish passage improvements, ditch screening, channel reconstruction.	Flint Creek drainage	2	X	X	X	X		1			X					3.2.1 3.2.2.7 4.2.4.1 4.2.4.2	$2,239,742.00	Y	Included
9	CFC, Andy Fischer	Helen Johnson Ditch flow enhancement project. Improve Dry Cottonwood Ranch irrigation system to provide up to 5 cfs of instream flow to the CFR.	CFR Mainstem, south of Deer Lodge	1, INJ	X	X												3.2.1	$420,448.00	Y	Included
10	CFC, Andy Fischer	Lost Creek Flow Enhancement. Identify, develop, and implement projects with private landowners that enhance flows in lower Lost Creek.	Lost Creek	2	X													3.2.1	$2,101,225.00	Y	Included
11	CFC, Andy Fischer	Lower Racetrack Creek Flow Enhancement. Identify, develop, and implement projects with private landowners that enhance flows in Racetrack Creek	Lower Racetrack Creek	1	X													3.2.1	$1,064,850.00	Y	Included
12	CFC, Andy Fischer	Warm Springs Creek Flow Enhancement. Identify, develop, and implement projects with private landowners that enhance flows in Warm Springs Creek.	Warm Springs Creek	1	X													3.2.1 3.2.2.14	$2,101,225.00	Y	Included
13	CFC, Andy Fischer	Pauley Ranch Flow Enhancement. Acquire 9 cfs of irrigation water rights for instream flow in Warm Springs Creek and Lost Creek.	Warm Springs and Lost Creeks	1	X													3.2.1 3.2.2.14	$596,871.00	Y	Included
14	CFC, Andy Fischer	Pilot Flow Project. Work with private landowners to establish pilot study flow restoration projects to teach landowners the benefits of flow restoration.	CFR	1 2 INJ	X													3.2.1	$987,975.00	Y	Not Included
15 *	CFC, Andy Fischer	Racetrack Water Users Assoc. Irrigation Efficiency and Energy Conservation Project - Phases 1, 2, 3. A series of irrigation pipeline improvement projects that would benefit agriculture and provide instream flow to Racetrack Creek, improve fish passage, and eliminate fish entrainment.	Racetrack Creek	1	X													3.2.1	$7,392,728.00	Y	Included
16	CFC, Andy Fischer	CFR Flow Enhancement (below Deer Lodge). Identify, develop, and implement projects with private landowners that enhance flows in the CFR below Deer Lodge.	CFR Mainstem below Deer Lodge	2, INJ	X													3.2.1	$1,874,225.00	Y	Included
17 *	CFC, Andy Fischer	West Side and Whalen Ditch Water Conservation Project. Consolidate the West Side and Whalen ditches into a single ditch to conserve water and provide 20 cfs to the CFR.	CFR Mainstem above Deer Lodge	1, INJ	X													3.2.1	$10,432,568.00	Y	Included
18	CFC, Andy Fischer	CFR Flow Enhance Project (above Deer Lodge). Identify, develop, and implement projects with private landowners that enhance flows in the CFR above Deer Lodge.	CFR Mainstem above Deer Lodge	1, INJ	X													3.2.1	$2,228,225.00	Y	Included
19	CFC, Andy Fischer	Willow Creek Flow Enhancement. Identify, develop, and implement projects with private landowners that enhance flows in Willow Creek near Opportunity.	Willow Creek near Opportunity	2	X													3.2.1	$411,647.00	Y	Included
20	CFC, Andy Fischer	Dempsey Creek Flow Enhancement. Identify, develop, and implement projects with private landowners that enhance flows in Dempsey Creek .	Dempsey Creek	2	X													3.2.1	$2,101,225.00	Y	Included
21	WRC, Ted Dodge	Baggs Creek Habitat and Fish Passage. Enhance riparian and aquatic habitat, improve fish passage within Baggs Creek.	Baggs Creek, tributary to Cottonwood Cr	2		X	X											3.2.2.5	$262,550.00	Y	Included
22	WRC, Ted Dodge	Kohrs/Manning Cottonwood Creek Crossing and Fish Screen. Enhance fish passage on Cottonwood Creek at the Kohrs/Manning canal crossing and prevent fish entrainment in canal and new diversion structure on Clark Fork River	Cottonwood Creek, near the CFR	2		X			X									3.2.2.5	$534,190.00	Y	Included
23	WRC, Ted Dodge	Cottonwood Creek Applegate Lower Diversion/Fish Screen Project. Enhance fish passage in Cottonwood Creek 3 miles east of Deer Lodge. Construct new diversion and install fish screen.	Cottonwood Creek, east of Deer Lodge	2		X												3.2.2.5	$83,200.00	Y	Included
24	WRC, Ted Dodge	Cottonwood Creek Johnson Ranch Habitat Project. Enhance riparian and aquatic habitat in Cottonwood Creek to improve spawning, rearing and migratory habitat.	Cottonwood Creek, east of Deer Lodge	2			X	X										3.2.2.5	$71,000.00	Y	Included

Idea #	Submitted by	Project Idea	Location	Aquatic Categories						Terrestrial Categories					Recreation Categories			Section # in Draft Plan	Estimated Cost	Eligibility Y / N	Included in Plan?** (See Explanation)
				Priority Stream	Flow	Fish Passage	Rip Habitat	Stream Construction	Other	Priority Area	Land Acquisition	Conservation Easement	Habitat Improvement	Other	FAS/ Access	Trails	Other				
25	ADLC and Washoe Park Foundation	Restoration of Washoe Park and Hafner Dam along Warm Springs Creek to include: 2.75 miles of riparian buffer on WSC, 31.75 acres of stormwater management, 5.86 miles of trail, 8.5 miles of stream/fishery improvements, and education. Supplemental information indicated $2.7 million for potential NRD funding for the Hafner Dam project and $4.1 million for the Washoe Park area.	Anaconda, Warm Springs Creek	1			X		X	1			X		X	X	X	5.2	$6,800,000.00	Y3	Partially Included
26	WRC, Ted Dodge	Upper Browns Gulch Habitat and Fish Passage. Enhance riparian and aquatic habitat and diversity in straightened reaches of 3,000 feet of Browns Gulch and design 4 fish passages structures to meet all agricultural and Fischery needs.	Browns Gulch	1		X		X		1			X					3.2.2.4	$311,900.00	Y	Included
27	WRC, Ted Dodge	Lower Browns Gulch Habitat and Fish Passage. Enhance aquatic habitat along 8500 feet by reducing sediment input with streambank restoration and improve fish passage by assessing fish passage issues and installing five fish-friendly diversions and at least one fish screen.	Browns Gulch	1		X		X		1			X					3.2.2.4	$356,100.00	Y	Included
28	WRC, Ted Dodge	Lower Blacktail Creek Riparian and Aquatic Habitat. Improve riparian and Fischery habitat along 6 miles of Blacktail Creek and provide angling opportunities. Will need to work with landowners to implement project.	Blacktail Creek, I-90 upstream 6 miles	2			X	X		1			X					3.2.2.3	$580,500.00	Y	Included
29	WRC, Ted Dodge	Lower Spotted Dog Creek Habitat and Fish Passage. Improve riparian and aquatic habitat and improve fish passage in the lower 6 miles of Spotted Dog Creek, all private land.	Spotted Dog Creek	2		X	X			1			X					3.2.2.10 4.2.4.5	$170,750.00	Y	Included
30	WRC, Ted Dodge	Little Blackfoot River Habitat. Enhance aquatic and riparian habitat along 32 miles of Little BFR, from Elliston to I-90.	Little Blackfoot River	1		X	X	X		1			X					3.2.2.10 4.2.4.3	$1,035,250.00	Y	Included
31	WRC, Ted Dodge	Dog Creek Riparian and Aquatic Habitat. Assess and enhance riparian habitat along 16 miles of Dog Creek.	Dog Creek, tributary to Little BFR	2		X	X			1			X					3.2.2.10 4.2.4.4	$279,600.00	Y	Included
32	WRC, Ted Dodge	Lower Willow Creek Aquatic Habitat and Fish Passage. Enhance aquatic and riparian habitat on 6.5 miles of Lower Willow Cr. from Mill Willow BPC upstream 6.5 miles, the Yellow Ditch. Work with landowners to reduce livestock impacts, reconstruct diverted sections and evaluate two diversions to minimize entrainment of fish.	Willow Creek near Opportunity	1		X	X	X		1			X					3.2.2.12	$263,000.00	Y	Included
33	CFC, Will McDowell	Lower Racetrack Creek Habitat and Fish Passage. Enhance one (1) mile of riparian habitat by working with landowners to develop grazing management plans, and designing fish passage structure.	Lower Racetrack Creek	1		X	X			1			X					3.2.2.13	$65,850.00	Y	Included
34	WRC, Ted Dodge	Middle Racetrack Creek Habitat and Fish Passage. Enhance riparian habitat on 6 miles of Racetrack Cr from I-90 upstream to Cement Ditch, reconstruct 1 mile of stream, remove and improve fish passage at 4 diversions.	Middle Racetrack Creek	1		X	X	X		1			X					3.2.2.13	$606,500.00	Y	Included
35	WRC, Ted Dodge	Lower Dempsey Creek Habitat and Fish Passage. Enhance riparian and aquatic habitat by reconstruction of channel, fencing, livestock management along 8 miles of Dempsey Creek from Dempsey Lake to the CFR. Design and install fish passage structures on 3 or 4 diversions.	Lower Dempsey Creek	2		X	X	X		1			X					3.2.2.6	$521,500.00	Y	Included
36	WRC, Ted Dodge	Habitat and Fish Passage Maintenance Program. Develop and provide a long-term (10 year) maintenance and monitoring fund to support the agricultural community to assure the successful adoption of conservation technology for aquatic resource projects.	UCFRB	1,2				X		1			X					3.2.3	$480,645.00	Y	Included
37	Powell County	Trestle Community Park: Plan, design, and develop park on the former Milwaukee Roundhouse site in Deer Lodge. This 14 acre park will support trails, pedestrian bridge, boat ramp, revegetation, educational signs, etc.	Deer Lodge	INJ, 0						INJ, 0					X	X	X	5.2	$1,413,744.00	Y3	Included
38	City of Deer Lodge	Deer Lodge Wastewater Project. Project includes slip-lining 8,300 feet of wastewater pipeline from Deer Lodge to the WWTF and replacing the WWTF Ultraviolet disinfection system.	Deer Lodge	1, INJ					X									3.2.2.1	$2,015,100.00	Y 1	Not Included
39a	Butte Country Club	Basin Creek/Butte Country Club. This proposal addresses flooding issues that occur at the Butte Country Club: replacement of existing culvert, removal of sand trap, adding fill to elevate land surface, riprap for bank stabilization, install drains are proposed to improve golf course and aquatic areas. Also subject to BNRC funding request.	Butte															2.3	$450,000.00	N	Not Included
39b	Butte Country Club	Blacktail Creek/Butte Country Club. Proposal study, design and implement for bridge/culvert replacement, streambank stabilization, fish passage at irrigation pond, drainage controls. Also subject to BNRC funding request.	Butte	2		X		X	X									3.2.2.3	$650,000.00	Y	Included
40	Mike Flanick	Rocker Storm Water System. Provide stormwater system in town of Rocker and the West Butte OU. Includes curbs, gutter, drain pipes, and retention ponds. Also subject to BNRC funding request.	Rocker	INJ					X									3.2.2.1	NA	Y 1,2	Not Included
41	Mike Flanick	North Ramsay Land Acquisition. Acquisition of 2,150 acres of wildlife and recreational land north of Ramsay. Also subject to BNRC funding request.	Ramsay															2.3	$5,912,500.00	N	Not Included
42	Mike Flanick	Pony Express Trail Bridge. Replace three culverts at the Pony Express Tail on Browns Gulch with a bridge to improve fish passage. Also subject to BNRC funding request.	Browns Gulch	1		X												3.2.2.4	NA	Y	Included
43	TU, Pat Barnes Chapter	Little Blackfoot River Riparian Habitat Protection and Enhancement. Little BFR riparian enhancement, including riparian fencing, streambank stabilization, and establishing a conservation easement program for areas of cattle exclusion.	Little Blackfoot River	1			X	X		1			X					3.2.2.10 4.2.4.3 4.2.4.4 4.2.4.5	$514,378.00	Y	Included
44	TU, Stan Bradshaw	Little Blackfoot Streamflow Restoration. Project would identify reaches of Little BFR and its major tributaries, develop minimum flow targets to improve water quality and fish habitat, survey existing water rights to identify potential partners, prioritize available water rights to achieve flow targets, build funding portfolio and implement water leases or acquisitions, and design and implement water monitoring program.	Little Blackfoot River	1	X													3.2.1 3.2.2.10	$214,240.00	Y	Included
45	City of Deer Lodge	Cottonwood Creek Streambank Enhancement. Project involves enhancement of City / County owned properties along Cottonwood Creek, tree planting, bank stabilization, grading of property are activities that are proposed.	Deer Lodge	2			X	X										3.2.2.5	$1,019,000.00	Y	Not Included

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				Priority Stream	Flow	Fish Passage	Rip Habitat	Stream Construction	Other	Priority Area	Land Acquisition	Conservation Easement	Habitat Improvement	Other	FAS/ Access	Trails	Other				
46	City of Deer Lodge	Cottonwood Creek Master Plan - Urban Channel. Project develops a Master Plan for the reach of Cottonwood Creek that flows through the City of Deer Lodge. The Master Plan would provide funding strategies for the City to implement streambank and channel modifications, complete a LOMR for FEMA, amend the City's growth policy to protect Cottonwood Creek.	Deer Lodge	2					X									3.2.2.5	$200,000.00	Y1	Not Included
47	Montana Tech, Kris Douglass	Restoring Native Plant Diversity in UCFRB. Proposal asks for continuation of funding of the 2008 grant to provide native plants and seeds for restoration projects along the SBC and CFR. Also subject to BNRC funding request.	UCFRB	1, 2, INJ			X		X	1,2,INJ			X	X				4.2.4.9	$2,500,000.00	Y	Not Included
48	Five Valleys Land Trust	The Confluence Project at Rock Creek. Acquisition of 201 acre property at the confluence of Rock Creek and the CFR and establishment of FAS at confluence. NRDP requested funds is 15% of total project costs. Property consist of 25 riparian acres, 50 non-riparian acres w/in 100-yr floodplain and 125 acres of upland property.	Rock Creek	INJ						1,INJ	X				X			3.2.2.1 4.2.4.9 5.2	$400,000.00	Y	Included
49	Five Valleys Land Trust	John Long Mtn Terrestrial Habitat. Proposal would develop and seek opportunities to implement conservation easements, acquisitions, and exchanges within the Long John Mountains.	Long John Mountains							1 2	X	X						4.2.4.1 4.2.4.2	$5,000,000.00	Y	Included
50	Five Valleys Land Trust	Graveley-East Garnet Mtn Conservation. Proposal to purchase a conservation easement on ~8,300 acres near Gold Creek, north of I-90, acquire 43 acres along the CFR, and provide FAS near Gold Creek.	Gold Creek							2		X			X			4.2.4.3 5.2	$2,000,000.00	Y	Included
51	Five Valleys Land Trust	Mentzer Ranch Conservation Easement. Project proposes to establish conservation easement on 480 acres, restore a section of Barnes Creek, and provide a FAS Flint Creek.	Flint Creek near Hall	2			X	X		1,0		X			X			3.2.2.7 4.2.4.2	$120,000.00	Y3	Not Included
52	Five Valleys Land Trust	Dry Cottonwood Neighbors Conservation. Conservation easement purchase for 11,844 acres of land near Warm Springs along the CFR. Project includes easements on 4 different but semi-contiguous ranches that include grassland, scrub forest, CFR floodplain, and cultivated lands.	Warm Springs	INJ						1 2, INJ		X						3.2.2.1 4.2.4.6 5.2	$3,800,000.00	Y	Included
53	Five Valleys Land Trust	Lower Willow Creek - Henderson Ranch Conservation Easement. Conservation easement purchase on 400-acre ranch that contains 2,900 feet of Flint Creek and 5,400 feet of Lower Willow Creek. NRDP funds (51%) would leverage other funds for this purchase.	Flint Creek near Hall	2						1,0		X						3.2.2.7 4.2.4.2	$120,000.00	Y3	Not Included
54	Watershed Consulting	Mapping Suitable Habitat for Passive Restoration of Tributaries of the UCFRB. Project proposes to identify sites within the UCFRB where beavers could be transplanted or placed for passive stream restoration proposes.	UCFRB	1 2, INJ					X	1								4.2.6	$24,668.01	Y	Included
55	TU, Casey Hackathorn	Harvey Creek Integrated Restoration. Proposal to work on private and state land to; screen 3 irrigation diversions; remove a diversion near the mouth of Harvey Creek; design and replace the Harvey Creek culvert crossing Mullan Rd.; complete water rights acquisition for instream flow, and 1 mile of riparian fencing.	Harvey Creek	2	X	X	X			INJ			X					3.2.1 3.2.2.9	$370,519.00	Y	Included
56	TU, Casey Hackathorn	Flint Creek Watershed Fish Passage. Project proposes to identify and implement fish passage and screening in the Flint Creek drainage. Up to 40 irrigation diversions will be evaluated and prioritized up to 20 diversions and 15 screening projects. Develop and implement 15 diversion and 10 screening projects.	Flint Creek drainage	1		X												3.2.2.7	$1,082,298.00	Y	Included
57	CFC, Andy Fischer	Flow Augmentation Basin-Wide Program Proposal. Proposal to develop a flow augmentation program for the UCFRB funded for 30-years to advise NRDP on water right purchases.	UCFRB	1 2 INJ	X													3.2.1	$1,263,849.00	Y	Not Included
58	CFC, Andy Fischer	Flow Augmentation Basin-Wide Programmatic Monitoring Program Proposal. Proposal would develop monitoring plan and training for water commissioners to ensure purchased water was making it to and staying instream.	UCFRB	1 2 INJ	X													3.2.1	$1,898,424.00	Y	Included
59	CFC, Andy Fischer	Water Rights Transaction Pricing and Valuation Framework Proposal. Proposal for establishing a framework and value for acquisition of water rights both general guidelines for water right values in the UCFRB and specific values for projects.	UCFRB	1 2 INJ	X													3.2.1	$100,000.00	Y	Partially Included
60	TU, Casey Hackathorn	Cottonwood Creek Fish Passage and Monitoring. Improve fish passage by replacing or upgrading 6 irrigation diversion on Cottonwood Creek, identify priorities for fish screens, and collect monitoring data on fish populations and movements.	Cottonwood Creek	2		X												3.2.2.5	$406,552.00	Y	Included
61	TU, Casey Hackathorn	Little Blackfoot River Fish Passage. Evaluate passage and implement fish passage structures. Evaluate up to 30 diversions, prioritize top 15 diversions for replacement and 10 screening projects, develop and implement 10 diversion projects and 5 screening projects.	Little Blackfoot River watershed	1 2		X												3.2.2.10	$282,948.00	Y	Included
62	TU, Casey Hackathorn	Warm Springs Fish Passage. Improve upstream and downstream connection on Warm Springs Creek. Develop and install 3 irrigation diversions, improve 3 diversions for function, flow regulation, and fish passage.	Warm Springs Creek and tributaries	1 2		X												3.2.2.14	$297,291.00	Y	Included
63	TU, Casey Hackathorn	Upper Warm Springs Creek Habitat Project. Project to improve habitat using large woody debris in the upper 6 miles of Warm Springs Creek, improve riparian veg in Barker and Twin Lakes creeks, investigate improving fish passage in lower mile of Storm Lake diversion.	Warm Springs Creek	1 2			X											3.2.2.14	$55,035.00	Y	Included
64	TU, Casey Hackathorn	German Gulch Habitat Restoration. Improve German Gulch riparian habitat by installing 4 miles of fencing with water gaps and removing 7,000 CY of mine tailings.	German Gulch	1			X			1			X					3.2.2.8	$329,176.00	Y	Included
65	TU, Casey Hackathorn	Browns Gulch Fish Passage. Install 5 fish ladders in the 5 downstream diversions in Browns Gulch. Monitoring of this work will determine if additional work is necessary. Future Fishery money awarded for fish ladder.	Browns Gulch	1		X												3.2.2.4	$24,120.00	Y	Included
66	TU, Casey Hackathorn	Mill Creek Fish Passage and Flow Restoration Project. Development of project to install 3 fish screens, improve diversion structures and install flow measurement equipment and attempt to develop in-stream flow water rights.	Mill Creek near Opportunity	2	X	X												3.2.1 3.2.2.12	$469,317.00	Y	Included

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67	Granite Headwaters Watershed Group, Jim Dinsmore	Mercury Levels in the Flint Creek Drainage of the Upper UCFRB. Measure mercury in sediment, aquatic insects and fish to determine baseline levels of mercury, sources of mercury and if a human health consumption advisor should be developed for the fish in Flint Creek.	Flint Creek drainage	2					X									3.2.2.7 4.2.6	$64,838.00	Y	Included
68	Granite County Extension - Dan Lucas	Restore Flint Creek Stream Channel and Weir Pond below the Power House. Proposal to remove or replace weir, replace culvert, and stabilize streambanks at below the powerhouse to prevent flooding and minimize sediment loads fro filling in pond that the County has to dredge.	Georgetown Lake Powerhouse	2			X											3.2.2.7	NA	Y	Not Included
69	ADLC, Connie Daniels	7 project ideas: stormwater reporting, vegetation upgrades to Willow and Mill Creeks, stream channel restoration projects of any of the creeks, stream channel restoration of WSC at Washoe and golf course, instream flow WSC, Grove Gulch, stormwater improvements to MS-4 standards.	Anaconda	1, 0	X		X	X	X	1, INJ			X					3.2.1 3.2.2.12 3.2.2.14 4.2.4.7 5.2	$26,000,000.00	Y 1,2,3	Partially Included
70	Butte Silver Bow	Timber Butte Open Space Area. Acquisition of 225 acres of Timber Butte, six parcels are proposed for acquisition.	Butte															2.3	$500,000.00	N	Not Included
71	Butte Silver Bow	Storm Water Management. Utilize aquatic funds to make improvements in stormwater management within BPSOU. Slip line pipes, replace catch basins, additional treatment, replace sanitary sewer lines, improve system for re-use of treated water. Also subject to BNRC funding request.	Butte	INJ														3.2.2.1	$30,000,000.00	Y1, 2	Not Included
72	Montana Rail Link	Bridge 91 Floodplain Connectivity. CFR channel and bank stabilization to protect MRL bridge.	CFR Nimrod	INJ				X										2.3	$60,620.00	N	Not Included
73	Anaconda Sportsman	Numerous ideas. FAS above Drummond, Fifer Gulch urban Fischery, Big Easy acquisition, 600 acre Brickly land, Hearst Lake, Litica property (11,000 acres).	Anaconda							1 2 0					X			4.2.4.6 4.2.4.7 4.2.4.8 5.2	NA	Y3	Partially Included
74	Granite Headwaters Watershed Group, Dan Lucas	Granite County Wildlife Winter Range Replacement. Proposal to improve wildlife winter range with the removal of conifers from 5,000 acres and invasive plant reduction on 12,000 acres. All priority 1 and 2 lands within Granite County.	Granite County							1 2			X					4.2.4.2	$1,300,000.00	Y	Not Included
75	Don McGee	UCFRB Lasting Legacy Concept. Establish a land trust to secure strategic conservation easements, fencing, protect and maintain easements, including buying a helicopter for weed control, research and monitoring.	UCFRB							1 2	X	X	X					4.2.4.8 5.2		Y3	Partially Included
76	TU, Casey Hackathorn	Blacktail Creek Fish Passage Proposal: Improve westslope cutthroat trout populations in Blacktail and Silver Bow creeks, improve angling opportunities, and reduce sedment by improving or replacing up to 5 irrigation diversions, improve or replace up to 6 culverts and improve up to 6 miles of riparian habitat along lower Blacktail Creek.	Blacktail Creek, I-90 upstream 6 miles	2		X	X											3.2.2.3	$350,533.00	Y	Included
77	City of Drummond	Sewage Lagoon Upgrade. Upgrade leaking sewage lagoon to meet current standards by removing sludge, adding liner, constructing berms, and adding U.V. disinfection .	CFR downstream of Drummond	INJ					X									3.2.2.1	$1,037,000.00	Y 1	Not Included
		2015 Concept Proposals																			
78	Zeke's Meadow	West Philipsburg Landscape Area. 800 acre land acquisition that is surrounded by USFS property, property has high aquatic and wildlife values.	Rocky Mountain Elk Foundation							1	X							4.2.4.1	$500,000.00	Y	Included
79	RY Timber	Anaconda Landscape Area. 442 acre land acquisition adjacent to the Garrett Mountain WMA, Warm Springs Creek runs through property.	Wild Sheep Foundation							1	X							4.2.4.7			Included
80	Deer Lodge Valley Parks/Master Plan	A plan to create linkage between existing recreational opportunities in and around the City of Deer Lodge, along the Clark Fork River, and connect to the trail system at the Grant-Kohrs National Park. This is a planning proposal integral to the Deer Lodge Trestle Park project funded in the Restoration Plans.	Powell County														X	5.2.1	$50,000.00	Y	Included
81	Frost Creek	an urban trout habitat and riparian zone enhancement concept.	Granite County	0			X											3.2.2		N	Not Included
		2018 Concept Proposals																			
82	*Cottonwood Creek (in town) – CFC:	The purpose of this restoration concept proposal is to enhance the ecological functions of Cottonwood Creek within the town of Deer Lodge, MT.	Powell County	2		x	x											3.2.2	$505,590.00		
83	CFR Mainstem Diversions CFC/TU:	The goals of this initial investigation were to identify potential streamflow restoration project opportunities, engage water users to assess interest in project work, and identify other potential opportunities to improve infrastructure for fish passage and recreation.	Powell County / ADLC	1	x	x											x		$2,000,000.00	Y	
84	Gold Creek Habitat- WRC:	enhance riparian and aquatic habitat, and improve fish passage in Gold Creek, a tributary to Reach B of the Upper Clark Fork River east of Drummond.	Granite County	2		x	x												$499,587.00	Y	
85	Lower Flint Creek Habitat and fish passage – WRC:	enhance riparian and aquatic habitat, and improve fish passage in Lower Flint Creek, from Hall down to the confluence with the Clark Fork River near Drummond.	Granite County	1		x	x												$548,162.00	Y	
86	O'Neil Creek Fish passage/Habitat- WRC:	The purpose of the Project is to enhance riparian and aquatic habitat, and improve fish passage in O'Neill Creek, a tributary to Reach A of the Upper Clark Fork River north of Deer Lodge. The Project should provide important fisheries benefits to the public, as O'Neill Creek is a significant source of westslope cutthroat trout recruitment to the Upper Clark Fork.	Powell County	2		x	x												$118,200.00	Y	
87	Rock Creek Rip Habitat– TU:	to protect and enhance the riparian corridor along Rock Creek. Trout Unlimited (TU) will identify and develop projects on private	Granite County	1			x												$347,500.00	Y	
88	Rock Creek fish passage – TU:	Improvement project is to improve fish passage and reduce fish entrainment in irrigation ditches in the watershed	Granite County	1		x													$995,000.00	Y	
89	Harvey Creek Fish passage/Habitat – TU:	complete fish passage and habitat improvements on Harvey Creek and make improvements to private irrigation infrastructure near the mouth of Harvey Creek on DNRC land that currently entrains most Harvey Creek outmigrant fish	Granite County	2		x	x												$241,000.00	Y	

Idea #	Submitted by	Project Idea	Location	Aquatic Categories						Terrestrial Categories					Recreation Categories			Section # in Draft Plan	Estimated Cost	Eligibility Y / N	Included in Plan?** (See Explanation)
				Priority Stream	Flow	Fish Passage	Rip Habitat	Stream Construction	Other	Priority Area	Land Acquisition	Conservation Easement	Habitat Improvement	Other	FAS/ Access	Trails	Other				
90	*Flint Creek Habitat –TU:	improve riparian and stream habitat on Flint Creek on a priority reach from Boulder Creek to the Clark Fork River.	Granite County	1			x												$454,000.00	Y	
91	*Flint Creek Fish Passage- TU:	continue working with irrigators in the Flint Creek watershed to immprove and replace irrigation diversion infrastructure that impairs fish passage and install fish screens on ditches that entrain fish.	Granite County	1	x	x													$1,066,000.00	Y	
92	*Little BFR Habitat- TU:	identify and implement projects in the Little Blackfoot River watershed through voluntary, collaborative activities with private landowners that will improve instream and riparian habitat for fish and wildlife.	Powell County	1			x												$705,000.00	Y	
93	*Little BFR fish passage- TU:	identify and implement projects in the Little Blackfoot River watershed through voluntary, collaborative activities with private landowners and water users that will improve upstream fish passage and decrease entrainment of fish at irrigation diversion sites.	Powell County	1		x													$2,500,000.00	Y	
94	*Little BFR Snowshoe Creek – TU:	identify and implement projects in Snowshoe Creek - tributary to the Little Blackfoot River - that will improve fish passage, instream and riparian habitat, and increase water quantity.	Powell County	2		x	x												$875,000.00	Y	
95	*Little BFR Spotted Dog – TU:	identify and implement projects in Spotted Dog Creek, a tributary to the Little Blackfoot River watershed, that will improve fish passage, water quantity and instream and riparian habitat.	Powell County	2	x	x	x												$1,260,000.00	Y	
96	*Trout Creek – TU:	identify and implement projects in Trout Creek - tributary to the Little Blackfoot River - that will improve fish passage and instream and riparian habitat.	Powell County	NA															$325,000.00	N	
97	Basin Creek – TU:	improve fish passage for upper Basin Creek above the Basin Creek Reservoir. The project will benefit native westslope cutthroat tout populations in Basin Creek and the reservoir as well as improve public recreational fishing opportunity in the watershed.	SilverBow County	2		x													$252,000.00	Y	
98	*Little BFR Flow – TU:	identify and implement water conservation measures in the Little Blackfoot River watershed through collaborative activities with private landowners and water users that will augment flows in key reaches during periods of critical water demand.	Powell County	?	x														$1,900,000.00	Y	
99	Little BFR Water Quality- TU-:	identify and implement project in the Little Blackfoot River watershed that will improve water quality in the mainstem, primarily upstream of the confluence with the Dog Creek.	Powell County	1					X										$100,000.00	N	
100	*Silver Lake Flow –TU:	pursue additional pilot releases from Silver Lake, successfully completing negotiations with BSB, and implementing a long-term (this proposal assumes a term of 20 years for this abstract) flow-release program in cooperation with BSB.	Anaconda - Deer Lodge	1	x														$112,000.00	Y	
101	CFC DCCR Education – CFC:	project is to conceptualize, design, and implement plans to convert the Clark Fork Coalition's ranch house and five-acre property on Dry Cottonwood Creek near Galen into a community resource for research, education, and outreach about the recovery of the Upper Clark Fork River.	Powell / ADLC														x		$570,000.00	Y	
102	FWP FAS –FWP:	for additional funding to complete the goal of acquiring and developing a series of Fishing Access Sites (FASs) on the upper Clark Fork River.	UCFRB												x				$600,000.00	Y	
103	Powell County Trail Master Plan for Basin:	This project would inventory and identify potential linkages between the recreational assets, opportunities and river access points within the Upper Clark Fork River watershed, from Warm Springs to Drummond.	ADLC and Powell Counties													x			$120,000.00	Y	
104	Anaconda Trail-	the West Valley Trail – a recreational trail utilizing a remediated railroad bed parallel to Montana Highway 1 West from Linden Street to Olson Gulch Road in Anaconda-Deer Lodge County	ADLC													x			$200,000.00	Y	
105	FWP Milltown State Park- FWP:	Improvements to the Milltown State Park Including: tunnel safety, construction of ranger station, and Bonner Learning Center acquistion and enhancement	Missoula													x	x		$365,000.00	Y	
		State Generated Ideas to Fill Data Gaps																			
G 1	FWP	Fish barrier placed on SBC to prevent brown trout from moving upstream		2				X										3.2.2.1	$ 250,000.00		Included
G 2a	FWP	Ten Fishing Access Sites along the Clark Fork River from Warm Springs Ponds and Milltown (Racetrack Pond, State Land downstream of Deer Lodge, Kohr's Bend Fishing Access Site, Little Blackfoot River near Garrison, Gold Creek, Jens Bridge, BLM Access Site, Bear Gulch, Bearmouth Fishing Access Site, Beavertail Hill)	various locations on CFR maintstem	INJ											X			5.2.1	$1,000,000.00		Included
G2b	FWP	Fishing Access Site on Little Blackfoot River	Little Blackfoot River	1											X			5.2.2	$82,000.00		Included
G2c	FWP	Fishing Access Sites along Flint Creek (2 above and 2 below Maxville)	Flint Creek	2											X			5.2.2	$328,000.00		Included
G3a	FWP	Milltown Park Completion: Complete confluence and gateway aspects to Milltown State Park	Milltown Dam former Powerhouse area	INJ											X	X	X	5.2.1	$1,200,000.00		Included
G3b	FWP	Milltown Park Augmentation: Continue the development of Milltown State Park: construction of trails and other recreation features in reservoir area, revegetation maintenance fund, operation and maintenance budget increase.	Milltown Dam former reservoir area	INJ						INJ			X			X	X	5.2.1	$1,250,000.00		Included
G3b	FWP	Bonner Dam Removal: Removal of remaining portions of Stimson Dam at Bonner to eliminate recreational hazards	BFR at Stimson Lumber Mill	INJ													X	5.2.1	$50,000.00		Included
G3c	FWP	CFR Pedestrian Bridge at Milltown Park: Construction of pedestrian bridge across the Clark Fork River from the Confluence area at the Milltown State Park to the railroad tunnel.	Milltown Dam downstream end of Powerhouse area	INJ													X	5.2.1	$3,000,000.00		Not Included
G 4	FWP	Study Reach C between Flint Cr and Rock Cr on the CFR to determine why the absence of fish in reach.	CFR mainstem Drummond to Milltown						X									3.2.2.1			Included

Idea #	Submitted by	Project Idea	Location	Aquatic Categories						Terrestrial Categories					Recreation Categories			Section # in Draft Plan	Estimated Cost	Eligibility Y / N	Included in Plan?** (See Explanation)
				Priority Stream	Flow	Fish Passage	Rip Habitat	Stream Construction	Other	Priority Area	Land Acquisition	Conservation Easement	Habitat Improvement	Other	FAS/ Access	Trails	Other				
G 5	NRDP	Milltown Restoration Maintenance:provide money for continuation of monitoirng and maintenance (as necessary) to ensure achievment of goals.	Entire Milltown Restoration project area	INJ			X	X	X	INJ			X	X				3.2.2.1			Included
G 6	FWP	Conserve land and habitat along the mainstem of the CFR between Garrison and Milltown.	CFR mainstem, Garrison to Milltown							1 INJ			X					3.2.2.1			Included
G7	FWP	Purchase land or conservation easements in the Priority 1 and 2 areas w/in Granite County	Priority 1 and 2 Terrestrial areas w/in Granite Co.							1 2	X	X						4.2.4.3			Included
G 8	FWP	Purchase land or conservation easements in the Priority 1 and 2 areas w/in the Garnet Mountains	Priority 1 and 2 areas in Garnet Mtn Range							1 2	X	X						4.2.4.3			Included
G 9	FWP	Purchase land or conservation easements in Priority 1 and 2 areas north of Avon.	Priority 1 and 2 areeas north and northeast of Avon							1 2	X	X						4.2.4.4			Included
G 10	FWP	Habitat enhancement projects w/in the Spotted Dog wildlife unit.	Spotted Dog Wildlife Management area							1			X					3.2.2.10 4.2.4.5			Included
G11	FWP	Removal of culvert on West Fork of Warm Springs Creek to enable fish passage	Warm Springs Creek	1		X												3.2.2.14			Included
G12	FWP	Purchase of 88 acres near Blue-Eye-Nellie WMA	Anaconda							2	X							4.2.4.7			Included
G13	FWP	Purchase of 1922 acres near Modesty Creek off Galen Road	Anaconda								X	X						4.2.4.8			Included
G14	FWP	Land acquistition transfer in the Lost Creek WMA area	Lost Creek WMA							2	X							4.2.4.2			Included
G15	FWP	Enhancement and conservation of Lower Willow Creek and it's tributaries	West Philipsburg							2	X	X						4.2.4.2			Included

Y 1: While this project meets eligibility criteria, it involves Normal Government Function activities that require further analyses. Projects 5b, 38, 40, 46, 71, 77
Y 2: While this project meets eligibility criteria, it involves potential remedy implications that require further analyses. Projects 40,71
Y3: While some components this project meet eligibility requirements some components may not and further analyses is needed. Projects 25, 37, 51, 53, 73
*: Project 15 and 17 additional information available upon request.
0: Other, not injuried area or priority area
INJ: Refers to Injuried area
1, 2: Referes to Priority Aquatic or Terrestrial Areas from Prioritization Documents

**** This column indicates whether the restoration concept suggested in the abstract was generally included, partially included, or not included in the plan. This determination is specific to the concept suggested in the abstract and not specific to the budget estimate provided in the abstract. The budgets specified in table 6-1 of the plan reflect the state's estimated budget for proposed actions covered in various sections of the plan. The sections cited for each concept proposal in this table provide more information on how the state's proposed actions incorporate the concepts indicated as included or partially included in the plan or why some concept proposals were not included in the plan.**

Appendix B

Funding Tables

	Table B-1. 4th Quarter FY12 UCFRB Restoration Fund Summary As of 7/1/12		
		Book Value	**Market Value**
A	FYE11 Fund Balance	$138,019,768.44	$147,404,341.41
B	FY12 Interest (as of 7/1/12)	$6,906,293.07	$6,906,293.07
C	FY12 Expenses (as of 7/1/12)	($14,080,616.31)	($14,080,616.31)
D	FY12 Market Adjustment	Not Applicable	$3,799,051.55
E	Fund Balance (A+B-C)	$130,845,445.20	$144,029,069.72
	Additional Fiscal Projections Based on Assumptions		
F	Major Encumbered Funds[1] Approved but not spent as of 7/1/12 • Grant Projects • DOI Wetlands • Milltown	Total ($26,746,331.76) ($24,208,115.48) ($2,414,151.33) ($123,064.95)	Total ($26,746,331.76) ($24,208,115.48) ($2,414,151.33) ($123,064.95)
G	Estimated Fund Balance minus major encumbered funds (E-F)	$104,099,113.44	$117,282,737.96

[1] This estimate of encumbered funds for site-specific projects includes the remaining budget for approved grant projects, the amount remaining of the $3.2M allocated for DOI wetland enhancement in the 1998 Consent Decree, remaining budget of the $2M allocated in 2011 to complete the State's Milltown restoration project. The allocation for approved grant projects includes the additional $8M allocated by the *Long Range Guidance Plan* (Dec. 2011) to the Silver Bow Creek Greenway grant project. It does not include the remaining budget of non-grant, programmatic projects, such as the Clark Fork Watershed Education Program.

Table B-2.

UCFRB Restoration Funded Projects (Approved by the 2011 Long Range Guidance Plan)

A. Approved Project Budgets Funded by the UCFRB Restoration Fund up to 7/1/12

Groundwater		Aquatic		Terrestrial		
Anaconda Water Studies	$107,771	Antelope/Wood Creek Revegetation	$10,000	Big Butte Acquisition	$687,842	
Anaconda Waterline	$13,598,044	Bighorn Reach A Revegetation (50%)	$55,400	Bighorn Reach A Revegetation (50%)	$55,400	
Basin Creek Dam Rehabilitation	$503,006	Bird's Eye View Education Project (50%)	$62,498	Bird's Eye View Education Project (50%)	$62,498	
Big Hole Diversion Dam	$3,714,833	Bonner Pedestrian Bridge	$975,652	Blue Eyed Nellie Moore Acquisition	$142,500	
Big Hole Pump Station	$3,500,000	Browns Gulch Assessment	$143,404	Butte Nursery	$628,175	
Big Hole Transmission Line Replacement	$8,721,882	Browns Gulch Education PDG	$17,602	Clark Fork Ed. Program (33.3%)	$240,350	
Ramsay School (33.3%)	$5,384	Butte Fishing Pond/Open Space	$1,225,000	Developing Tolerant Seed (Bridger)	$672,644	
Butte Master Plan	$174,634	Clark Fork Ed. Program (33.3%)	$240,350	Duhame Acquisition	$1,668,557	
Butte Metering	$273,600	Cottonwood Creek Flow	$380,024	East Deer Lodge Valley	$544,751	
Butte Waterline	$17,414,083	Douglas Creek PDG	$35,000	German Gulch (50%)	$462,856	
Clark Fork Ed. Program (33.3%)	$240,351	Dry Cottonwood Creek Ranch	$23,150	Haefner PDG (20%)	$4,950	
High Service Tank Replacement	$1,192,802	East Fork Rock Creek Fish Passage	$370,000	Limestone Ridge PDG	$22,589	
Milltown Education PDG (33.3%)	$7,971	Flint Creek PDG	$7,000	Manley Ranch Cons. Easement	$608,048	
Opportunity Groundwater PDG	$309,268	Garrison Trails Project	$24,974	Maud S Canyon Trails	$62,040	
U of M Database Planning (33.3%)	$3,183	Georgetown Lake Study	$114,985	Milltown Education PDG (33.3%)	$7,971	
		German Gulch (1/2)	$462,856	Milltown/Two Rivers Rec. Facilities (50%)	$1,331,875	
		Haefner PDG (80%)	$19,800	Osprey Project	$25,000	
		Johnson/Cottonwood Creek Trail	$633,015	Otter Distribution	$26,457	
		Little Blackfoot River PDGs	$50,000	Paracini Ponds Acquisition (20%)	$236,841	
		Lost Creek Watershed	$518,382	Peterson Ranch Conservation Easement	$334,125	
		Lower Browns Gulch Instream Flow PDG	$25,000	Ramsay School (33.3%)	$5,384	
		Lower Little Blackfoot Flow Study PDG	$25,000	Silver Bow Creek Greenway (40%)	$9,425,970	
		Madsen Easement PDG	$25,000	Stuart Mill Bay Acquisition (50%)	$1,000,000	
		Middle Little Blackfoot Flow Study PDG	$25,000	Stucky Ridge/Jamison Conservancy	$265,335	
		Milltown Acquisition	$595,628	Thompson Park Improvement Project	$988,402	
		Milltown Bridge Pier & Log Removal	$262,177	U of M Database Planning (33.3%)	$3,183	
		Milltown Education PDG (33.3%)	$7,971	Vanisko Conservation Easement PDG	$20,140	
		Milltown Sediment Removal Project	$2,819,072	Washoe Park PDG (20%)	$5,000	
		Milltown/Two Rivers Rec. Facilities (50%)	$1,331,875	Watershed Land Acquisition	$5,831,904	
		Myers Dam Diversion PDG	$11,710	Z-4 Conservation Easement	$10,000	
		Paracini Ponds PDG	$17,700	Spotted Dog (60%)	$9,944,405	
		Paracini Ponds Acquisition (80%)	$947,364			
		Racetrack Lake	$500,000			
		Ramsay School (33.3%)	$5,384			
		Silver Bow Creek Greenway (60%)	$14,138,954			
		Stuart Mill Bay Acquisition (50%)	$1,000,000			
		TU Instream Flow Protection	$25,000			
		Twin Lakes Diversion PDG	$11,056			
		U of M Database Planning (33.3%)	$3,183			
		Upper Little Blackfoot River Project	$216,044			
		Upper Willow Creek Restoration	$307,758			
		Warm Springs Ponds Rec. Improv.	$97,577			
		Washoe Park PDG (80%)	$20,000			
		West Side Ditch Flow Study PDG	$25,000			
		West Side Ditch Metering PDG	$25,000			
		Wetland/Riparian Mapping	$71,400			
		Spotted Dog Acquisition (40%)	$6,629,604			
Subtotal	$49,766,812		$34,538,548		$35,325,192	$119,630,552
Percent Funded to Date by Resource	41.6%		28.9%		29.5%	

B. Approved Project Budgets Funded by UCFRB Restoration Fund via Other Consent Decrees

Groundwater		Aquatic		Terrestrial		
		Milltown (75% of $9.6 Million)	$7,200,000	Milltown (25% of $9.6 Million)	$2,400,000	
		DOI Wetlands (SBC CD) (60% of $3.2 Mil)	$1,920,000	DOI Wetlands (SBC CD, 40% of $3.2 Mil)	$1,280,000	
Subtotal	$0		$9,120,000		$3,680,000	$12,800,000
Other Projects Subtotal	$49,766,812		$43,658,548		$39,005,192	$132,430,552
Running Percent	37.6%		33.0%		29.5%	

C. Summary of Educational/Database Projects	
(these are included in tables above)	
Bird's Eye View Education Project	$124,995
Browns Gulch Education PDG	$17,602
Clark Fork Ed. Program	$721,052
Milltown Education PDG	$23,914
Ramsay School	$16,151
U of M Database Planning	$9,550
Total	$913,264
Percent of Total	0.7%

D. Summary of Recreational Projects	
(these are included in tables above)	
Bonner Pedestrian Bridge	$673,200
Butte Fishing Pond/Open Space PDG	$25,000
Butte Fishing Pond/Open Space	$1,200,000
Deer Lodge Trail PDG	$25,000
Maud S Canyon Trail	$62,040
Garrison Trails Project	$24,974
Haefner PDG	$24,750
Johnson/Cottonwood Creek Trail	$633,015
Milltown/Two Rivers Rec. Facilities (50%)	$1,598,249
Silver Bow Creek Greenway (43%)*	$10,169,477
Thompson Park Improvement (80%)	$790,722
Warm Springs Ponds Rec. Improv.	$97,577
Washoe Park PDG	$25,000
Total	$15,349,004
Percent of Total	12%

* The SBC Greenway recreational amount is based on 30% of the grant funds plus $5.5M of the $8M approved by the 2011 Long-Range Plan.

Table B-3. Fund Allocation by Resource: Past & Future based on 7/1/12 Market*

Natural Resource by 1999 Claim		Total	Groundwater	Aquatic	Terrestrial
Natural Resource Percentage as per 1999 Claim		100%	36%	39%	25%
Currently	**Obligated&Spent UCFRB Restoration Funds by Resource**	$132,430,552	$49,766,812	$43,658,548	$39,005,192
Obligated (from	**Percent of UCFRB Restoration Funds by Resource**	100%	37.6%	33.0%	29.5%
Unobligated Fund Balance as per Long Range Plan (Including SBC Greenway)		$117,282,738	$40,129,972	$53,729,635	$23,423,131
Percent of Remaining Funds Allocated by Resource		100%	34.2%	45.8%	20.0%
Obligated, Spent and Unobligated Combined Total		$249,713,290	$89,896,784	$97,388,183	$62,428,322
	A&T Reserve (15% Aquatic & Terrestrial)	$11,572,915	$0	$8,059,445	$3,513,470
	Aquatic &Terrestrial Funds	$65,579,851	$0	$45,670,190	$19,909,661
	Groundwater Split (Butte 75%)	$30,097,479	$30,097,479	-	-
	Groundwater Split (Anaconda 25%)	$10,032,493	$10,032,493	-	-
	Fund Balance (NRDP Admin & CFWEP not included)**	**$117,282,738**	**$40,129,972**	**$53,729,635**	**$23,423,131**

* The NRDP produced this draft table based on the 2011 Long Range Guidance Plan and the 7/1/12 UCFRB Restoration Fund Balance

** The Funding Balance does not include specified funding amounts for NRDP Administration or the CFWEP approved budget.

The Blue Highlights are the projected fund amounts based on the approved percentages in the 2011 Long Range Guidance Plan and the unobligated market fund balance, as of 7/1/12.

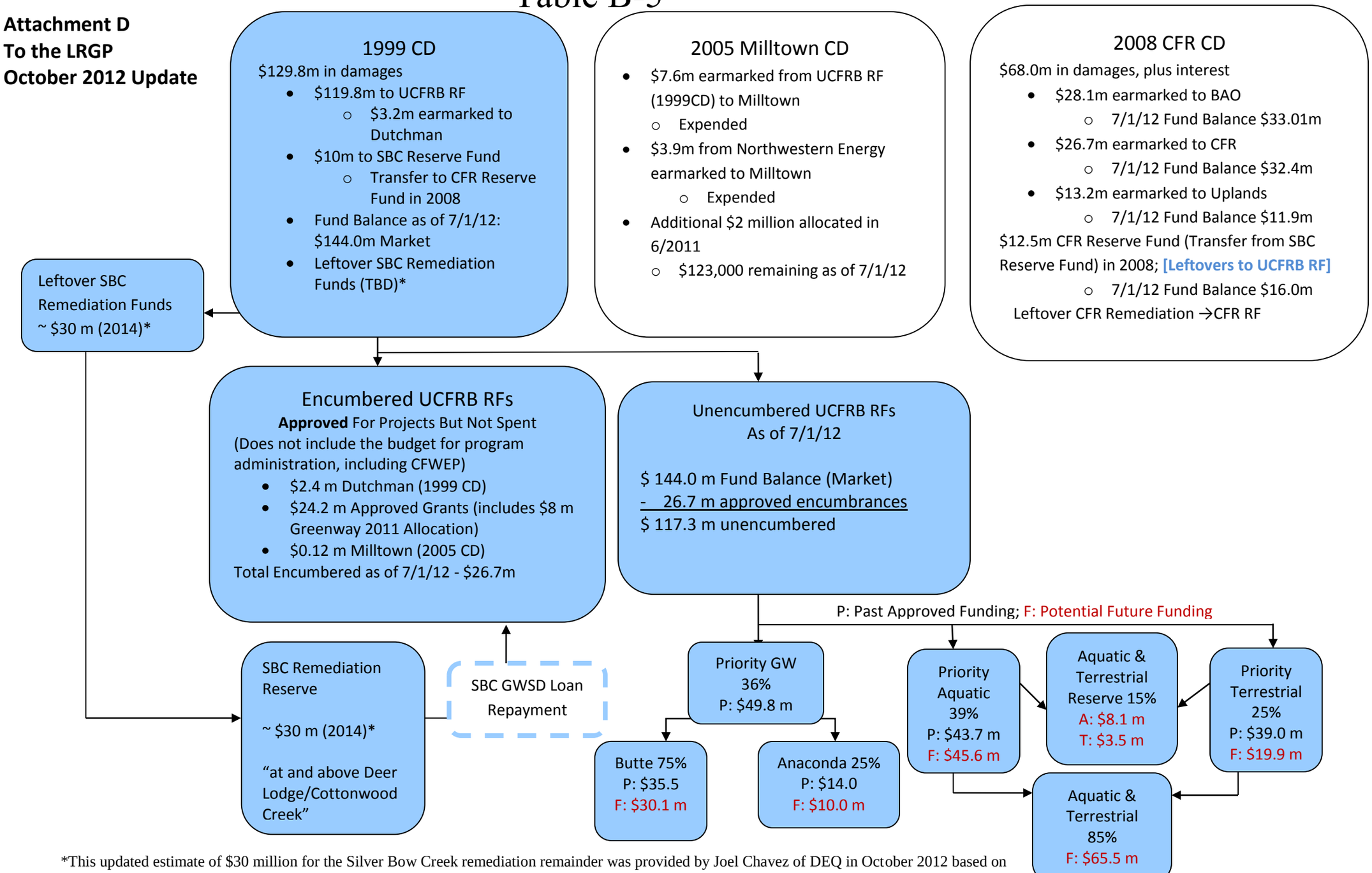
Table B-4. Updated Fund Allocation by Resource - Cash and Invested Cash							
	Total	**Groundwater - Butte**	**Groundwater - Anaconda**	**Aquatic**	**Aquatic Reserve**	**Terrestrial**	**Terrestrial Reserve**
2012 Original Allocation[1]	$117,282,738	$30,097,479	$10,032,493	$45,670,190	$8,059,445	$19,909,661	$3,513,470
2012 Cash and Invested Cash Balance[2]	$104,099,113	$26,537,900	$8,845,967	$41,299,818	$7,288,203	$17,108,141	$3,019,084
2012-2018 Interest Used to Backfill to Original Allocation[3]	$13,183,625	$3,559,579	$1,186,526	$4,370,372	$771,242	$2,801,520	$494,386
2018 Restoration Plan Interest Allocation[4]	$11,800,000	$4,000,000	$900,000	$4,950,000	$1,150,000	$500,000	$300,000
Total Resource Allocation[5]	**$129,082,738**	**$34,097,479**	**$10,932,493**	**$50,620,190**	**$9,209,445**	**$20,409,661**	**$3,813,470**

1. 2012 Original Allocation totals taken from Table B3.
2. This is the amount of cash and invested cash that was available to allocate in 2012.
3. Interest earned from fiscal years 2013-2018 was first used to backfill to the 2012 Original Allocation starting balances.
4. This is the amount of interest from fiscal years 2013-2018 available to allocate after backfilling to the 2012 Original Allocation. Interest allocations are rounded to the nearest $50,000.
5. The total of the 2012 Cash and Invested Cash Balance, 2012-2018 Interest Used to Backfull to Original Allocation, and 2018 Restoration Plan Interest Allocation.
6. This is a draft version of the fund allocation by resource. The NRDP will finanlize the fund allocation and provide that information in the response to public comment and the final 2018 Restoration Plans.

L:\UCFRB and BAO Restoration Plans\2018 Update Restoration Plans\Appendix B Funding Tables_final\[TableB_4_Copy of Resource Funds_4thQTRFY12A.xlsx]Table B4

Table B-5

Attachment D
To the LRGP
October 2012 Update



*This updated estimate of $30 million for the Silver Bow Creek remediation remainder was provided by Joel Chavez of DEQ in October 2012 based on 1/1/2012 financial reports. The exact amount of the remainder remains to be determined.