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RECOMMENDATIONS FOR INSTREAM FLOW RIGHTS ON NATIONAL FOREST

LANDS IN MONTANA

By

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## Recommendations for Instream Flow Rights on National Forest Lands in Montana

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A unique opportunity exists to create instream water rights on national forest lands in Montana as a result of the US Forest Service Reserved Water Rights Compact between the US Forest Service (USFS) and the state of Montana, which went into law in 2007. Instream water rights on national forest lands are important because they have the potential to protect streamflows that support many vital ecosystem functions in our forests from water development pressures. Montana Trout Unlimited has an interest in advancing and accelerating this effort by providing stream recommendations to the USFS for the establishment of future water rights. The primary purposes of this paper are to offer recommendations to Montana Trout Unlimited for streams in Montana that would benefit the most from a US Forest Service instream water right and why, to develop an effective process for doing so, and to identify how Montana Trout Unlimited can help in this larger effort. Through the solicitation of stream recommendations from biologists and fisheries manager across the state and the development of a ranking worksheet to prioritize these recommendations, the final product of this research was a ranked stream list to help guide future efforts to establish USFS instream water rights. The USFS need to act on these recommendations and increase their investment in this effort before new water development pressures adjacent to national forests occur. Establishing water rights will enable the USFS to be a legal stakeholder in the water resources on national forest lands in Montana and ensure the long term health of our forests in the state.

## TABLE OF CONTENTS

|      |  |    |
|------|--|----|
| I.   | Introduction.....  | 1  |
|      | a. Research Problem.....   | 1  |
|      | b. Significance.....   | 2  |
|      | c. Research Question.....  | 4  |
|      | d. Purpose Statement.....  | 4  |
| II.  | Background.....  | 5  |
|      | a. State and Federal Tensions.....   | 6  |
|      | b. Authority for US Forest Service Reserved Water Rights.....                | 7  |
|      | c. Federal Reserved Water Right Negotiations in Four Western States.....     | 11 |
|      | d. Current Options for the US Forest Service.....                            | 19 |
| III. | Objectives of the Study.....   | 24 |
| IV.  | Methods of the Study.....  | 24 |
|      | a. Development of the Initial Stream List.....                               | 24 |
|      | b. Identification of Ranking Criteria.....                                   | 26 |
|      | c. Development of a Ranking Worksheet.....                                   | 28 |
|      | d. Ranking the Stream List.....  | 29 |
| V.   | Results and Recommendations.....   | 37 |
|      | a. Results and Discussion of the Stream Survey.....                          | 38 |
|      | b. Results and Discussion of the Stream Criteria Identification Process..... | 38 |
|      | c. Analysis and Discussion of the Ranked Stream List.....                    | 50 |
|      | d. Areas for Improvement and Challenges.....                                 | 51 |
|      | e. Final Product.....  | 52 |

f. Montana Trout Unlimited Steps in to Help.....52

g. What can Montana Trout Unlimited do to Help Address these Needs?.....56

h. Next Steps for the US Forest Service Across the Nation.....57

VI. Conclusion.....60

VII. References.....64

VIII. Appendices.....67

## I. Introduction

### a. Research Problem

Like many commodities in the West, water has often been treated as an unlimited resource. Its presence has been easily taken for granted. As states continue to allocate this finite resource, it is important to understand where water comes from and who has a right to it. Traditionally water rights in western states were granted to property owners for consumptive uses such as irrigation, stock watering, drinking water and industrial purposes, to name a few. As state water laws have evolved throughout the West, most states have expanded their definitions of beneficial uses to allow certain entities to hold non-consumptive, instream water rights that support specific environmental purposes. Understanding how these consumptive and non-consumptive water rights can overlap in their jurisdictions and management is useful for the process of establishing protections for instream, environmental water purposes.

One place where water originates is in our mountain watersheds, many of which are located on national forests. National forests in the United States span approximately 192 million acres across 43 states.<sup>1</sup> They are responsible for storing and delivering tremendous amounts of water that supports habitat for aquatic communities, provides clean drinking water for people, serves industrial uses, generates hydropower and meets downstream irrigation needs, to name only a few. The US Forest Service's (USFS) literature has asserted that 50-70% of the Nation's runoff derives from national forests.<sup>2</sup> In most states and in most streams the USFS has no defined right to the water that originates and runs through national forest lands. This means that in circumstances where there are private in holdings or private lands upstream of a national

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<sup>1</sup> Lois G. Witte, "Still No Water for the Woods"; Available from [http://stream.fs.fed.us/publications/PDFs/Still\\_no\\_water\\_for\\_the\\_woods.pdf](http://stream.fs.fed.us/publications/PDFs/Still_no_water_for_the_woods.pdf); internet; accessed 2 December 2008.

<sup>2</sup> Diana Apple, Max Copenhagen, Mike Furniss, James Sedell and Maitland Sharpe, *Water and the Forest Service*, (Washington D.C.:USDA Forest Service, January 2000), p.ii.

forest, private landowners can generally obtain and exercise a water rights under state law to completely appropriate the remaining water (to a beneficial use) and in turn dry up a stream. Removing water from a stream can have profound ecological consequences for national forest ecosystems.

Without a water right, the USFS has no standing to object to such appropriations (on any of its national forests). Luckily, the USFS and other federal land agencies can hold water rights that are called “reserved rights.” A reserved water right is essentially a federal water right established under the reserved water rights doctrine, which provides that when the federal government acquires land for a particular purpose, there is an implied reservation of water at the time necessary to achieve the purposes of the reservation.<sup>3</sup> It allows federal agencies outside of state law to secure water necessary to fulfill the purposes of their federal land designation. The USFS recently negotiated a reserved water rights compact agreement with the State of Montana to exercise its rights to the water on national forest lands, which went into law in 2007. The compact agreement provided the USFS with 77 instream flow rights and a process for applying for additional rights. While the USFS did not leverage its claims to water reservations to the greatest extent possible in its compact negotiations with the State, there is a tremendous opportunity to establish additional instream water rights on national forests.

*b. Significance*

The potential to establish new water rights and protect water resources on national forests in Montana under the compact agreement is huge. Unfortunately, the US Forest Service has yet to utilize this opportunity. As of November, 2008, the USFS has only submitted four applications for instream flow protections, but not a single application has been processed and

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<sup>3</sup> Winters, 207 U.S. at 577.

approved by the Montana Department of Natural Resources and Conservation (DNRC), despite an expedited review process described in the compact.<sup>4</sup> The USFS has up to 30 years to apply for all of its water rights under the 2007 compact provisions.<sup>5</sup> At the current application rate, hundreds of deserving tributaries could end up without USFS instream protections. In the meantime, development pressures adjacent to our national forests could result in new water appropriations.

If the USFS doesn't act swiftly, some streams may be dry before it applies for water rights. With large divestments of timber landholdings in the state adjacent to USFS lands, there is potential for new activities such as oil and gas exploration, small hydroelectric facilities, mining, irrigation and new domestic groundwater uses. All of these activities have the potential to significantly impact streamflow and aquatic health on national forest lands and beyond. A strategic and accelerated approach to establishing instream water rights on national forest lands in Montana needs to occur before someone else puts the public's water to use.

Montana Trout Unlimited's (MTU) and Trout Unlimited's Western Watershed Project staff are actively working with the USFS to support its efforts to establish instream water rights.<sup>6</sup> These groups were engaged early in the compact negotiation and provided comments for the draft compact agreement between the state and the US Forest Service.<sup>7</sup> During the compact negotiation process, the US Forest Service invited Montana Trout Unlimited to provide stream recommendations for reserved water rights, many of which were adopted in the 77 streams

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<sup>4</sup> Tim Sullivan, Water Team Leader, United States Department of Agriculture, Forest Service, Personal Communication, November 7, 2008.

<sup>5</sup> Montana Department of Natural Resources and Conservation, "Water Rights Settlement," Available from <http://dnrc.mt.gov/rwrc/Compacts/usdacompact/ExecutiveSummary.pdf> ; Internet; Accessed 5 December 2008.

<sup>6</sup> Bruce Farling, Executive Director of Montana Trout Unlimited. Personal Communication, September 25, 2008.

<sup>7</sup> Bruce Farling and Laura Ziemer, "Re: TU Comments on draft Forest Service Reserved Water Right Compact," Available from [http://www.montanatu.org/issuesandprojects/correspondence%20files/TU%27s%20Final%20compact%20comments%20\\_2\\_.pdf](http://www.montanatu.org/issuesandprojects/correspondence%20files/TU%27s%20Final%20compact%20comments%20_2_.pdf); Internet; Accessed 8 December 2008.



identified in the compact. Despite some frustrations with the USFS Compact agreement, MTU has remained keenly involved in monitoring and facilitating the process for establishing future instream rights. The USFS has continued to communicate progress filing instream water rights and solicit recommendations from MTU for establishing future USFS water rights. In an effort to provide a more comprehensive and strategic set of recommendations to the USFS, MTU initiated, supported and guided much of the research project described in this paper.

*c. Research Question*

Numerous authors have examined the legal authority of the US Forest Service to establish reserved rights, and the long history associated with this effort.<sup>8</sup> Little has been written about the USFS Reserved Water Right Compact Agreement in Montana or the process for establishing future USFS rights because the compact is so recent. In this paper, I provide a history of the Montana compact in the context of other negotiations that have occurred in the West. I also develop and evaluate strategies for facilitating the USFS process of establishing instream water rights in Montana. To support MTU's effort to provide the USFS with a strategic set of stream recommendations my research question is: *What streams in Montana would benefit the most from a US Forest Service instream water right and why; and what is an effective process for doing so, including what role is there for Montana Trout Unlimited?*

*d. Purpose Statement*

This paper provides a brief background of the legal authority and evolution of US Forest Service reserved water rights. It includes an analysis of negotiations that occurred in four

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<sup>8</sup> Emelen G. Hall, *The Forest Service and Western Water Rights: An Intimate Portrait of United States v. New Mexico*. Natural Resources Journal. Vol. 45. p.1040 (Fall 2005)

western states, including Montana. Part of this analysis is a discussion of the legal authority for the USFS to establish instream flow protections and the unique opportunity provided in the Montana compact for future rights. As very little has been published detailing the Montana compact, I discuss the provisions of this agreement and the involvement of Montana Trout Unlimited.

The primary purposes of this paper are to offer recommendations to Montana Trout Unlimited for streams in Montana that would benefit the most from a US Forest Service instream water right and why, to develop an effective process for doing so, and to identify the appropriate role for Montana Trout Unlimited in this larger effort. MTU has a strong interest in helping to move this effort forward, and the US Forest Service has identified a need for stream recommendations from MTU. To assist with this effort, I developed a process to making recommendations which involved surveying fisheries biologists across Montana for stream recommendations. I further refined this list of recommendations by creating a ranking worksheet that I used to evaluate the need on each stream for a USFS reserved right. The evaluation criteria in this worksheet were primarily guided by the interests and values of MTU, although additional input was solicited from seven water resource professionals at the DNRC, USFS and Montana Fish Wildlife and Parks (FWP). The final product of this research is a prioritized list of streams which I provided to Montana Trout Unlimited to assist in developing a more timely and strategic approach to establishing future in stream flow rights.

## **II. Background**

On the topic of reserved water rights on US national forest lands it is important to understand the legal history and federal authority to negotiate water reservations. Unfortunately,

the law relating to reserved water rights is not very clear cut and has hindered the USFS from making significant headway in asserting its reserved rights for instream flow purposes. In the following pages I discuss the current legal parameters governing and restricting the establishment of federal reserved water rights. I also compare and contrast the approaches that US Forest Service officials in Montana, Colorado, New Mexico and Oregon have taken in establishing reserved water rights. Based on the limited number of federal reserved water rights established in the Western U.S., I examine some of the primary limitations and opportunities for establishing meaningful protection of water on national forests.

*a. State and Federal Tensions*

Before describing the acts and laws that created federal reserved water rights, it is important to understand the authority of states to appropriate and manage water resources. State control over water originates from the equal footing doctrine, which allows states sovereignty and jurisdiction over the navigable waters within its boundaries.<sup>9</sup> The McCarran Amendment of 1952 subsequently allowed state courts to adjudicate federal water right claims under state law.<sup>10</sup> This provided states with the authority to settle water claims through adjudication processes, including federal reserved rights under state law. Based on direction by the U.S. Supreme Court, it is often in the best interest of the US Forest Service to file water rights claims if it wants them recognized and adjudicated under state law.<sup>11</sup>

As state water resource agencies continue to receive and review new water right applications, it is important for them to understand the existing authorized uses in order to decide

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<sup>9</sup> U.S.C. Article IV, Clause 1.

<sup>10</sup> McCarran Amendment of 1952, 43 U.S.C 666

<sup>11</sup> Adell L. Amos, *The Use of Instream Flow Laws for Federal Lands: Respecting State Control While Meeting Federal Purposes*. Environmental Law Journal. Vol. 36. p.1244. (2006)

whether there is any remaining water left to appropriate. Through the process of adjudication, many states are attempting to reconcile existing water right claims and quantify current uses. Adjudication involves investigating water right claims, determining whether those claims are valid, and then deciding whether there is any water left to appropriate. Many federal and tribal entities have participated in state adjudication processes to settle their often extensive water right claims. Subsequently, some of these entities have filed large water right claims for instream flow purposes in this adjudication process. In an effort to balance state and federal interests, federal entities with water right claims often choose to settle them in a water rights compact agreement rather than in state water courts. These agreements quantify the federal water reservation claims and transfer management and enforcement of these rights to the state. As I will describe in the following pages, the combination of state authority to negotiate federal reserved water rights and murky federal laws supporting the establishment of reserved water rights have caused significant state/federal power struggles that have delayed the recognition of federal water right claims.

*b. Authority for US Forest Service Reserved Water Rights*

National forests in the United States were created by presidential designations of forest reserves under the Creative Act of 1891.<sup>12</sup> These designations prevented private parties from owning and potentially destroying vast timber resources, watersheds, and land. The Creative Act was followed with the Organic Act of 1897, which helped clarify the purposes for which these forest reserves were created. The Act reads:

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<sup>12</sup> *Creative Act of 1891*, 16 U.S.C 471, repealed.

No national forest shall be established, except to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens. . .<sup>13</sup>

This short, but powerful piece of language has been debated in state and federal supreme courts around the country in terms of exactly what water purposes are authorized under the Organic Act. Although it appears to be implied, this Act provides no explicit statement concerning the establishment of national forests for protecting fish, wildlife or recreational uses.

The ability of the USFS and other federal land agencies to hold reserved water rights was established by the in the *Winters v. United States* case of 1908, which ruled that when the federal government reserves land for particular purposes, there is an implied reservation of unappropriated water necessary to achieve the purposes of the reservation.<sup>14</sup> The case and subsequent Supreme Court cases granted federal agencies and Native American tribes federal reserved water rights, under what came to be known as the Winters Doctrine, to satisfy the purposes of their particular land reservations.<sup>15</sup>

The subsequent statute that directed how national forest lands were to be managed was the Multiple Use Sustained Yield Act of 1960 (MUSYA).<sup>16</sup> This Act helped to codify long-standing administrative practices and allowed forest management for a host of purposes.<sup>17</sup> The Act also assisted in clarifying the uses and management of national forests for water, timber, range, recreation and wildlife and emphasized that all the stated uses were of equal importance. Although water is defined as a separate purpose, it also supports many of the other purposes of

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<sup>13</sup> *Organic Administration Act* of June 4, 1897, 16 U.S.C 473 et seq.

<sup>14</sup> *Winters v. United States*, 207 U.S. 564 (1908)

<sup>15</sup> *Arizona v. California*, 373 U.S. 546 (1963)

<sup>16</sup> *Multiple-Use Sustained-Yield Act* of 1960, 16 U.S.C 528-531

<sup>17</sup> Lois G. Witte, "Still No Water for the Woods"; Available from

[http://stream.fs.fed.us/publications/PDFs/Still\\_no\\_water\\_for\\_the\\_woods.pdf](http://stream.fs.fed.us/publications/PDFs/Still_no_water_for_the_woods.pdf); internet; accessed 2 December 2008.

MUSYA by supporting habitat for wildlife and recreation. In addition to the MUSA and the Organic Administration Act described above, there are over 30 additional federal statutes which articulate the federal responsibilities for water dependent resources on national forest lands and direct management of the USFS relative to water resources.<sup>18</sup> Despite this host of statutes and laws, the USFS has struggled to assert its federal reserved water rights in state water courts.

One of the first successes of the federal government to defend and clarify the purposes of a reserved water right occurred in Nevada at the Devil's Hole National Monument. Water levels in this unique geologic feature began to drop soon after a nearby ranch (the Cappaert's) began pumping groundwater from the same source supplying water to the monument. In the ensuing Supreme Court case known as *Cappaert v. United States* (1976), the court affirmed the ability of a federal entity to reserve necessary water to fulfill the purpose of the reservation and no more.<sup>19</sup> This meant that the National Park Service was able to protect a sufficient amount of water in the underground pool at the monument to preserve its scientific value. While the *Cappaert v. United States* decision can be seen as a step forward in enforcing and defining a federal reserved water right, the supporting authority for this right is unique to the National Park Service and more specifically to the act that created the national monument. Unlike the Devil's Hole National Monument, national forests are governed by different authorizing legislation (the Organic Act) that does not provide the same clear direction for the purposes of these federal reservations.

The inability of the US Forest Service to pursue federal reserved water rights for instream flow purposes is largely hindered by the 1978 *U.S. v New Mexico* decision.<sup>20</sup> In this case which started in New Mexico state court and advanced to the U.S. Supreme Court, the majority decision authored by Justice Rehnquist provided a very narrow and damaging interpretation of

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<sup>18</sup> Ibid.

<sup>19</sup> *Cappaert v United States*, 426 U.S. at 128, 141 (1976)

<sup>20</sup> *U.S. v New Mexico*, 438 U.S. at 1061-1062 (1978)

the Organic Administration Act of 1897.<sup>21</sup> In Justice Rehnquist's majority opinion to deny USFS reserved rights for fish, wildlife and recreational purposes, he disguised between the "primary purposes" which implied rights and "secondary objects" of national forests which did not.<sup>22</sup> The primary purposes were defined as 1) to secure favorable conditions for water flow and 2) to furnish a continuous supply of timber.<sup>23</sup> Justices Brennan and Powell disagreed with Justice Rehnquist on the basis that the US Forest Service must be able to maintain flow for fish and wildlife, but unfortunately this was the minority opinion among the Justices. Interpretations of securing favorable conditions for water flow have been especially narrow and, in the Klamath Basin Adjudication in Oregon for example, were viewed as only minimum streamflows necessary for channel maintenance and denied any claims that were based on fish, wildlife or recreation.<sup>24</sup> The *U.S. v. New Mexico* decision also weakened the power of the Multiple Use Sustained Yield Act by reinterpreting the Organic Act and not recognizing water (for fish, wildlife and recreation) as an equal purpose. The decision interpreted the Organic Act to distinguish a hierarchy of primary and secondary purposes for which only the primary purposes could be used to exercise federal reserved water rights. This distinction between primary and secondary purposes of the Organic Act made in the *U.S. v. New Mexico* decision has severely limited the USFS to seek federal reserved water rights beyond administrative purposes. This damaging decision was a decisive win for the states concerning federal control of water.

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<sup>21</sup> Emelen G. Hall, *The Forest Service and Western Water Rights: An Intimate Portrait of United States v. New Mexico*. Natural Resources Journal. Vol. 45. p.34 (Fall 2005)

<sup>22</sup> *U.S. v. New Mexico*, 438 U.S. at 1061-1062 (1978)

<sup>23</sup> *Ibid* at 718. (1978)

<sup>24</sup> Richard Bailey, *Oregon Department of Justice Memorandum on Klamath Adjudication*. Oct. 1, 1999. Available from [http://www1.wrd.state.or.us/pdfs/kba\\_vija\\_adv\\_pt1.pdf](http://www1.wrd.state.or.us/pdfs/kba_vija_adv_pt1.pdf); internet, accessed 1 December, 2009.

c. *Federal Reserved Water Right Negotiations in Four Western States*

To better understand the options of the US Forest Service to negotiate for federal reserved water rights, it is informative to examine the successes and barriers of individual reserved water right negotiations in the West. Four relatively recent federal reserved water rights settlement agreements in New Mexico, Colorado, Oregon, and Montana shed light into potential avenues for future protections of water resources on federal lands.

*New Mexico*

As described above, the *U.S. v New Mexico (1978)* case was the first major battle over federal reserved water rights for the US Forest Service. In this historic case, the USFS argued in New Mexico State Supreme Court and eventually in the U.S. Supreme Court for federal reserved water rights on the Mimbres River in the Gila National Forest for a combination of administrative uses in addition to instream flow claims. Even though this case eventually resulted in a number of federal reserved rights for the USFS, it denied them any reserved rights that were viewed as secondary purposes of their reservation. These secondary purposes included instream flow claims in the Mimbres River for fish, wildlife and recreation. The final Supreme Court majority provided the narrowest interpretation of allowable reserved water right claims under the 1897 Organic Act, which did not extend to instream flow purposes.<sup>25</sup> In subsequent litigation as late as 1990, the USFS and New Mexico mutually agreed to 260 water right claims under state law.<sup>26</sup> In the end the US Forest Service lost its federal supremacy, but managed to receive its water rights.

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<sup>25</sup> Emelen G. Hall, *The Forest Service and Western Water Rights: An Intimate Portrait of United States v. New Mexico*. Natural Resources Journal. Vol. 45. p.1040 (Fall 2005)

<sup>26</sup> *Ibid.* p.1050.



## Colorado

The reserved water rights doctrine was again tested in the Colorado Division 1 Water trial of 1993 in which the US Forest Service sought reserved rights for headwater streams in the Laramie and South Platte Rivers on the Arapahoe, Roosevelt, Pike, and San Isabel National Forests to protect stream channels and timber.<sup>27</sup> The decision recognized that federal reserved water rights include channel maintenance purposes, but denied the US Forest Service federal reserved rights except for firefighting purposes on the basis that it did not adequately demonstrate the need for these purposes under state law and the Organic Act, and that it failed to convincingly establish the minimum amount of water it needed.<sup>28</sup>

Despite this setback in Colorado, the US Forest Service has continued efforts through a series of collaborative efforts to establish instream flow protections. This has been realized through an effort called the Pathfinder Project, started in 2000, in which the US Forest Service made an effort to bring together stakeholder groups to address water management issues and instream flow needs on a series of National Forests.<sup>29</sup> The results of this effort provided 27 strategies to meet instream flow needs on these National Forests to avoid litigation or requiring conditions for bypass flows on special use permits involving diversions on national forest lands.<sup>30</sup> While the USFS may not be securing the definitive, long term water rights it is looking for through this approach, it appears to be building important relations and communication channels between agencies and landowners to achieve common objectives.

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<sup>27</sup> USDA, Forest Service. *Summary of Technical Testimony in the Colorado Water Division 1 Trial (RM-GTR-270)*. (1993). Available from: <http://www.stream.fs.fed.us/news/streamnt/jan96/jan96a1.htm>. Accessed December 1, 2009.

<sup>28</sup> Ibid.

<sup>29</sup> Pathfinder Project Steering Committee Report. *Strategies for Instream Flow Management*. April 2004. Available from: <http://www.fs.fed.us/r2/gmug/policy/swa/PathfinderCompletedFinalSteeringCommitteeReport.pdf>. Accessed December 1, 2009.

<sup>30</sup> Ibid.

## *Oregon*

In 1999, the US Forest Service in Oregon made claims in the Klamath adjudication process in the Fremont-Winema National Forest for reserved rights under the Organic Act, Multiple Use Sustained Yield Act (MUYSYA), the Wilderness Act, and the Wild and Scenic Rivers Act.<sup>31</sup> In its interpretation of the Organic Act, the Oregon Water Resources Department (OWRD) allowed one federal reserved claim for instream flow for the purpose channel maintenance if the USFS could provide the necessary scientific evidence to demonstrate that it was necessary for favorable water flows and channel maintenance.<sup>32</sup> Oregon was very clear to not allow an instream right under the Organic Act for fish, wildlife and recreation purposes.

In the Klamath adjudication, the OWRD did approve federal reserved claims for instream flow under the Wilderness Act and Wild and Scenic Rivers Act. It denied claims under the MUYSYA under the assertion that Congress did not intend to reserve water for secondary purposes such as fish, wildlife or recreation under this Act.<sup>33</sup> Oregon did not leave much leeway for the negotiation of US Forest Service reserved water rights, except in its allowance of channel maintenance flows under the Organic Act. The US Forest Service subsequently devised a number of scientific techniques for quantifying the needs for channel maintenance flows.<sup>34</sup>

## *Montana*

In 1992, compact negotiations began between the USFS and the State of Montana over reserved water rights on the national forests there. A group called the Reserved Water Right Compact Commission (RWRCC) was created by the Montana legislature in 1979 to act on

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<sup>31</sup> Richard Bailey, "Oregon Department of Justice Memorandum on Klamath Adjudication." Oct. 1, 1999. Available from [http://www1.wrd.state.or.us/pdfs/kba\\_viiia\\_adv\\_pt1.pdf](http://www1.wrd.state.or.us/pdfs/kba_viiia_adv_pt1.pdf); internet, accessed 1 December, 2009.

<sup>32</sup> Ibid.

<sup>33</sup> Ibid.

<sup>34</sup> Michael L. MacNamara and Tim Sullivan. *Forest Service Channel Maintenance Flows in the Klamath Basin*. Available at: <http://www.stream.fs.fed.us/afsc/pdfs/McNamara.pdf>. Accessed December 1, 2009.

behalf of the State in this negotiation and other water compacts. A mediator was hired in 2005 to reach a proposed settlement (compact) and present it to the public.<sup>35</sup> A public comment period occurred in 2006 and in 2007 the compact was ratified by the Montana Legislature. In terms of federal reserved water rights, the compact recognized 66 water rights for administrative uses (fire suppression, road watering, and visitor facilities) with early 1900's priority dates.<sup>36</sup> In addition, one federal reserved water right for instream purposes was established on the South Fork of the Flathead Wild and Scenic River with a 1976 priority date, based on the date the river was designated by Congress.<sup>37</sup> The purpose of this instream water right is based on Wild and Scenic River designation and not specifically for fish, wildlife or recreation under the Organic Act.

Under State law, the compact established instream water rights in 77 streams on national forest lands with a 2007 priority date.<sup>38</sup> The compact also created a process to establish future State instream water rights on national forest lands. The priority date for these rights is the date of the application.<sup>39</sup> In exchange the USFS agreed to withdraw all of its claims for reserved water rights for instream flows in the ongoing State water adjudication process. The compact was careful to define the instream water rights as "water right(s) recognized under state law," which was further defined as the 77 instream rights identified in the compact and other state water reservations granted in the future, "but does not include a federal or tribal reserved right recognized by the State."<sup>40</sup> While it might appear to be a minor point whether a USFS water

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<sup>35</sup> Montana Department of Natural Resources and Conservation, "Water Rights Settlement," Available from <http://dnrc.mt.gov/rwrcc/Compacts/usdacompact/ExecutiveSummary.pdf>; Internet; Accessed 5 December 2008.

<sup>36</sup> Water Rights Compact State of Montana United States of America, Department of Agriculture, Forest Service. Available from <http://data.opi.mt.gov/bills/mca/85/20/85-20-1401.htm>; Internet; Accessed 11 February 2010.

<sup>37</sup> Montana Department of Natural Resources and Conservation, "USDA Forest Service/ Montana RWCC Agreement: Frequently Asked Questions and Answers," Available from <http://dnrc.mt.gov/rwrcc/Compacts/usdacompact/usfsfaqs.asp>; Internet; Accessed 5 December 2008.

<sup>38</sup> Ibid

<sup>39</sup> Ibid

<sup>40</sup> Water Rights Compact State of Montana United States of America, Department of Agriculture, Forest Service. Available from <http://data.opi.mt.gov/bills/mca/85/20/85-20-1401.htm>; Internet; Accessed 11 February 2010.

right is defined as a federal reserved right or a water right recognized under state law, it means a lot from a legal point of view. The State of Montana allowed the USFS to establish water rights for instream flow based on fisheries needs, but in return the USFS relinquished its reserved water rights claims and allowed them to be classified as state reserved rights. The State was also careful to define that allowing these water rights for instream flows should not, “be construed or interpreted as a precedent for litigation of federal reserved water rights or the interpretation of administration of future compacts between the United States and the State or between the United States and any other State”.<sup>41</sup> Although this compact may say that it does not set a precedent, it is likely that the USFS will remember the outcome of this negotiation when engaging in compacts with other states.

After a series of disappointing reserved water right compact negotiations in other states (New Mexico, Oregon, Colorado), the USFS in Montana took one small step forward through securing a process for establishing future rights. These early water compact negotiations will be critical in setting the stage for future agreements between states and the USFS. Some might argue that the USFS should have held out for a better deal or have been more aggressive in their compact negotiation, although they have risked losing everything through this approach. The USFS in Montana put up a strong effort through nearly 20 years of negotiation, but fared only slightly better than other states have in the past. Given the shaky legal footing set by the *US v New Mexico* decision, the USFS is in a weak negotiating position to demand flows for fish or other important ecological functions.

While this compact settlement established some valuable instream water rights and a process for future rights, not everyone was happy with what the US Forest Service agreed to do. A number of conservation groups, particularly Montana Trout Unlimited and Trout Unlimited

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<sup>41</sup> Ibid

(the national organization) provided public comment urging the USFS to exercise its instream reserves to the greatest extent possible.<sup>42</sup> Stan Bradshaw, Director of the Trout Unlimited Western Watershed Project expressed concerns in an opinion article contending that the Montana Reserved Water Right Commission was unwilling to “accept that the US Forest Service and the State of Montana have a mutual interest in protecting water instream on national forest.”<sup>43</sup> It appears that the State of Montana was reluctant to grant instream flow rights to the US Forest Service. It contended that an instream flow right was not required under the Organic Act to maintain favorable conditions of flow.<sup>44</sup> The reason for this reluctance was unclear, but it may have stemmed from political pressures to accommodate future water development. There may have been fears that US Forest Service instream flow rights would have restricted the consumptive use of water, which could translate into restricted economic growth in certain sectors of the economy.<sup>45</sup>

Not everyone was satisfied with the final outcome of the compact. According to Bruce Farling, Executive Director of Montana Trout Unlimited, “We think that all streams on national forest lands should have an instream flow right.” Farling went on to say, “We spent 15 years of process to set up a process. We’d hoped for more.”<sup>46</sup> As Farling illustrates, the compact did not settle US Forest Service instream claims, but simply set up a time limited process for applying for future instream flow rights. Some additional shortcomings include the establishment of only 77 instream rights versus the 750 streams originally identified in the negotiations. This is

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<sup>42</sup> Bruce Farling and Laura Ziemer, “Re: TU Comments on draft Forest Service Reserved Water Right Compact,” Available from [http://www.montanatu.org/issuesandprojects/correspondence%20files/TU%27s%20Final%20compact%20comments%202\\_.pdf](http://www.montanatu.org/issuesandprojects/correspondence%20files/TU%27s%20Final%20compact%20comments%202_.pdf); Internet; Accessed 8 December 2008.

<sup>43</sup> Perry Backus, “Troubled National Forest Waters,” *Helena Independent Record*, 4 April 2006.

<sup>44</sup> Jean A. Thomas, “An evaluation of Forest Service reserved water rights,” (M.A. Thesis, University of Montana, 1989), 20.

<sup>45</sup> *Ibid*, 21.

<sup>46</sup> Stan Bradshaw, “Forest Service, state agree on water compact,” *Missoulian*, 18 April 2007.

primarily a result of the agreed upon method for determining minimum instream flow requirements, the wetted perimeter methodology (WETP). Data using this method of stream measurement was only available for 77 streams in the State.

The Wetted Perimeter method has been attributed as one of the major limitations of the compact. Since the inception of Montana's instream flow program in the mid-1970s, the WETP method has been used by the Montana Department of Fish Wildlife and Parks to derive instream flow recommendations for, "the preservation of aquatic resources during the low-water period in Montana's streams and rivers."<sup>47</sup> The WETP method has been widely criticized for lacking consideration of annual channel maintenance flows, requiring intensive field measurements, producing variable measurements, and inadequately meeting the habitat needs of aquatic communities.<sup>48</sup> The WETP approach does not take into account the seasonal needs of trout, aquatic invertebrates or riparian vegetation.

Alternatives to the WETP method have been successfully utilized for instream reserved water negotiations in other states. The Montana USFS Compact negotiations largely ignored the precedents set by other states for utilizing alternative methods of stream measurement. Apparently, the USFS negotiated a reserved water rights settlement with Colorado over instream rights in the San Luis Valley that went beyond the WETP approach and took into consideration streamflows necessary to satisfy Department of Environmental Quality 303 water quality requirements.<sup>49</sup> New methods for determining minimum instream flow needs have been

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<sup>47</sup> Stephen Leathe and Frederick Nelson, *A Literature Evaluation of Montana's Wetted Perimeter Inflection Point Method for Deriving In stream Flow Recommendations*, (Montana Department of Fish, Wildlife and Parks, 1986), 1.

<sup>48</sup> Patrick Byorth, *A Proposal to Adopt Dual Minimum Flow Targets to Facilitate Instream Flow Reservations in Streams on U.S.D.A. Forest Service Land in Montana*, (Trout Unlimited Western Watershed Project, 2007), 4-6.

<sup>49</sup> Bruce Farling and Laura Ziemer, "Re: TU Comments on Draft Forest Service Reserved Water Rights Compact," Available from

[http://www.montanatu.org/issuesandprojects/correspondence%20files/TU's%20Final%20compact%20comments%202 .pdf](http://www.montanatu.org/issuesandprojects/correspondence%20files/TU's%20Final%20compact%20comments%202.pdf); Internet; Accessed 4 December, 2008.

developed in recent years such as the Ecological Limits to Hydrologic Alteration (ELOHA) method, which has potential to more closely mimic features of the natural hydrograph to provide channel maintenance flows, while benefiting the life cycle needs of aquatic organisms.<sup>50</sup> The compact did not entirely reject alternative stream measurement approaches. Under the compact, both parties may elect to adopt a mutually agreed upon alternative approach the Wetted Perimeter Method.<sup>51</sup> At a minimum, at least the compact has the flexibility to adopt alternative methods for stream measurement.

While much of the criticism of the compact is centered on the wetted perimeter approach for quantifying minimum flow protections, there were some lost opportunities in the negotiation that are worthy of mention. The State should have viewed the compact negotiation as an opportunity to prevent the over-appropriation of water resources in affected stream reaches. As the priority date assigned to the US Forest Service rights is extremely junior (2007) and does not impact existing authorized water uses, allowing the USFS to obtain the remaining unappropriated rights would have benefited senior downstream users by restricting future upstream junior water development and potential water conflict. Water right enforcement in the State is largely non-existent and is driven on a complaint driven basis. By providing the US Forest Service with rights to the remaining natural flow, the State would have been protecting downstream senior rights and preventing future water conflicts. Reducing conflict over natural resources has the potential to put less of a burden on the courts and frees up resources of the State. While the Montana compact is a disappointment in some respects, it did establish 77 State based rights and introduce a unique State based process for establishing future water rights that in many respects will provide the same protections as a federal reserved water right.

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<sup>50</sup> The Nature Conservancy, "Freshwater for Practitioners: ELOHA," Available from <http://www.nature.org/initiatives/freshwater/resources/art23977.html>; Internet; Accessed 5 December 2008.

<sup>51</sup> Montana Code Annotated 85-20-1401(Article VI,B,b) (2007)

d. *Current Options for the US Forest Service*

Despite the *U.S. v New Mexico* setback, there are still options for the USFS to establish federal reserved rights for instream flow purposes and negotiate for state-based instream flow rights. While no state to this date has approved a federal reserved water right specifically for fish, wildlife or recreational purposes, a number of states have allowed instream flow reserved water rights under the authority of the Wilderness Act of 1964 and Wild and Scenic Rivers Act of 1968. The Wilderness Act designated that wilderness lands are to be, “for the use and enjoyment of the American people in such a manner that will leave them unimpaired for future use and enjoyment as wilderness.”<sup>52</sup> Wilderness designation is unique in that it applies to national forest lands that were already reserved under the Organic Administration Act. In relation to water, the courts have concluded that the Wilderness Act was intended to reserve water for designated wilderness areas.<sup>53</sup> This decision is largely based on the direction of the Wilderness Act to protect areas in their natural condition and allows federal entities to claim all unappropriated water at the time of the designation.

Similarly, the Wild and Scenic Rivers Act provides opportunities for federal reserved water rights protections through its direction to preserve rivers in their free-flowing condition to protect water quality and other national conservation purposes.<sup>54</sup> The Act specifically names fish, wildlife, recreation, historic, geologic and cultural aspects as purposes for the establishment of this designation. In addition, the Act specifically addresses reserved water rights stating that quantities of water are necessary to reserve for the purposes described in the Act (fish, wildlife

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<sup>52</sup> *Wilderness Act* of September 3, 1964.. 16 U.S.C. 1131 (a).

<sup>53</sup> Richard Bailey, *Oregon Department of Justice Memorandum on Klamath Adjudication*. Oct. 1, 1999. Available from [http://www1.wrd.state.or.us/pdfs/kba\\_viiia\\_adv\\_pt1.pdf](http://www1.wrd.state.or.us/pdfs/kba_viiia_adv_pt1.pdf); internet, accessed 1 December, 2009.

<sup>54</sup> *Wild and Scenic Rivers Act* of October 2, 1968. 16 U.S.C 1271



etc.).<sup>55</sup> Since there are a limited number of streams and rivers on national forest lands with Wilderness or Wild and Scenic Rivers designation, the applicability of this particular tool is also limited. Other acts such as the Organic Act and Multiple Use Sustained Yield Act have provided no results to date in terms of state courts accepting applicability in creating federal reserved rights for instream flow purposes.

The most promising opportunity for achieving federal instream flow protections may be through negotiation for state based rights as evidenced through the Montana compact negotiation. Most western states recognize instream flow as a beneficial use of water, although there are still some challenges. Due to the legal uncertainties and often lengthy court battles, it may make sense for the US Forest Service to settle its federal claims and pursue state based rights that would achieve the same protections as a federal reserved right. There are strong sentiments that these settlements, “encourage local cooperation, develop more lasting and satisfactory solutions, and avoid the conflict and expense of litigation.”<sup>56</sup>

From an on-the-ground water management perspective, there is very little difference between a federal reserved right and a state based right other than the priority date. When the USFS or other federal agencies negotiate for a federal reserved right, typically the right holds a priority date pursuant to the date of establishment of that particular land reserve or national forest. States often find the priority of these rights unsettling since it can effectively regulate junior water rights holders with state based rights. Instead, states are often more willing to provide federal land agencies with state based water rights with a junior priority date (typically the date of the compact agreement). In return, the USFS agrees to settle its claims for reserved water rights within the state adjudication process. Since there are generally very few existing

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<sup>55</sup> Ibid at 1272.

<sup>56</sup> John E. Thorson et al., *Dividing Western Waters: A Century of Adjudicating Rivers and Streams*, U. DENV. WATER L. REV. Vol. 9. Issue 2. p.444. (Spring 2006).

water rights upstream of national forest lands, the priority date is often not that important. What's important is establishing a right that captures most if not all of the remaining unappropriated water that runs through national forest lands and provides protections from future upstream appropriations. The threat of long, protracted court battles and the uncertainty of higher courts to determine the validity of federal reserved water rights claims is often enough of an incentive for states to allow water rights protections on national forest lands. In addition, it is in the state's best interest to allow these protections since they provide benefits for downstream communities by maintaining water quality and reliable drinking water, sustaining healthy fish and wildlife populations and providing recreational opportunities.

The worst option for the US Forest Service is to do nothing. Numerous courts in Colorado and Idaho have rejected federal reserved water right claims on the basis that the USFS has control over what happens on its land and can effectively deny special use permits for water diversions that might impair water resources. This reasoning is exhibited in Idaho's denial of USFS reserved rights:

Given that the US Forest Service has authority to regulate the use and occupancy of the National Forests and the waters within them, the question arises as to why a federal reserved right is necessary to preserve favorable conditions of water flows. . .<sup>57</sup>

While it's true that the USFS has the authority to approve or deny appropriations of water on its own lands through special use permits, but it does not have any standing to object to upstream appropriations of water that may impact conditions on USFS lands, unless it has an established right. This interpretation of national forest lands views them as isolated islands of biodiversity, which is not the case. Actions adjacent to USFS lands can have significant impacts on water.

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<sup>57</sup> State of Idaho. *Memorandum Regarding Matters Resolved By Court's Summary Judgment Order, In the District Court of the Fifth Judicial District of the State of Idaho, in and for the County of Twin Falls*. Re SRBA, Case No. 39576. (1999).

While many national forests are located at high elevations, high in watersheds where there are not upstream private lands, there are also many national forests with checker board private landholdings that hold potential for water appropriation. Many of these lands are private timberlands, but could be potentially sold for other uses such as recreational homes, golf courses, ski resorts, hydropower facilities, or other industrial uses, all of which require significant amounts of water. In Missoula County in Montana for example, Plum Creek Timber Company owns approximately 58% of the private land and has begun to divest its holdings into the real estate market.<sup>58</sup> New water demands could occur with these changes in land ownership and use.

The US Forest Service may have control over the water diverted on its land through special use permitting, but that doesn't mean it will or necessarily need to exercise that control. The threat of conditioning special use water permits on national forests to require bypass flow for instream purposes has gained momentum in Colorado through the Pathfinder collaborative effort described above. In this instance the USFS has worked in a non-litigious fashion to facilitate dialogue, explore alternative water management option and find common objectives. Although these types of collaborative efforts may be meeting short term objectives for instream flow and can be important for the reasons I've described above, it does not protect the forest from new water appropriations adjacent to US Forest Service lands. The only mechanisms that will protect our national forests in the long term are instream federal reserved water rights and state based instream water rights.

Other options the USFS might pursue is looking into the applicability of the Endangered Species Act (ESA) to assist in justifying federal reserved rights, a Congressional mandate or direction that would specifically define the purposes allowable for establishing reserved water

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<sup>58</sup> Missoula County Planning Board. Preliminary Draft Growth Policy 2005 Update. Available from: <ftp://www.co.missoula.mt.us/opg2/Documents/LRCounty/GrowthPolicy/GPUupdate/DraftsEtc/GovRev/PBChanges.pdf>. Internet; Accessed; 9 March, 2010.

rights and further litigation at the Supreme Court level that might overturn the *U.S. v New Mexico* decision. According to Lois Witte, USFS Regional Deputy Attorney and National Water Team Leader, “the ESA may be the most potent legal tool for reallocating water to meet instream flow needs on federal lands.”<sup>59</sup> Utilizing the ESA for USFS reserved water rights appears to be largely untested, although the ESA provides requirements for agencies to use its power to further purposes of the Act and protect threatened and endangered species. In recent years the ESA has been criticized for being overly harsh on regulating private lands. This complaint could lead Congress or the executive branch to support efforts on federal lands such as water right protections to promote imperiled species.<sup>60</sup>

Granting reserved rights to the USFS and essentially fully appropriating remaining water for a stream might be a way for states to reduce the ESA liability (and future conflict) for existing water right holders by limiting new consumptive uses of water. Allowing reserved rights would essentially limit new consumptive uses of water and theoretically stop further dewatering concerns for current ESA and candidate species. Under the ESA, water right holders can be required to develop mitigation plans in areas where there are listed species and critical habitat designations. If additional consumptive uses of water are granted by the state adjacent to national forests, there is additional liability for existing water right holders that these new appropriations could further impact already declining fish species and invoke new critical habitat listings. Water right holders can be forced under the ESA to develop plans such as curtailing their water diversions and upgrading water diversion structures to be more fish friendly to limit their incidental take of a species. The threat of federal involvement under the ESA in state water

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<sup>59</sup> Lois G. Witte, “Still No Water for the Woods”; Available from [http://stream.fs.fed.us/publications/PDFs/Still\\_no\\_water\\_for\\_the\\_woods.pdf](http://stream.fs.fed.us/publications/PDFs/Still_no_water_for_the_woods.pdf); internet; accessed 1 December 2009.

<sup>60</sup> Eric T. Freyfogle. *Repairing the Waters of the National Parks: Notes on a Long Term Strategy*. Denver Law Review. Vol. 74. p.845.

issues could serve a powerful incentive for states to recognize mutual benefits of reducing ESA liability through the establishment of USFS instream water rights.

### **III. Objectives of the Study**

The overall objectives of this study are to offer prioritized recommendations to Montana Trout Unlimited for streams in Montana that would benefit the most from USFS instream water right protections, develop a process for doing so and to offer some insight on the role of non-governmental organizations (NGOs) such as Montana Trout Unlimited have played and could play to accelerate the process. Based on the limited capacity of the USFS to collect data and submit new instream applications, it is essential that it focus its efforts in a strategic manner. It is also important that an NGO such as MTU understand the best use of its time and resources in facilitating this process. Below I describe the methods I used to develop a list of prioritized stream recommendations and then follow with a discussion of the results of the analysis, including process I used to identify the appropriate role of MTU.

### **IV. Methods of the Study**

#### *a. Development of the Initial Stream List*

In order to begin developing a list of recommended streams for MTU, I worked to identify the appropriate group of natural resource professionals from which to request such recommendations. While the study strived to survey a broad representation of agencies across the state, MTU's role in helping identify the group of natural resource professionals for stream advice introduced a degree of potential bias. As the primary purpose of USFS instream protections is to preserve fisheries values on national forests, we therefore focused on identifying

biologically significant streams. The natural resources professionals with significant firsthand knowledge of the biological conditions of Montana's streams are, naturally, fisheries biologists and fisheries managers. While a significant amount of fisheries information can be obtained from fish databases, MTU felt strongly that its recommendations to the USFS should be guided directly by biologists with significant amounts of on-the-ground knowledge. The primary agencies that have fisheries experts on staff in Montana are the USFS, FWP, USFWS and Native American Tribes in the state. From these agencies we developed a list of 46 biologists and regional managers across the state. This survey sample was not comprehensive in that it did not include biologists in the state working for non-profits, private businesses and consulting firms, academic institutions or Native American tribes. While the list of biologists surveyed for recommendations included a large number of biologists and fisheries managers working in the public sector, it was not comprehensive due to the resource and time constraints of this study. Based on MTU's input, the individuals surveyed were largely from FWP, although biologists from other agencies were included. This unequal representation of one agency over another could certainly introduce a level of bias in the survey sample. For example, FWP biologists might place a heavy emphasis in its recommendations for streams that also run through state lands where they have conducted research or restoration projects. Fish are property of the state however, wherever they are found.

The request for stream recommendations sent to the fisheries experts took into consideration a number of factors. First, I weighed the various communications types such as a letter, phone call or email, to make this request and yield a high response rate. Considering the sample size and that these were busy professionals with limited time to dedicate towards this effort, I chose email as the preferred means of communicating stream recommendation requests.

In an attempt to elicit a higher response rate, I provided a brief background (Appendix A- Fisheries Biologist Stream Recommendation Request) on the compact, the purpose of the recommendation request, and my affiliation with MTU. I specifically asked for ten stream recommendations from each individual's respective region that they thought would benefit the most from a USFS instream water right. The request included a brief description of some key provisions in the compact. I also mentioned potential values to consider for streams such as biological importance, water development risks, and existing protections. This statement of values was intended more to inform respondents of general considerations than to guide its responses. The request encouraged additional notes and/or input on why particular streams were chosen. The following portions of this study describe the process to further refine and prioritize the list of 150 stream recommendations received from the 46 biologists and regional fisheries managers.

*b. Identification of Ranking Criteria*

Many of the listings on the 150 recommended streams contained notes as to why the streams were chosen. These notes suggested different reasons for choosing streams ranging from dewatering concerns to supporting important critical stages in the life histories of different important fishes. In order to refine the list of 150 streams, I sought to identify the range of considerations and values when prioritizing one stream over another for a USFS instream right. I conducted seven informal interviews with the primary stakeholders and water rights experts in the region from Montana Trout Unlimited, the US Forest Service, Montana Department of Natural Resources and Conservation Water Resources staff and Montana Fish Wildlife and Parks (Appendix B- Interview Questions). The primary stakeholders are defined as the USFS and

DNRC since they are the two parties responsible for submitting and reviewing applications for instream water rights under the compact agreement. Other stakeholders in this process were defined as parties that have taken some role or interest in the compact, such as MTU and FWP. The interviewees were selected based on their involvement in the compact process and their knowledge of water law in Montana.

The aim of these interviews was to determine the relevant criteria for evaluating the need for a US Forest Service instream water right. I asked the interviewees what criteria they would consider to evaluate the importance of a USFS instream water right in Montana. Based on the criteria each participant identified, I asked which they would consider to be the most and least important. Notes of each interview were recorded by hand during the meeting. If there was any confusion about what a criterion meant, additional clarification was requested during the interview and notes describing each criterion were recorded. During the interviews, I provided a verbal verification of each criterion recorded and my interpretation of its meaning. I also provided an opportunity for clarification of my understanding of what I thought I heard. Notes describing each criterion were recorded by hand to ensure the proper meaning of each consideration was utilized in the future. These interviews yielded a long list of potential considerations, which I will explain in greater detail in the results section. The criterion from each interview was compiled into a master list, which was reviewed for common themes and repetition. Both Bruce Farling of MTU and I reviewed the list of criterion, eliminated repetition and organized the list into common themes.



*c. Development of a Ranking Worksheet*

Based on the above considerations for evaluating the need for an USFS instream water right, I compiled a worksheet for the ranking of streams that listed the criteria for consideration and organized it by four primary topics: biological criteria, ground and surface water development risks, existing protections and other considerations (Appendix C- Ranking Worksheet). The purpose of this worksheet was to develop a method for evaluating the need of individual streams for consideration of an USFS instream water right. The most efficient way to manage a large list of streams for consideration was through the development of a points system that ranked particular streams based on the criteria identified above. Multiple formats of this worksheet were developed and refined with the feedback of MTU. In order to allow the highest priority assigned to ground and surface water development risks, individual categories of water development were included. Among these categories, “mixed ownership” was used as a broad category to boost the relative value of water development risks in circumstances where the individual types of risks may not be well defined.

I incorporated a scoring value to the worksheet by including a column in which a criterion’s value from one to ten could be assigned. Points were assigned to the individual criteria based on the supporting data. A column was also included in the worksheet to accommodate for unavailable or unknown data. This column was designed to identify gaps in data and reduce the possibility for uninformed judgments about particular criteria. Among the four major headings, existing protections criteria were assigned negative scores. While I received mixed input about the importance of existing protections from the stakeholders, MTU provided a strong recommendation that streams already enjoying some degree of protection should be of lesser importance for establishing a USFS reserved water right. To accommodate

these sentiments, I assigned negative points values to existing protections criteria. Of the 21 positive criteria (21 criteria \* 10 points each = 210 possible points), minus the five negative criteria (5 criteria \* negative 10 possible points= -50), the maximum points available to a stream are 160 (210-50=160) as per the worksheet developed in coordination with MTU (Appendix C-Ranking Worksheet). Some additional critical information was included in this worksheet including the stream name, the national forest in which it is located, the river basin, and an area for notes relating to the particular criteria. The data sources and method for prioritizing the list of streams using this worksheet are described in the following section.

d. *Ranking the Stream List*

Using the criteria and screening worksheet I identify above, I ranked the list of 150 streams. This prioritized list of Montana Trout Unlimited's recommendations will be reviewed and provided to the US Forest Service for the purpose of strategically establishing future instream flow applications.

*Selecting the Appropriate Data Sources*

Before I began the process of utilizing the ranking worksheet to evaluate particular streams from the list of 150, I identified the appropriate data sources to support my scoring of each criterion in the worksheet. The study sought to draw from as many credible data sources as feasible to support the scoring in the prioritization process. Despite efforts to base as much of scoring upon supporting data, there was bound to be an of inherent partiality in the rankings of each stream since they were conducted by one individual and the process of developing the worksheet was largely driven by direct input from Montana Trout Unlimited. Utilizing multiple

individuals to evaluate and rank streams was not within the scope of this research due to time and resource constraints. The following discussion of each of the four major screening categories, describes the selection of the appropriate data sources used to evaluate each criterion. US Forest Service maps, fisheries data, FWP dewatered stream lists, property ownership information and other resources were used during the evaluation of each stream.

### *Sources for Evaluating Biological Criteria*

The primary source for evaluating the biological criteria in the ranking worksheet was the Montana Fisheries Information System (MFISH) database. MFISH is a publicly available database managed and maintained by the Information Management Bureau of the Information Services Division of Montana FWP, and it provides stream-level information relating to fish species distributions, biological sampling information, angler use and fishing logs, restoration projects, instream water protections and conversions, dewatering concerns, and references and studies relating to the specific waterbody.<sup>61</sup> MFISH is updated annually based on information from 21 different entities including: FWP, USFS, USFWS, BLM, tribal fisheries biologists. Other information sources such as new reports and technical documents are frequently added to the MFISH database as well. MFISH was chosen as one of the primary data sources for this study due to its diverse range of stream specific information, user-friendly nature, mapping capabilities and cross-jurisdictional agency information. This data source was extremely useful in researching many of the criteria identified in the worksheet, particularly because it addressed many of the criteria identified in the worksheet.

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<sup>61</sup> Information Management Bureau of the Information Services Division of Montana Fish Wildlife and Parks, *MFISH Data Definitions*, Internet; Available at: <http://fwpiis.mt.gov/content/getItem.aspx?id=29756>. Accessed; 27 February 2010.

Specific to the biological criteria identified in the worksheet, the MFISH database provided species information for all of the identified streams including, in many circumstances, genetic samples of fish. Genetic samples typically included the percentage of hybridization with non-native species. MFISH provided extremely comprehensive biological information in terms of the fish species listed in each stream, including both native and non-native species. Based on the sampling records, I was also able to analyze the historical presence of each species even if it no longer appeared in current fisheries surveys. Notes were often included, but not always in regard to the importance of a stream for particular life stages. I relied on a combination of the MFISH information and comments that accompanied the fisheries biologists' recommendations. In instances where there was no information listed about the importance of a stream for particular fish life stages, I assigned no points to the criteria and marked the "N/A or unknown" column.

#### *Sources for Evaluating Ground and Surface Water Development Risks*

Identifying water development risks based on the available data was extremely challenging. While the MFISH database provides information about FWP dewatering concerns, it does not address potential water development risks. In order to evaluate potential water development risks (such as real-estate development, mining, irrigation and other potential water uses), I utilized information available from the Montana Cadastral Mapping Project (cadastral). Cadastral is another publicly available resource that combines the Montana Department of Revenue Computer Assisted Mass Appraisal System (CAMA) database and the U.S. Bureau of Land Management Geographic Coordinate Data Base (GCDB).<sup>62</sup> Cadastral's combination of

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<sup>62</sup> Montana Department of Administration and Revenue. Montana Cadastral Mapping Project. Internet; Available at: <http://gis.mt.gov/>. Accessed; 27 February 2010.

databases allows for the mapping of property ownership boundaries and includes specific information about each parcel. Specifically its mapping function allows a series of layer options, which for the purpose of this study allowed the close examination of streams, roads and land ownership patterns. In addition, Cadastral provides detailed ownership information about each parcel such as the number acres, owners names, the number of structures and date they were built, the land classification and irrigation information.

The Cadastral database was used to research real-estate development, mining claims, irrigable lands, industrial uses and mixed ownership patterns. Small hydroelectric and oil and gas development potential were not studied, based on limited data sources to predict these classifications of development. The specific parcel information about ownership, land classifications and mining patents provided a fair background of where water development pressures might occur. Evaluating ground and surface water development risks was a prediction-based method that utilized property ownership data to guide specific recommendations. The intent of evaluating the ownership patterns based on these criteria was to identify potential dewatering risks originating on private lands. A sample Cadastral map of a watershed containing mixed ownership above national forest grounds that might warrant consideration for water development risks is provided in Appendix F. In addition to Cadastral, I also utilized USFS maps to assist with mixed ownership determination. In a few cases, cadastral information on public lands was incomplete and referencing USFS maps was necessary instead.

The criterion I was not able to evaluate was the potential for further appropriation, which would have involved an extensive water rights analysis for each stream. Performing a water rights analysis of each stream would have aided in tracking water development pressures and the potential for further appropriation. Recent water rights filings might suggest new water

development pressures and an ability to further appropriate water in a stream. This information is available online through the Montana Department of Natural Resources Water Right Query System. Unfortunately, searching for water rights by a particular stream is extremely challenging and time consuming. The search criteria required to pull up a water right includes knowledge of a water right number or an owner's name. While it would have been possible to cross reference last names from the cadastral database for private parcels within the USFS boundaries, it would have required a great deal of additional research. A future study of water development risks on or near USFS lands utilizing this database would provide a useful complement to this research.

#### *Sources for Evaluating Existing Protections Criteria*

To analyze the existing protections for a stream, I primarily utilized the MFISH database. MFISH provides FWP water reservation information, Murphy rights and instream leases in their query process. In order to determine if a stream was located in a closed basin, I referenced the DNRC basin closure map.<sup>63</sup> Identifying streams located in wilderness areas was also relatively easy and most were identified using USFS maps and the MFISH mapping program.

#### *Sources for Evaluating Other Considerations*

Criteria identified under the "other considerations" section of the ranking worksheet also were derived primarily from the MFISH database in addition to individual comments received from fisheries biologists during the stream survey process. For analyzing water quality

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<sup>63</sup> Montana Department of Natural Resources and Conservation, Water Resources Division, Montana Basin Closures and Controlled Groundwater Areas January 2009. Internet; Available at: [http://www.dnrc.mt.gov/wrd/water\\_rts/appro\\_info/basinclose-cgw\\_map.pdf](http://www.dnrc.mt.gov/wrd/water_rts/appro_info/basinclose-cgw_map.pdf) Accessed; 27 February, 2010.

impairment, I utilized the Montana Department of Environmental Quality 2008 303(d) listings and cross-referenced them with the stream recommendation list.<sup>64</sup>

I relied primarily on the MFISH database for evaluating angler use and significance, fish conservation plans, recent restoration projects and tributaries to biologically significant streams. Angler use and significance is tracked in the MFISH database primarily by data reported about the number of anglers who fish a stream and the total number of days fished per year. Montana Fish Wildlife and Parks has a voluntary fishing log program in which anglers record the species caught and number of hours fished. In terms of fish conservation plans, the MFISH database primarily tracks designations under the Northwest Power and Conservation Council fisheries protection plans, but also includes Federal Wild and Scenic River protections.<sup>65</sup> There are a host of other fish conservation plans in Montana that are not included in the MFISH database, but the scope of this study was limited to those in the MFISH database.

Restoration projects are also tracked in the MFISH database through information from the FWP Future Fisheries Grant Program, which supports funding for restoration projects across the state and other available agency data. There are likely data about recent restoration projects initiated by non-profit organizations and landowners that are not included in this database due to their difficulty to track. I also utilized the MFISH database to determine whether or not a particular stream is a tributary to a biologically significant stream or river by looking at the fish species present in the receiving water body. If any of the five fish species listed in the compact were present (bull trout, westslope Cutthroat, Yellowstone cutthroat, arctic grayling or Columbia redband trout), it was considered a biologically significant stream.

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<sup>64</sup> Montana Department of Environmental Quality, Clean Water Act Information Center, 2008 303(d) List. Internet; Available from: <http://cwaic.mt.gov/> Accessed; 27 February, 2010.

<sup>65</sup> Information Management Bureau of the Information Services Division of Montana Fish Wildlife and Parks, *MFISH Data Definitions*, Internet; Available at: <http://fwpiis.mt.gov/content/getItem.aspx?id=29756>. Accessed; 27 February 2010

The accessibility to a stream by vehicle was important for determining the feasibility of conducting stream measurements. The stream access criterion in the worksheet was evaluated based on the proximity of roads to a stream, utilizing the cadastral mapping program. When roads were identified on USFS land within a half mile of a stream, it was considered accessible and received a full score of ten points. The half mile rule was based upon input from field technicians that conducted stream measurements for MTU during the 2009 field season. Terrain limitations were not assessed based on the detail of the maps used.

### *Scoring Procedure*

Scores for each criterion in the worksheet were based on available information from the supporting data sources described above. A score or value from zero to ten was assigned to each criterion, adding up to a total potential point value of 160 per stream (Appendix C- Ranking Worksheet). A maximum value of ten was chosen to accommodate the wide range of supporting data associated with a number of the criteria. A full criteria score of ten was awarded to criteria there was strong supporting data. Partial criteria scores were awarded in circumstances where supporting data only addressed a portion of a criterion. The number of points received was based on the degree to which the data supported evidence of a particular criterion.

I did not attempt to assign scores for any criteria where there was no available information. If particular criteria were strongly supported by the data, they received the maximum score of ten. The sum of all the scores was automatically tabulated and entered into a master ranking spreadsheet. In addition to the score, extensive notes on why particular scores were derived were provided in the scoring worksheets and master spreadsheet. This information could provide useful if there is a need to retrace scoring decisions.



I attempted to be as consistent and objective in my scoring as possible, although ultimately there was some subjectivity in the assignment of criteria scores and the analysis of risk for potential water development. The criteria for judgment of water development risks were based upon property ownership data that stated specific land classifications that would allow for certain types of water development. For example, if a parcel of private land within the USFS boundary was classified as agricultural or pasture, it would receive points for potential irrigation development since it is presumed that if there is not already water rights, that there might be future needs for agricultural uses. Other scores and conclusions could be reached by other individuals analyzing the data. With such a large spread in potential points, I decided that a few points discrepancy by different reviewers would likely not make a big difference to the overall score and ranking of a stream. In addition, I did not attempt to assign scores for oil and gas development risks, water storage risks, small hydro potential and potential for further appropriation. This was largely because there was unavailable supporting data to draw informed conclusions about these considerations. While the potential for further appropriation as discussed above could have been potentially analyzed, it was not possible within the scope of this study due to time and resource constraints.

The process of researching the stream information, mapping the stream, cross referencing multiple databases and other materials to derive a score and provide notes required a significant time investment (10 to 20 minutes on average per stream). Some streams had much more data available than others and required additional time to weigh each criteria. The most time consuming aspect of the scoring process was looking up the property ownership information on each private parcel on a stream, particularly in areas with lots of private development (see sample map in Appendix F). It was important to look at each private parcel to evaluate if there

were unique land classifications or ownerships that might suggest potential future water development risks.

As the ranking process was being conducted, I recognized multiple duplicate recommendations and recommendations for streams that were already protected by a USFS right. To improve the efficiency of the scoring process, I cross-referenced all of the streams for duplications and pre-existing USFS water rights. The scoring went fairly smoothly, although I did encounter a few instances where the public lands ownership was not listed in detail in the cadastral database. In these cases, I referred back to the USFS maps to determine the bottommost section of USFS land on a stream. An additional procedure that helped score a stream more quickly was to first look at the property ownership map via cadastral to determine if there was any USFS land along a stream. In a few instances, there was no USFS land and a score of zero was assigned since establishing a USFS right would not be possible.

## **V. Results and Recommendations**

As noted above, the overall objectives of this study are to offer prioritized recommendations to Montana Trout Unlimited for streams in Montana that would benefit the most from USFS instream water right protections, develop a process for doing so, and to offer some insights on the role of non-governmental organizations such as Montana Trout Unlimited that have played and could play in the process in order to accelerate it. In the following pages I discuss the results of the stream identification and ranking process using the methods I described above. I also investigate the appropriate role for MTU to assist in this agency driven process.

*a. Results and Discussion of the Stream Survey*

The stream recommendation requests were sent during the month of October, 2008, and elicited responses from 28 of the 46 individuals surveyed. MTU felt strongly that only one request for information should be sent to individuals in an effort to be respectful of its time and willingness to participate. Of the 28 respondents, 18 were willing to provide recommendations. There appeared to a higher response rate for participants working closer to Missoula. The lowest response rates were from the central and eastern parts of Montana. This could be due to the heightened awareness of the compact through the media and MTU in western Montana. In addition, regional fishery managers were nearly twice as likely not to respond or defer the information request to other individuals. The ten respondents that did not provide recommendations but responded to the email, most commonly deferred to other individuals already contacted in the study, cited inexperience or a lack of time to dedicate to the request. The 18 respondents who provided recommendations resulted in a list of 150 streams. This list was considered adequate for the scope of this study in terms of providing MTU with recommendations to the USFS for a number of years. The list represented input from three agencies and contained an ample number of recommendations necessary build a working list of streams across the state. The rough, unscreened or prioritized list from this portion of the study was provided directly to MTU and the USFS to help guide future efforts (Appendix E- Unranked Stream List).

*b. Results and Discussion of the Stream Criteria Identification Process*

During the process of identifying criteria to rank the stream list, I detected three primary themes: biological criteria, future water development risks and existing protections.

### *Identification of Biological Considerations*

- *ESA Listed Fish Species and Five Fish Species Identified in Compact*—One of the primary considerations voiced by the water resource experts and stakeholders was biological considerations for instream flow protection on national forest land. These related primarily to the fish species inhabiting tributaries in, or adjacent to, national forest land. In the compact, current and future Endangered Species Act-listed species receive a higher streamflow protection.<sup>66</sup> The only ESA listed fish species eligible to receive the higher streamflow protection is bull trout. There are five species identified in the compact which are eligible to receive an upper inflection point using the WETP approach, including bull trout, westslope cutthroat trout, Yellowstone cutthroat trout, fluvial arctic grayling, and Columbia redband trout.
- *Conservation Populations*—Among these species, it was also mentioned that genetic purity should be a consideration if they meet the definition of a conservation population. A conservation population refers to genetically pure (over 90%) native species. Conservation populations have slight genetic variations, may be adapted to unique environments and have distinct behaviors that local experts deem important enough to conserve.<sup>67</sup> Many trout populations in Montana are experiencing hybridization with non-native species, which can threaten species' survival.<sup>68</sup> Protecting streamflow for genetically pure populations of native trout could aid in maintaining vital habitat and their long-term survival.

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<sup>66</sup> Montana Code Annotated 85-20-1401(Article VI,B.) (2007)

<sup>67</sup> Montana Cutthroat Trout Technical Committee, *Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana*, April 2007, pg. 5.

<sup>68</sup> Montana Fish Wildlife and Parks, *Cutthroat Trout Conservation Agreement*. July 2007. P.5. Available from: <http://fwpiis.mt.gov/content/getItem.aspx?id=28662>. Accessed: 20 February, 2010.

- *Introduced Wild Fish*—While the experts placed significant emphasis on biological considerations for the five native species identified in the compact, it is still possible to establish a USFS water right for streams containing other fish species or no fish at all. As MTU represents a membership with strong ties to fishing, it was important to consider flow protections in streams that support introduced wild fish populations such as brown, rainbow and brook trout. Anglers rely on favorable flows in many rivers and streams that run through USFS lands to support populations of introduced wild fish with sport fishing value.
- *Angler Significance*—An additional consideration that is significant to anglers and the sport fishing industry is whether a stream being considered for a USFS right is fishable. Many streams that run through USFS lands originate high in the mountains and are narrow and fast moving, which makes for poor fishing waters. Some streams and rivers that cross USFS lands however, are lower gradient and provide exceptional opportunities for sport fishing of native and introduced wild fish. The ability of a stream to support recreational opportunities such as fishing was a priority emphasized particularly by MTU. Angler use can provide significant economic resources for jobs in the state. According to 2001 figures from a Montana Fish Wildlife and Parks report on tourism, hunters, anglers and wildlife viewers had a total economic effect of \$680 million dollars which resulted in the creation of 9,800 jobs.<sup>69</sup> Protecting water resources on national forest lands could help sustain and invigorate local economies that benefit from nature based tourism.
- *Habitat for Critical Life Stages*—Some streams do not provide angling opportunities, but may supply habitat for critical life stages of fish populations. The ability of a stream to

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<sup>69</sup> Montana Fish Wildlife and Parks, “Montana Tourism and the Role of Fish and Wildlife,” Available from <http://fwp.mt.gov/tmc/reports/tourism.html>; Internet; Accessed 7 December, 2008.

support critical life stages such as juvenile rearing, migration, seasonal foraging or spawning was also a criterion that a number of individuals expressed. USFS lands support tributaries to many larger and biologically significant water bodies. These tributaries in some cases provide thermal refugia during drought conditions and support critical life stages of many fish populations. Maintaining favorable flows in tributary streams can have a significant impact in supporting healthy populations downstream.

- *Historical Presence* –The absence of fish should not preclude a stream from consideration of a USFS instream right. Streams that have the ability to support fish or have data demonstrating a historical presence might also benefit from water right protections. One example of a stream with historically present species is Big Lake Creek in the Beaverhead-Deerlodge National Forest. Historical fishery samples of the creek found fluvial arctic grayling present, but recent surveys have produced no evidence of the species.<sup>70</sup> In such cases, protecting streamflow could facilitate the recovery of healthy stream conditions and provide connectivity for currently isolated fish populations. Although an USFS right does not take precedence over existing authorized uses of water, it can provide flow protections and complement reintroduction or other restoration efforts. Historical presence of a fish population can come from records of fisheries surveys or the professional judgment from a biologist regarding whether a stream could support a fish population.

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<sup>70</sup> Tim Sullivan, Former Water Team Leader, United States Forest Service Northern Region. Personal Communication. September 24, 2008.

### *Ground and Surface Water Development Risks*

One of the principal purposes of establishing water rights for instream flow on national forest lands is to protect against future water development. An USFS water right does not limit existing authorized uses of water that might be dewatering streams currently, but it does provide the potential to protect against future water developments. Some of the primary types of water development identified by MTU and others included: real-estate, oil and gas extraction, mining, irrigation, water storage facilities, industrial uses, small hydro-electric generation and the potential for further water right appropriation. As land use changes occur on private lands adjacent to national forests, so do the potential impacts on adjacent natural resources—namely water. Given the trajectory of climate change and increasing competition for water, pressure from water development interests to develop headwater areas is likely to increase. Water is an essential component of mining operations and availability of water can create a roadblock if the USFS holds the rights. These often high-elevation, scenic areas in close proximity to national forests are also attractive locations for ski resorts, outfitting businesses and destination resorts to name a few.

In watersheds that contain mixed land ownership above USFS lands, the development considerations are particularly important. In situations where private in-holdings are intermingled with, or otherwise upstream of USFS lands, future water development can potentially harm fish located in reaches on public lands (see example map in Appendix F). Unless the USFS has an established right to the water flowing across national forest lands, it has limited ability to object to new water right applications. Using the wetted perimeter measurement method to determine the necessary flow for the forest however, does not appropriate all remaining flow in a creek, although it does protect against major water

developments and requires a minimum flow. It is important to note though, that new USFS instream flow rights are junior in priority and do not trump existing senior water rights. Because instream flow rights are for perpetuity, they can protect and enhance natural resources as much as conservation easements do.

To address the risk of potential water development risks, it is also useful to consider the ability of individuals to obtain water rights in stream. If a stream is already fully appropriated (meaning the state has authorized every available drop for a beneficial use) then there is little point in pursuing an USFS right. Although analyzing the level of appropriation in particular streams can be a research intensive process, it can provide useful information about the ability to protect any water instream with a USFS right. Since USFS rights hold a junior priority date, there may be many existing uses that would prohibit the USFS from being served.

As private landowners adjacent to national forests such as Plum Creek Timber Company begin to change the focus of its business towards real-estate development, there is potential for upstream water development associated with houses (wells) and surface water use associated with ski areas (snow-making), agriculture (stockwater), fish ponds and other aesthetic features. Securing an instream water right by the USFS would at least give them some legal standing to object or claim injury to upstream water development. It is thus important that, in some cases, the USFS establish instream rights with a priority date senior to any future water developments.

While protecting surface water running through national forest lands is a central consideration of this study, it is also important to consider the value of groundwater resources underneath national forests. Montana is beginning to recognize the interconnections between groundwater and surface water, and to place greater scrutiny on new groundwater applications.



As a result of a lawsuit between TU and the DNRC<sup>71</sup>, the Legislature passed HB 831 in 2007 which requires applicants for new groundwater developments (over 35 gpm and 10 AF per year) in closed basins to conduct a hydrologic assessment for depletion of surface water. If the applicant and DNRC determine that depletion will occur, the applicant is required to either terminate their application or develop a mitigation plan which will, “offset the amount of net depletion that results in adverse effect.”<sup>72</sup> Options for mitigating include purchasing a water right from another user for instream flow protection and/or changing an existing beneficial use of a water right, or manipulating the timing of an existing right to offset any adverse effects, all of which require filing change applications with the DNRC. HB 831 is important in the USFS instream flow application process because it legally recognizes the interconnections with ground and surface water. If upstream groundwater applications occur in streams with national forest instream rights, the USFS will have authority to object and require new appropriations in closed basins to offset their consumptive use.

### *Existing Protections*

The third major category of recommendations I received from the stakeholders, (USFS, DNRC, FWP, MTU) was the consideration of existing protections for USFS streams. The primary types of existing protections for instream flow that exist for streams in Montana include: Montana Fish Wildlife and Parks water reservations and Murphy rights, closed basin status, wilderness allocation and instream leases.

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<sup>71</sup> *TU v DNRC*, Montana Supreme Court (April, 2006)

<sup>72</sup> Montana Water Policy Interim Committee, “House Bill 831 (2007)- Ground Water Appropriations in Closed Basins (Summary),” Available from [http://leg.mt.gov/content/Committees/Interim/2007\\_2008/water\\_policy/staffmemos/831summary.pdf](http://leg.mt.gov/content/Committees/Interim/2007_2008/water_policy/staffmemos/831summary.pdf); Internet; Accessed 7 December 2008.

- *FWP Murphy Rights and Water Reservations*—Instream flow protection began in Montana in 1969 when legislation was enacted that allowed Montana Fish Wildlife and Parks to establish Murphy rights. These rights resulted in protections on 12 rivers across the state.<sup>73</sup> Murphy rights appropriated all remaining streamflow in these rivers for the preservation of fish and wildlife habitat. Unless a district court challenges the beneficial use of these rights, they effectively closed a number of rivers to new surface water appropriations. Murphy Right legislation was replaced in 1973 under the Montana Water Use Act with a reservation system that allowed state and federal agencies to request reservations for minimum flows on streams throughout the state. In 1978, 2078 stream miles in the Yellowstone River Basin in 69 stream segments were protected with state water reservations.<sup>74</sup> FWP Murphy rights and reservations extend to national forest boundaries in most cases and could complement an USFS water right.
- *Water Leasing*—Another mechanism for instream flow protections is through water leasing, which allows state agencies and individuals to temporarily lease water rights for instream use. Groups such as the Montana Water Trust, the Trout Unlimited Western Watershed Project and FWP actively use the State’s leasing program as a method for protecting instream flows.
- *Closed Basins*—In addition to the instream protections described above, there is also the ability to close a basin from future surface water appropriation. The DNRC in Montana has closed nine basins, including the Clark Fork, to further surface water

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<sup>73</sup> Bureau of Land Management, National Science and Technology Center, “Western States Water Laws: Montana Water Rights Fact Sheet,” August 15, 2001, Available from: <http://www.blm.gov/nstc/WaterLaws/montana.html>. Internet; Accessed 21, February 2010.

<sup>74</sup> Information Management Bureau of the Information Services Division of Montana Fish Wildlife and Parks, *MFISH Data Definitions*, Internet; Available at: <http://fwpiis.mt.gov/content/getItem.aspx?id=29756>. Accessed; 27 February 2010.

appropriations.<sup>75</sup> Basin closures can occur from a variety of actions such as a petition by a water right holder, a DNRC ordered closure, legislative closure and compact closures.<sup>76</sup>

The USFS Compact is unique in that it allows for the establishment of instream water rights in closed basins. While it is likely more critical to obtain rights in a basin that is open to new water appropriations, basin closures are not necessarily permanent. Securing water rights in basins without closures should be a priority for the USFS, but it should also pursue protections in closed basins.

- *Wilderness Allocation*—Wilderness designation can also be an added layer of protection against water development on national forest lands. The Wilderness Act of 1964 provides the most comprehensive forms of protection for federal lands in terms of limiting the development of water resources. The *Potlatch Corp. v. United States* case in the Idaho Supreme Court (1999) determined that federal reserved water rights doctrine applies under the Wilderness Act of 1964.<sup>77</sup> This decision set the precedent for establishing reserved water rights with a priority date of the establishment of the Wilderness Act (1964).<sup>78</sup> An USFS reserved water right under the Wilderness Act could prohibit water uses established under state law after 1964. This is one of the few instances where an USFS reserved right can actually curtail existing authorized water uses. The USFS would however need to address reserved water rights claims under the

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<sup>75</sup> Clark Fork River Basin Task Force. *Managing Montana's Water: Challenges Facing the Prior Appropriation Doctrine in the 21<sup>st</sup> Century*. July 2008. P.3. Internet; Available At: [http://dnrc.mt.gov/wrd/water\\_mgmt/clarkforkbasin\\_taskforce/pdUSFS/appropriation\\_paper.pdf](http://dnrc.mt.gov/wrd/water_mgmt/clarkforkbasin_taskforce/pdUSFS/appropriation_paper.pdf). Accessed 21 February, 2010.

<sup>76</sup> State of Montana Water Resources Division, Water Right Bureau, *Montana's Basin Closures and Controlled Groundwater Areas*, December 2003. P.6. Internet; Available at: [http://www.dnrc.mt.gov/wrd/water\\_rts/appro\\_info/basinclose-cgw\\_areas.pdf](http://www.dnrc.mt.gov/wrd/water_rts/appro_info/basinclose-cgw_areas.pdf). Accessed 21 February, 2010.

<sup>77</sup> *Potlatch Corp. v United States*, 134 Idaho 912, 12 P3d 1256 (Idaho 2000).

<sup>78</sup> Kelly J. Latimer, *Federal Reserved Water Rights Doctrine Under the Wilderness Act: Is it Finally Here to Stay?* *Journal of Land, Resources and Environmental Law*. 2000. P1.

Wilderness Act in their compact agreements, or risk a junior priority date (in Montana) or a water right altogether.

While existing protections such as the Wilderness Act, basin closures, water leases, Murphy rights and other water reservations might compliment an USFS right, streams that do not have any of these protections might be the ones that need it most. Having multiple stakeholders representing instream rights can certainly be a potential benefit in water right disputes and monitoring of flows. Establishing at least one level of instream flow protection in a watershed is a good start. Those watersheds already enjoying some level of existing water right protection were considered less of a priority than those without any.

### *Other Considerations*

There were a number of additional considerations brought up by the stakeholders that did not fit into any of the above categories. Those included: water quality impairment issues, identification in a fish conservation plan, recent or planned restoration projects, a tributary to a biologically significant stream and reasonable access to conduct measurements.

- *Water Quality*—Water quality might be a useful parameter to include, not because a USFS water right can necessarily stop authorized existing uses contributing to impairment, but because it can potentially curtail further impairment by protecting streamflow. A lack of streamflow can often be a source for water quality problems such as elevated water temperatures.<sup>79</sup> Water quality impairment was analyzed in terms of

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<sup>79</sup> Bashar A. Sinokrot and John S. Gulliver, *Instream Flow Impact on River Temperatures*. Journal of Hydraulic Research, Vol. 38, 2000, No. 5. P1.

Department of Environmental Quality 303(d) listings for various issues like temperature, nutrients and turbidity.

- *Recent or Planned Restoration Projects*—A consideration that bolsters the case for an USFS reserved right are recent or planned restoration projects. If investments are already being made in a stream through other conservation actions, then naturally an USFS water right would compliment such efforts and safeguard these investments.
- *Identification in a Fish Conservation Plan*—An added justification for supporting the establishment of an USFS instream right is its identification in a fish conservation plan. If a stream has been identified in a fish conservation plan, such as a Northwest Power and Conservation Council sub-basin plan, it may be easier to justify the need for an USFS reserved right to support specific fish populations. In addition, USFWS critical habitat listings for bull trout and USFS management plans would also be useful documents to support the need for instream water protections.
- *Tributary to a Biologically Significant Stream*—An USFS water right can also be useful in helping to maintain flows in tributary streams that feed biologically significant water bodies. Biologically significant streams are defined as supporting the fish species identified in the compact for the purpose of this research. Restricting the development of water resources in the top of a watershed that supports a larger, more biologically significant stream or river can serve to provide predictable water flow, maintain water quality and fish habitat.
- *Access*—A final consideration voiced by some of the stakeholders familiar with collecting wetted perimeter data, was available access to the streams. If a stream does not have roads near or adjacent to it, conducting wetted perimeter measurements can be

time-consuming and costly. In addition, there is a substantial amount of equipment needed to collect wetted perimeter data that would likely prohibit hiking long distances off road. USFS streams without road access also tend not to have private land inholdings, which would reduce the potential for the development of water resources.

### *Analysis of Stakeholder Input*

Among the agency and non-profit stakeholders I interviewed, five out of the seven suggested that development pressures should be the primary consideration driving the prioritization efforts. Since an USFS reserved right only provides protections to the bottommost piece of USFS land on a stream, there needs to be private inholdings to justify protections. If there is no development possibility, meaning there is no private land upstream of the bottommost parcel of USFS land, then there is little practical purpose in establishing an USFS reserved right. Two of the interviewees suggested that biological criteria should be the driving considerations for establishing an USFS instream right. Most of the stakeholders agreed that the biological importance of a stream was a critical consideration, but was secondary to the potential for development. Criteria identified under existing protections and other considerations were evaluated as important, but secondary to development pressures and biological criteria. The reason that the stakeholders recommended water development risks as the most important stream evaluation category was likely due to the practical purpose of a USFS instream water right. If there are no private lands above or within a national forest where a water right can be established, there is almost no risk that water running through the forest could be impacted by a consumptive water use. A USFS instream water right serves little purpose if it does not protect against some potential water use. Although biological factors are important in supporting the

need for a USFS instream water right, practically a USFS instream right only serves a purpose if there is the possibility of a future water use that could impact the forest.

*c. Analysis and Discussion of the Ranked Stream List*

The criteria identified above were integrated into a ranking worksheet (Appendix C- Ranking Worksheet), which was used to score the importance of a USFS instream right for each stream in the list of recommendations. The final product associated with this effort was a list of ranked streams based on a score, notes about each stream relating to the fish species present and other unique information that influenced the scoring process (Appendix D- Ranked Stream List). In addition, each stream has an associated scoring worksheet and two digital maps. One digital map is a topographic map illustrating the general stream location derived from the MFISH database and the other digital map is a cadastral map of the property ownership along the stream. The intention of this additional information is to assist in any future efforts to refine the stream list or scoring.

Through the process of scoring the various streams, I noticed that most of the stream recommendations appeared to be driven primarily by biological considerations. This was expected since the individuals providing the recommendations were fisheries biologists and my primary job was to consider a wider range of values identified in the ranking worksheet. A few of the recommendations provided comments that went beyond solely biological considerations, although for the most part these considerations were identified from the MFISH and Cadastral data sources. Just under half of the recommendations received scores of 55 or less due to very little water development potential. If a stream does not have any private lands within or above the bottommost piece of USFS land, the water developments risks are nearly non-existent and

the need to establish a USFS right is low. In sorting through the stream list, there was a good deal of repetition in terms of duplicate recommendations and streams already enjoying USFS water right protections. In a few cases, there was no USFS land with a watershed and a score of zero was assigned to the stream.

The 50 highest ranked streams all possessed a diverse combination of the considerations identified in the ranking worksheet. All of these were biologically significant streams and rivers that contained some degree of water development risk. The highest ranked streams typically contained bull trout, mixed ownership, were identified in a fish conservation plan, had reasonable access, there were existing restoration projects, they were significant fisheries for anglers and were tributaries to other biologically significant streams. Among the existing protection criteria, which detracted from a score, very few stream received negative points beyond the closed basin consideration. This illustrates the lack of existing protections for instream flows in Montana.

#### *d. Areas for Improvement and Challenges*

There were some areas in which future research could improve the available data sources and ranking procedure. This study relied primary upon information from fisheries biologists, the MFISH database and the Montana Cadastral database. To improve the study or to refine the recommendations in the future, additional data sources might be used and a more diverse selection of recommenders might be surveyed. A survey of recommendations from water rights experts in the State and a broader audience of fisheries experts would likely have potentially bolstered the information about water development risks and identified additional streams benefitting from a USFS water right. Additionally, a water rights analysis of each stream would



improve the information needed to make informed decisions about specific types of water development risks and the potential for further water appropriation.

The study could also have been improved by providing more background information about the compact and its provisions in the stream recommendation request process. Many of the fisheries biologists responded with questions about the compact that illustrated limited knowledge of its primary provisions. There was a mutually agreed upon decision made by both the researcher and MTU to keep the recommendation request short and simple to improve the survey response rate. If the individuals surveyed responded with information requests, additional documents and explanations of the compact were provided. Additional information background information about the compact may have yielded stream recommendations that provided a wider range of considerations.

*e. Final Product*

The master stream list in addition to the supporting maps and ranking worksheets were provided to MTU for review and submission to the USFS (Appendix D- Ranked Stream List). The intention is that this list will help in identifying streams for future data collection efforts and USFS instream water right applications. MTU will also have detailed stream information and maps if additional background information is needed to justify its recommendations. The list is designed so that it can be updated and refined in the future as new information is available.

*f. Montana Trout Unlimited Steps in to Help*

While a great deal of attention can be focused on what did not occur in the compact, it is important to put the past behind and instead examine opportunities for the future instream

benefits on national forests in Montana. The most notable opportunity is the process of applying for future national forest instream rights.<sup>80</sup> The US Forest Service has 30 years from the signing of the compact or 30 years after the issuance of a final court decree adjudicating a basin (whichever is later) to establish an instream right. This limit makes it extremely important that timely USFS water rights are established in adjudicated basins in the State. As of June 30, 2008, of the total 85 basins in the State, only six basins have final court decrees issued.<sup>81</sup> The Montana Legislature in 2005 passed HB 22, which established a deadline of 2020 to issue preliminary court decrees and speed up the adjudication process of examining the remaining 57,000 water right claims across 32 basins in the state.<sup>82</sup> With the State aggressively pursuing adjudication of water claims, it is important that the US Forest Service allocate the necessary resources towards establishing instream water rights on national forest lands.

Montana Trout Unlimited has taken a keen interest in accelerating this process. MTU is a non-profit organization with the mission of “conserving, protecting and restoring Montana’s coldwater fisheries and their watersheds.”<sup>83</sup> The organization represents approximately 3,000 members and 13 chapters of TU in Montana.<sup>84</sup> Naturally, its mission compliments the efforts of the USFS to establish protection of water resources for fisheries values on national forest lands. Bruce Farling, Executive Director of Montana Trout Unlimited was involved early in tracking the compact negotiations and provided comments in response to the draft compact. While MTU

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<sup>80</sup> Water Rights Compact State of Montana United States of America, Department of Agriculture, Forest Service. Available from <http://data.opi.mt.gov/bills/mca/85/20/85-20-1401.htm>; Internet; Accessed 11 February 2010, Article VI, B.

<sup>81</sup> Montana Water Adjudication Bureau, “Montana General Adjudication Basin Status- through June 30, 2008” Available from [http://dnrc.mt.gov/wrd/water\\_rts/adjudication/adjstatus\\_report\\_7-2008.pdf](http://dnrc.mt.gov/wrd/water_rts/adjudication/adjstatus_report_7-2008.pdf); Internet; Accessed 6 December 2008.

<sup>82</sup> Montana DNRC Water Resources Division, “HB-22 Simplified,” Available from [http://dnrc.mt.gov/wrd/water\\_rts/adjudication/HB22/simplified.asp](http://dnrc.mt.gov/wrd/water_rts/adjudication/HB22/simplified.asp); Internet; Accessed 6 December 2008.

<sup>83</sup> Montana Trout Unlimited, 2009 Annual Report.

<sup>84</sup> Montana Trout Unlimited, “Who We Are,” Available from: [http://www.montanatu.org/who%20we%20are/who\\_we\\_are.htm](http://www.montanatu.org/who%20we%20are/who_we_are.htm); Internet; Accessed 15 February 2010.

provided some strong critiques of the draft compact, it has remained committed to working closely with the USFS to achieve mutual objectives for instream flow protections. In fact, the USFS invited MTU to assist in identifying priority streams during the compact negotiation; however, of the 750 streams originally identified, water rights were only issued on 77 streams due to limited wetted perimeter streamflow data. Following the compact negotiation, the USFS has continued to solicit advice from MTU for priority streams.

Aside from streamflow recommendations, MTU expressed an interest in playing a greater role in facilitating this agency driven process. Based on my expertise in Montana water law and involvement with other water related non-profits, I was hired as an intern at MTU in 2008 to look into potential avenues to move this effort forward and help MTU in developing a prioritized list of future stream recommendations. To assist with this effort, I met with the primary stakeholders, the USFS and DNRC, to identify the needs of each party in accelerating the water right application process. The USFS addressed three primary needs: more wetted perimeter data, increased staffing for submitting applications and a strategic approach to selecting future streams.<sup>85</sup> The USFS and DNRC discussed delays in processing the initial applications, although there did not appear to be any needs addressed in this process that MTU could be of assistance. The expectations of the application process had been clarified and worked out among the parties. The primary limitation associated with the application process addressed by the USFS was the limited staffing dedicated to this effort. The allocation of USFS staffing towards this effort appears to be a major constraint in moving USFS water right applications forward in an accelerated manner.

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<sup>85</sup> Tim Sullivan, Former Water Team Leader, United States Forest Service Northern Region. Personal Communication. September 24, 2008.

Unfortunately the US Forest Service has very little available wetted perimeter data available on streams running through national forests in Montana. In the years following the compact, the USFS was only able to collect data on a couple of streams a year in addition to relying on Montana FWP to provide additional data. Collecting wetted perimeter data necessary to file water right applications under the compact is extremely time consuming. In addition, collecting usable wetted perimeter data requires hiring experienced field technicians. If more than a five percent deviation is found in a series wetted perimeter measurements, then the data are considered unusable.<sup>86</sup> Given the rigorous constraints of this measurement approach and its costly nature, the USFS has only invested modest resources into collecting new data for this effort.

The US Forest Service identified a need for establishing a more strategic approach to applying for new water rights. With so many streams across the state, it is challenging to know exactly which streams might benefit the most from a USFS right. Most of the USFS rights that have been established to date were prioritized primarily due to the availability of wetted perimeter data. As the USFS tries to make the best use of its limited resources for new data collection, it is essential that it consider multiple values and establish rights where they are needed most.

The DNRC did not have many suggestions for accelerating the application process besides maintaining strong lines of communication on applications through a pre-review process. Although very few applications have been submitted to date, DNRC was not concerned with its capacity to process applications or flag potential issues. In fact, DNRC initially dedicated one full-time employee to the sole task of processing USFS applications. Until the USFS starts

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<sup>86</sup> Jed Simon, Water Team Leader, United States Forest Service Northern Region. Personal Communication. October 9, 2009.

submitting applications at a much larger volume, it is unclear whether there are any obstacles for DNRC that would delay its processing of applications.

*g. What can MTU do to help address these needs?*

This study concludes that the primary constraint to accelerating the USFS water rights application process currently is a lack of resources to collect data and file applications. The US Forest Service presently allocates very modest resources towards collecting new wetted perimeter data essential for future instream applications. However, an effort to expand this work is beginning to occur.<sup>87</sup> To assist with these constraints, MTU might provide financial assistance to collect more wetted perimeter data. As a non-profit with a small staff and budget, providing financial assistance in a meaningful way appears unlikely. However, in 2009 MTU secured a \$20,000 grant through the Montana Natural Resources Damage Program (NRDP) to collect streamflow data in the Upper Clark Fork River Basin for future USFS instream rights. This effort resulted in data collection on 10 tributaries and the USFS is in the process of preparing instream water right applications. This investment in data gathering helped to strengthen the MTU's commitment to working with the USFS to achieve mutual goals of water right protections. While continued financial assistance at any significant level by MTU is unlikely, this small gesture to facilitate this effort may have helped gain trust and raise awareness of MTU's commitment to furthering this process.

Another way MTU might help with the data constraint is to improve the sharing of information among agencies. Montana Fish Wildlife and Parks also collect wetted perimeter data on many streams throughout the state. In fact, FWP has already started collecting new data

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<sup>87</sup> Jed Simon, Water Team Leader, United States Forest Service Northern Region. Personal Communication. October 9, 2009.

in recent years in circumstances where it benefits the agency and can potentially yield a USFS reserved water right. Continuing to ensure that available data is being shared openly and that agencies work together to meet multiple needs in their collection efforts appears to be a potential avenue for assistance by MTU. MTU might communicate with USFS supervisors at a state and national level about the importance of this issue on behalf of its constituents to raise awareness of the issue and push for a greater investment of resources by the USFS. TU forms of forms of public communication such as opinion articles may also be a way to address the importance of this issue. In addition, educating members of MTU as well as other conservation organizations about the issue could help to raise the level of public awareness.

An important role MTU can play in assisting the USFS is to provide guided recommendations of streams for future data collection efforts and water right applications. With limited staffing to collect new data and apply for water rights, it is essential that the streams with the potential to benefit the most from an instream right receive these protections first. As an organization that closely tracks water issues across Montana, MTU is ideally situated to provide recommendations. In response to USFS requests in 2007 and 2008, MTU provided a brief list of recommendations to the USFS with the intention of providing a more comprehensive list in the future.<sup>88</sup> To initiate this larger effort, MTU supported and guided much of the research described in this study.

#### *h. Next Steps for the US Forest Service Across the Nation*

Securing water rights for instream purposes is important because it provides permanent protections against future water developments and important ecosystems that depend on reliable freshwater supplies. National forests are integral for supplying clean ground and surface water

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<sup>88</sup> Bruce Farling, Executive Director, Montana Trout Unlimited. Personal Communication. September 11, 2009.

for downstream communities in addition to fish and wildlife. Approximately 80% of the Nation's freshwater supplies originate on forests, which cover about one third of the Nation's land mass.<sup>89</sup> Much of this water is deposited on national forest lands and seeps into the ground. National forests provide recharge for aquifers in nearby valleys that many citizens depend on groundwater for drinking and irrigation water. Establishing surface water rights in tributaries to national forest lands will provide the USFS authority as a water right holder to object to nearby groundwater applications. USFS instream surface water rights will also help to protect unappropriated water from future consumptive uses. In terms of reducing potential conflict, is in the interest of senior downstream users to have the US Forest Service as an instream water right holder and potential objector to new junior consumptive water uses.

Thus, the US Forest Service does not currently have a well defined property rights to the water that runs through its lands. In the face of climate change and other factors that may change the availability of water resources, it is critical that the USFS clearly define its needs and rights, regardless of whether it is through state-based or federal reserved water rights. Part of defining the water rights of the USFS should be improving the definition of beneficial use. Many states do not even recognize instream flow as a beneficial use of water because it does not involve a diversion of water.

The US Forest Service needs to take the lead in clearly articulating how instream flow on national forest lands provides benefits for a host of reasons such as water quality, fish and wildlife. Good conservation planning should emphasize the vital roles that water plays on our national forests and beyond. Although its rights are vested in federal law and on federal lands, the USFS needs to take an active interest in shaping and promoting watershed health (through

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<sup>89</sup>Diana Apple, Max Copenhagen, Mike Furniss, James Sedell and Maitland Sharpe, *Water and the Forest Service*, (Washington D.C.:USDA Forest Service, January 2000), i.

the acquisition of water rights) beyond the arbitrary boundaries of the national forest. This study suggests that the USFS should be making a greater effort to articulate its water right goals in ways that emphasize it is trying to protect against damaging water uses for the common good and for the health of the waterways that many people share.<sup>90</sup> The USFS is not out to establish water rights out of malicious intent. Instead the organization is trying to meet many of the same objectives that states and nearby communities are worried about in terms of providing clean water for the future and healthy ecosystems. Focusing on these mutual interests might be more fruitful than engaging in litigious battles that are more about state versus federal power than water.

In addition to finding mutual interests for in stream water on national forest lands, the US Forest Service could be doing a better job dedicating resources for monitoring water resources and improved science on its forests. According to a USFS report, “claims on water originating from the National Forest System far outstrip the agency’s ability to track them, much less manage the issues.”<sup>91</sup> If the USFS cares so much about establishing reserved water rights, why is it not dedicating the resources to monitor and enforce illegal water uses on its lands? In addition, improving scientific knowledge of the importance of water for various ecosystem functions would bolster claims under the Organic Act for “securing favorable conditions of water flow,” which the courts have allowed for channel maintenance purposes when there is adequate evidence to support this purpose. The Montana Reserved Water Rights Compact Agreement highlights the need for better information about water resources on national forest land. In this negotiation, 750 streams were originally identified for water rights protections, but only 77

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<sup>90</sup> Eric T. Freyfogle. *Repairing the Waters of the National Parks: Notes on a Long Term Strategy*. Denver Law Review. Vol. 74. p.836

<sup>91</sup> Diana Apple, Max Copenhagen, Mike Furniss, James Sedell and Maitland Sharpe et al. *Water and the Forest Service*, (Washington D.C.:USDA Forest Service, January 2000). p.15.



streams could be protected with state based rights since that's all that the USFS had available streamflow information.<sup>92</sup> To establish future rights in Montana, the USFS is tasked with a tedious water right application process for each stream and only provided 30 years to submit its applications.

## **VI. Conclusion**

This analysis concludes that Montana Trout Unlimited has a tremendous opportunity to assist the process of establishing US Forest Service instream rights through its stream recommendations. This study furthers this effort by identifying streams in Montana that would benefit the most from these water right protections. The intention is for MTU to review and utilize this study in submitting future stream recommendations to the USFS. Providing a strategic list of streams for future protections will help ensure that water rights are secured where they are needed most.

Developing a range of considerations to evaluate the benefits of an instream water right for particular streams is also a contribution of this study. As other regions, agencies and Native American tribes negotiate compact agreements and prioritize internally the streams that they desire water right protections, the criteria identified in this study may assist in planning efforts. In addition, the worksheet developed through this research may also provide useful in other stream ranking and prioritization efforts.

Through conversations with the stakeholders this study identified constraints and needs associated with the process of establishing future water rights. It addressed capacity issues of both MTU and the USFS to invest time in this effort. Both MTU and the USFS have limited

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<sup>92</sup> Montana Department of Natural Resources and Conservation, "Water Rights Settlement," Available from <http://dnrc.mt.gov/rwrcc/Compacts/usdacompact/ExecutiveSummary.pdf> ; Internet; Accessed 5 December 2008.

staffing available to analyze streams across the state for instream flow protections. One of the primary purposes of this study was to assist this effort by allowing the USFS to focus its limited resources to collecting new data and applying for water rights. Clarifying the roles among this partnership between MTU and the USFS may result in more work accomplished and more stream protections. If the USFS is able to increase the volume of its water right applications, the third leg of the stool in this partnership will be DNRC's ability to process the applications in a timely manner. If a large backlog of applications occurs, MTU and the USFS may need to apply pressure on the state to uphold its agreement in the compact to an expedited water right application process.

If the USFS does not act upon these recommendations, the forest streams may suffer. MTU's support of this study is a testament to its dedication to supporting this effort. The current level of investment in this effort by the USFS is unacceptable given the limited timeframe of the compact to establish protections (30 years). A more coordinated effort to collect streamflow data among USFS regional offices needs to occur. Although this study provides recommendations to assist the USFS in making the best use of its limited resources, there are literally thousands of streams across the state that would benefit from FS water right protections.

Water is an essential ingredient in maintaining healthy forests and watersheds. It supports timber, fisheries, wildlife and clean water. The USFS has been provided the opportunity through its compact agreement to safeguard the water resources on its national forests in Montana beyond just timber needs. It also has an obligation to protect the public's forests from water development risks. If the USFS does not act in protecting this resource, aquatic health in our national forests may decline, species may disappear, water quality may worsen and recreational opportunities for angling and wildlife viewing may decline. Rather than

being reactive to these potential issues and spend millions of dollars in restoration, the USFS needs to take a proactive role in protecting the water resources on national forests.

Establishing water rights will enable the USFS to be a legal stakeholder in the water resources on national forest lands in Montana. This will allow the agency to object to new water right applications that may impact its instream rights. In addition, having the USFS as an additional instream flow water right holder will compliment the efforts of other agencies to monitor and track new water development risks. This may facilitate coordination among agencies for monitoring of water resources and improve enforcement of illegal water diversion activities.

More monitoring and research of the water resources on national forest lands needs to occur. Most of the data from this study relied on data collected by the state from streams adjacent to national forests. The USFS needs to more closely monitor streamflows and the fisheries national forests support. Better information about the role of water in our national forests will justify its importance in maintaining healthy ecosystem functions. In addition, better monitoring of its water resources would help protect against illegal diversions of water. The USFS needs to be more restrictive with its approval of special use permits for diversions of water on national forests. The threat of conditioning special use permits for bypass flows on water users within national forests can be an adequate tool for generating dialogue and developing alternative solutions that meet the forest's water needs. The public cost associated with dewatering streams through national forests should be a primary consideration. Cities that rely on clean, abundant drinking water that originates in headwater tributaries could face challenges if these water resources are extracted or impaired.

The Montana compact created a unique model and set a precedent for establishing future water protections that may be applied in other states engaging in US Forest Service compact negotiations. The USFS will likely enter future negotiations with the confidence that at least it can secure a process for securing future water rights. The process in Montana for establishing USFS water rights has the potential to create meaningful protections if the proper resources are invested in this effort. In addition to pursuing state based instream rights similar to the Montana example, the US Forest Service needs to work more collaboratively with state governments and existing water users. While the USFS has largely lost the legal battle for federal reserved rights for instream purposes, this does not mean it should abandon alternative approaches to protecting the Nation's water resources. Much can still be gained through collaborative processes by identifying mutual interests, securing state-based junior water rights, making investments in monitoring, and better communicating of the role of water in supporting healthy ecosystems and communities in and around our national forests.

## VII. References

- Adell L. Amos, "The Use of Instream Flow Laws for Federal Lands: Respecting State Control While Meeting Federal Purposes." *Environmental Law Journal*. Vol. 36. p.1244. (2006)
- Arizona v. California*, 373 U.S. 546 (1963)
- Bashar A. Sinokrot and John S. Gulliver, "Instream Flow Impact on River Temperatures." *Journal of Hydraulic Research*, Vol. 38, 2000, No. 5. P1.
- Bruce Farling, Executive Director of Montana Trout Unlimited. *Personal Communication*, September 25, 2008 and September 11, 2009.
- Bruce Farling and Laura Ziemer, "Re: TU Comments on draft Forest Service Reserved Water Right Compact," Available from [http://www.montanatu.org/issuesandprojects/correspondence%20files/TU%27s%20Final%20compact%20comments%20\\_2\\_.pdf](http://www.montanatu.org/issuesandprojects/correspondence%20files/TU%27s%20Final%20compact%20comments%20_2_.pdf); Internet; Accessed 8 December 2008.
- Bureau of Land Management, National Science and Technology Center, "Western States Water Laws: Montana Water Rights Fact Sheet," August 15, 2001, Available from: <http://www.blm.gov/nstc/WaterLaws/montana.html>. Internet; Accessed 21, February 2010.
- Creative Act of 1891*, 16 U.S.C 471, repealed.
- Clark Fork River Basin Task Force. "Managing Montana's Water: Challenges Facing the Prior Appropriation Doctrine in the 21<sup>st</sup> Century." July 2008. P.3. Internet; Available At: [http://dnrc.mt.gov/wrd/water\\_mgmt/clarkforkbasin\\_taskforce/pdfs/appropriation\\_paper.pdf](http://dnrc.mt.gov/wrd/water_mgmt/clarkforkbasin_taskforce/pdfs/appropriation_paper.pdf). Accessed 21 February, 2010.
- Department of Agriculture, Forest Service. "Water Rights Compact State of Montana United States of America," Available from <http://data.opi.mt.gov/bills/mca/85/20/85-20-1401.htm>; Internet: Accessed 11 February 2010.
- Diana Apple, Max Copenhagen, Mike Furniss, James Sedell and Maitland Sharpe, *Water and the Forest Service*, (Washington D.C.:USDA Forest Service, January 2000), p.i, ii, 15.
- Emelen G. Hall, "The Forest Service and Western Water Rights: An Intimate Portrait of United States v. New Mexico." *Natural Resources Journal*. Vol. 45. p.34 (Fall 2005)
- Eric T. Freyfogle. "Repairing the Waters of the National Parks: Notes on a Long Term Strategy." *Denver Law Review*. Vol. 74. p.845.
- Information Management Bureau of the Information Services Division of Montana Fish Wildlife and Parks, "MFISH Data Definitions," Internet; Available at: <http://fwpiis.mt.gov/content/getItem.aspx?id=29756>. Accessed; 27 February 2010.
- Jed Simon, Water Team Leader, United States Forest Service Northern Region. *Personal Communication*. October 9, 2009.
- John E. Thorson et al., "Dividing Western Waters: A Century of Adjudicating Rivers and Streams," *U. DENV. WATER L. REV.* Vol. 9. Issue 2. p.444. (Spring 2006).
- Jean A. Thomas, "An evaluation of Forest Service reserved water rights," M.A. Thesis, University of Montana, 1989, 20.
- Kelly J. Latimer, "Federal Reserved Water Rights Doctrine Under the Wilderness Act: Is it Finally Here to Stay?" *Journal of Land, Resources and Environmental Law*. 2000. P1.

Lois G. Witte, "Still No Water for the Woods"; Available from [http://stream.fs.fed.us/publications/PDFs/Still\\_no\\_water\\_for\\_the\\_woods.pdf](http://stream.fs.fed.us/publications/PDFs/Still_no_water_for_the_woods.pdf); internet; accessed 1 December 2009.

McCarren Amendment of 1952, 43 U.S.C 666

*Multiple-Use Sustained-Yield Act* of 1960, 16 U.S.C 528-531

Michael L. MacNamara and Tim Sullivan. "Forest Service Channel Maintenance Flows in the Klamath Basin." Available at: <http://www.stream.fs.fed.us/afsc/pdfs/McNamara.pdf>. Accessed December 1, 2009.

Missoula County Planning Board. "Preliminary Draft Growth Policy 2005 Update." Available from: <ftp://www.co.missoula.mt.us/opg2/Documents/LRCounty/GrowthPolicy/GPUUpdate/DraftsEtc/GovRev/PBChanges.pdf>. Internet; Accessed; 9 March, 2010.

Montana Code Annotated 85-20-1401(Article VI,B,b) (2007)

Montana Cutthroat Trout Technical Committee, "Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana," April 2007, pg. 5.

Montana Department of Administration and Revenue. "Montana Cadastral Mapping Project." Internet; Available at: <http://gis.mt.gov/>. Accessed; 27 February 2010.

Montana Department of Environmental Quality, "Clean Water Act Information Center, 2008 303(d) List." Internet; Available from: <http://cwaic.mt.gov/> Accessed; 27 February, 2010.

Montana Department of Natural Resources and Conservation, "Water Rights Settlement," Available from <http://dnrc.mt.gov/rwrcc/Compacts/usdacompact/ExecutiveSummary.pdf> ; Internet; Accessed 5 December 2008.

Montana Department of Natural Resources and Conservation, "USDA Forest Service/ Montana RWCC Agreement: Frequently Asked Questions and Answers," Available from <http://dnrc.mt.gov/rwrcc/Compacts/usdacompact/usfsfaqs.asp>; Internet; Accessed 5 December 2008.

Montana Department of Natural Resources and Conservation, Water Resources Division, "HB-22 Simplified," Available from [http://dnrc.mt.gov/wrd/water\\_rts/adjudication/HB22/simplified.asp](http://dnrc.mt.gov/wrd/water_rts/adjudication/HB22/simplified.asp); Internet; Accessed 6 December 2008.

Montana Department of Natural Resources and Conservation, Water Resources Division, "Montana Basin Closures and Controlled Groundwater Areas January 2009." Internet; Available at: [http://www.dnrc.mt.gov/wrd/water\\_rts/appro\\_info/basinclose-cgw\\_map.pdf](http://www.dnrc.mt.gov/wrd/water_rts/appro_info/basinclose-cgw_map.pdf) Accessed; 27 February, 2010.

Montana Fish Wildlife and Parks, "Cutthroat Trout Conservation Agreement." July 2007. P.5. Available from: <http://fwpiis.mt.gov/content/getItem.aspx?id=28662>. Accessed: 20 February, 2010.

Montana Fish Wildlife and Parks, "Montana Tourism and the Role of Fish and Wildlife," Available from <http://fwp.mt.gov/tmc/reports/tourism.html>; Internet; Accessed 7 December, 2008.

Montana Water Adjudication Bureau, "Montana General Adjudication Basin Status- through June 30, 2008" Available from [http://dnrc.mt.gov/wrd/water\\_rts/adjudication/adjstatus\\_report\\_7-2008.pdf](http://dnrc.mt.gov/wrd/water_rts/adjudication/adjstatus_report_7-2008.pdf); Internet; Accessed 6 December 2008.

Montana Water Policy Interim Committee, "House Bill 831 (2007)- Ground Water Appropriations in Closed Basins (Summary)," Available from [http://leg.mt.gov/content/Committees/Interim/2007\\_2008/water\\_policy/staffmemos/831summary.pdf](http://leg.mt.gov/content/Committees/Interim/2007_2008/water_policy/staffmemos/831summary.pdf); Internet; Accessed 7 December 2008.

*Organic Administration Act* of June 4, 1897, 16 U.S.C 473 et seq.

Pathfinder Project Steering Committee Report. "Strategies for Instream Flow Management." April 2004. Available from: <http://www.fs.fed.us/r2/gmug/policy/swa/PathfinderCompletedFinalSteeringCommitteeReport.pdf>. Accessed December 1, 2009.

Patrick Byorth, "A Proposal to Adopt Dual Minimum Flow Targets to Facilitate Instream Flow Reservations in Streams on U.S.D.A. Forest Service Land in Montana," *Trout Unlimited Western Watershed Project, 2007, 4-6*.

Perry Backus, "Troubled National Forest Waters," *Helena Independent Record*, 4 April 2006.

*Potlatch Corp. v United States*, 134 Idaho 912, 12 P3d 1256 (Idaho 2000).

Richard Bailey, "Oregon Department of Justice Memorandum on Klamath Adjudication." Oct. 1, 1999. Available from [http://www1.wrd.state.or.us/pdfs/kba\\_viiia\\_adv\\_pt1.pdf](http://www1.wrd.state.or.us/pdfs/kba_viiia_adv_pt1.pdf); internet, accessed 1 December, 2009.

Stan Bradshaw, "Forest Service, state agree on water compact," *Missoulian*, 18 April 2007.

State of Idaho. "Memorandum Regarding Matters Resolved By Court's Summary Judgment Order," *In the District Court of the Fifth Judicial District of the State of Idaho, in and for the County of Twin Falls*. Re SRBA, Case No. 39576. (1999).

State of Montana Water Resources Division, Water Right Bureau, "Montana's Basin Closures and Controlled Groundwater Areas," December 2003. P.6. Internet; Available at: [http://www.dnrc.mt.gov/wrd/water\\_rts/appro\\_info/basinclose-cgw\\_areas.pdf](http://www.dnrc.mt.gov/wrd/water_rts/appro_info/basinclose-cgw_areas.pdf). Accessed 21 February, 2010.

Stephen Leathe and Frederick Nelson, *A Literature Evaluation of Montana's Wetted Perimeter Inflection Point Method for Deriving Instream Flow Recommendations*, Montana Department of Fish, Wildlife and Parks, 1986, 1.

The Nature Conservancy, "Freshwater for Practitioners: ELOHA," Available from <http://www.nature.org/initiatives/freshwater/resources/art23977.html>; Internet; Accessed 5 December 2008.

Tim Sullivan, Water Team Leader, United States Department of Agriculture, Forest Service, *Personal Communication*, November 7, 2008 and September 24, 2008.

*TU v DNRC*, Montana Supreme Court (April, 2006)

*Wilderness Act* of September 3, 1964.. 16 U.S.C. 1131 (a).

*Wild and Scenic Rivers Act* of October 2, 1968. 16 U.S.C 1271

United States Department of Agriculture, Forest Service. "Summary of Technical Testimony in the Colorado Water Division 1 Trial (RM-GTR-270)." (1993). Available from: <http://www.stream.fs.fed.us/news/streamnt/jan96/jan96a1.htm>. Accessed December 1, 2009.

*U.S. v New Mexico*, 438 U.S. at 1061-1062 (1978)

U.S.C. Article IV, Clause 1.

*Winters v. United States*, 207 U.S. 564 and 577 (1908)

## VIII. Appendices

### *Appendix A- Fisheries Biologist Stream Recommendation Request*

Dear XXXX,

I am an intern working for Bruce Farling at Montana Trout Unlimited in Missoula on a project to assist the USFS in prioritizing streams that need instream flow water rights. The USFS as a result of their water rights compact negotiations with the State in 2006 established instream flow rights on 77 streams across the State. The Compact also established a process to apply for further instream rights.

Please take a moment to send me the top ten streams in your region (that flow through national forest at some point) that you think would benefit the most from a USFS instream flow water right. Any notes on why you chose these particular streams would be fantastic, but are not required. We are asking for input from regional fishery managers, biologists across the State and others.

In providing your list of priority streams please consider biological values, future water development risks and existing protections. In addition, keep in mind the following species listed in the Compact receive a higher inflection point using the wetted perimeter measurement methodology: westslope and Yellowstone cutthroat, bull trout, arctic grayling and Columbia River redband trout.

I look forward to your input and thank you for your time.

Sincerely,

Andy Fischer



## *Appendix B- Criteria Identification*

### Interview Questions:

1. Do you have any additions or suggestions on the proposed parameters for prioritization of streams? -- see below
2. Which parameters are most important and least important?
3. Do you have any thoughts regarding the limitations or opportunities of the Compact? Any comments on the process--what's working, what's not?

### Prioritization Methodology:

1. Biological
  - ESA Listed Species
  - 5 Species identified in the Compact
  - Native
  - Non-native
2. Potential for Water Development
  - real-estate (groundwater)
  - oil and gas
  - mining
  - irrigation
  - municipalities
  - recreation (ponds)
  - small hydro development
  - industrial
3. Existing Protection
  - closed basins
  - Murphy Rights
  - FWP Water Reservations
  - water leases
4. Other Considerations
  - level of appropriation
  - water quality impairment – DEQ 303(d)
  - wilderness designation
  - wild and scenic river study area

Appendix C- Ranking Worksheet

**MTU National Forest Instream Water Right Ranking Worksheet**

Stream Name: \_\_\_\_\_ National Forest: \_\_\_\_\_ River Basin: \_\_\_\_\_

| Ranking   | N/A or Unknown | Score (0-10) | Notes:  |
|---|----------------|--------------|---|
| <b>Biological Criteria</b>                        |                |              | (Add Points)  |
| Importance to ESA Listed Species                  |                |              | Bull Trout  |
| Importance to 5 Species Identified in Compact     |                |              | Bull Trout, Westslope Cutthroat, Yellowstone Cutthroat, Columbia River Redband, Arctic Grayling                       |
| Conservation Population                           |                |              | Genetically pure (over 90%) native species  |
| Introduced Wild Fish                              |                |              | Non-native species with sport fishing value   |
| Historical Presence                               |                |              | Not present, but evidence of past populations   |
| Important Habitat for Critical Life Stages        |                |              | life stage or history, including juvenile rearing value, juvenile migration, adult migration, spawning, adult holding |
|   | Subtotal:      | 0            |   |
| <b>Ground and Surface Water Development Risks</b> |                |              | (Add Points)  |
| Real-estate                                       |                |              | Potential land ownership change with ability for surface and groundwater development                                  |
| x Oil and Gas                                     |                |              |   |
| Irrigation  |                |              |   |
| Mining  |                |              |   |
| x Storage   |                |              | Development of fish ponds or other storage  |
| Industrial  |                |              |   |
| Mixed Ownership                                   |                |              | Multiple owners including private entities  |
| x Small Hydro                                     |                |              | Potential for small hydro development   |
| Potential for further Appropriation               |                |              | Is the watershed fully appropriated? Meaning, will a junior water right be served?                                    |
|   | Subtotal:      | 0            |   |
| <b>Existing Protections Criteria</b>              |                |              | (Subtract Points)   |
| FWP Water Reservations                            |                |              |   |
| Murphy Rights                                     |                |              |   |
| Closed Basin                                      |                |              | Streams closed to new surface and groundwater development   |
| Wilderness Allocation                             |                |              | Federally designated Wilderness Areas   |
| Instream Leases                                   |                |              |   |
|   | Subtotal:      | 0            |   |

| Other Considerations                           |           | (Add Points)   |
|--|-----------|--|
| Water Quality Impairment                       |           | Includes potential for impairment and existing impairment such as 303(d) listings                                      |
| Angler Use Availability/Significance           |           | Is this somewhere you can actually fish? Is it of high recreational value?   |
| Identified in a Fish Conservation Plan         |           | Do existing conservation plans identify this stream or watershed? Are they specific to aquatic species and conditions? |
| Recent or Planned Restoration Projects         |           | Are there planned or existing projects on this stream or watershed?  |
| Tributary to a biologically significant stream |           | Does this stream/river flow into a highly ranked/biologically significant stream?                                      |
| Access   |           | Is there reasonable access to conduct measurements?  |
|  | Subtotal: | 0  |
| Total Score:                                   |           | 0  |

Appendix D- Ranked Stream List

| Stream Name:                     | National Forest:                     | Sub Basin:        | Score | Species Present:                       | Notes:   |
|----------------------------------|--------------------------------------|-------------------|-------|--|--|
| Clark Fork River                 | Lolo National Forest                 | Clark Fork River  | 132   | Bull, Westslope, Brown, Brook, Rainbow | Lots of mixed ownership, FS land near Tarkio 303(d)  |
| Upper Blackfoot River            | Helena National Forest               | Blackfoot         | 115   | Bull, Westslope, Brown, Brook, Rainbow | Lots of good accessible FS land between HWY 141 and Lincoln. Suitable for Wetted P methodology??   |
| East Fork of Bitterroot          | Bitterroot National Forest           | Bitterroot River  | 110   | Bull, Westslope, Brown, Brook, Rainbow | Excellent downstream FS land w/in lots of mixed ownership. 303(d)  |
| Grave Creek                      | Kootenai National Forest             | Kootenai          | 110   | Bull, Westslope, Brook, Brown, Rainbow | Essential spawning habitat for Bull T, Identified in NWPCC Conservation Plan, Multiple Restoration Projects, Checkerboard landholdings within NF |
| Nez Perce Fork of the Bitterroot | Bitterroot National Forest           | Bitterroot River  | 100   | Bull, Westslope, Brown, Brook, Rainbow | Mixed ownership with large chunks of FS near bottom of watershed. Some hybridization.  |
| North Fork of Big Hole River     | Beaverhead Deerlodge National Forest | Big Hole River    | 100   | Grayling, Rainbow, Brown, Brook        | Lots of mixed ownership, section of FS land. FWP reservation. 303(d)   |
| SF Madison                       | Gallatin National Forest             | Madison Drainage  | 100   | Westslope, Brook, Brown, Rainbow,      | Lots of mixed ownership with FS parcels at the bottom of watershed. Excellent candidate for FS right.  |
| Skalkaho Creek                   | Bitterroot National Forest           | Bitterroot River  | 100   | Bull, Westslope, Brown, Brook, Rainbow | Mixed ownership with large chunks of FS near bottom of watershed. Some hybridization. 303(d)   |
| West Fork of Bitterroot          | Bitterroot National Forest           | Bitterroot River  | 100   | Bull, Westslope, Brown, Brook, Rainbow | Excellent downstream FS land w/in lots of mixed ownership.   |
| Grant Creek                      | Lolo National Forest                 | Middle Clark Fork | 95    | Westslope, Bull, Brown, Rainbow, Brook | Mixed ownership, possible hybridization of Bull trout, restoration projects, 303(d)  |
| Bear Creek                       | Flathead                             | Trib to           | 92    | Bull,                                  | Lots of development with mixed   |

|                 |                                 |                         |    |  |  |
|-----------------|---------------------------------|-------------------------|----|--|--|
|                 | National Forest                 | Middle Fork of Flathead |    | Westslope, Brook                             | FS parcels, throughout watershed, including bottom.  |
| Arrastra Creek  | Lolo National Forest            | Blackfoot               | 90 | Bull, Westslope, Brown, Brook                | Biologically significant, although only a tiny portion of the creek at the very bottom goes through FS, the rest is high in the watershed.             |
| Cache Creek     | Gallatin National Forest        | Shields River           | 87 | Yellowstone Cutthroat, Brown, Brook          | Lots of mixed ownership in top of watershed, with FS parcel below. Good candidate. 303(d)  |
| Blackfoot River | Lolo National Forest            | Clark Fork River        | 85 | Bull, Westslope, Brown, Brook, Rainbow       | No large tracts of FS land until Helmville. Upper Blackfoot River would be more suitable.  |
| Dry Creek       | Lolo National Forest            | Middle Clark Fork       | 85 | Westslope, Brown, Rainbow, Brook             | Subdivision, development within FS land, restoration projects, 303(d)  |
| Tom Miner Creek | Gallatin National Forest        | Upper Yellowstone       | 85 | Yellowstone, Brook, Brown, Rainbow           | Mixed ownership with FS parcel towards bottom of watershed. Lots of development pressure. Great candidate for FS right.                                |
| Brackett Creek  | Gallatin National Forest        | Shields River           | 82 | Yellowstone Cutthroat, Brown, Brook, Rainbow | Mixed ownership, FWP reservation, restoration projects.  |
| Quartz Creek    | Beaverhead National Forest      | Jefferson River         | 82 | Westslope Cutthroat, Brook                   | Important WCT population. Mining development concerns. Mixed ownership with FS land lower in watershed (on S Fork). 303(d)                             |
| Rock Creek      | Gallatin National Forest        | Yellowstone River       | 82 | Yellowstone Cutthroat                        | Mixed ownership and development with FS land. FWP Water Reservation. 303(d)  |
| Tenmile Creek   | Helena National Forest          | Missouri River          | 82 | Rainbow, Brook, Brown                        | Currently poor fisheries values, but restoration work occurring. Lots of mixed ownership w/FS land below. Mining claims. FWP water reservation. 303(d) |
| Beaver Creek    | Helena National Forest          | Missouri River          | 81 | Westslope, Brown, Rainbow, Brook             | Important Spawning trib of Missouri. Lots of mixed ownership w/ private at the top of watershed. Good candidate for FS right. FWP reservation.         |
| Rye Creek       | Bitterroot National Forest      | Bitterroot River        | 81 | Bull, Westslope, Brown, Brook, Rainbow       | Mixed ownership near top of watershed, some lower FS pieces. Biologically sig.   |
| Carpenter Creek | Lewis and Clark National Forest | Belt Drainage           | 80 | Westslope Cutthroat                          | Lots of mining claims and mixed ownership. Good access and FS land lower in watershed. 303(d)  |
| Grayling Creek  | Gallatin National               | Madison Drainage        | 80 | Westslope, Brook,                            | Mixed ownership with FS parcels throughout, including one at the   |

|                             |                                      |                            |    |  |   |
|-----------------------------|--------------------------------------|----------------------------|----|--|---|
|                             | Forest                               |                            |    | Brown, Rainbow, Bull, Westslope, Brook       | bottom. Excellent candidate.  |
| Hogum Creek                 | Lolo National Forest                 | Blackfoot                  | 80 | Bull, Westslope, Brook                       | Lots of mixed ownership and low FS land.  |
| Smith River                 | Lewis and Clark National Forest      | Missouri River             | 80 | Brown, Rainbow, Brook                        | Lots of mixed ownership, dewatering concerns. FS land in the middle of the watershed. FWP reservation and Murphy rights. 303(d) |
| Swamp Creek                 | Beaverhead Deerlodge National Forest | Wise River                 | 80 | Westslope, Rainbow, Brook, Brown             | Mixed ownership with FS lower in watershed. 303(d)  |
| Tamarack Creek              | Lolo National Forest                 | Middle Clark Fork          | 80 | Bull, Westslope, Rainbow, Brook              | Lots of mixed ownership w/FS holding parcel at the mouth. Genetically pure cutthroat.   |
| Upper Nevada Creek          | Helena National Forest               | Blackfoot                  | 77 | Bull, Westslope, Brown, Brook, Rainbow       | Only one parcel upstream/w/in FS Land. FS land high in watershed. Lots of restoration projects                                  |
| White's Gulch (White Creek) | Helena National Forest               | Missouri River             | 77 | Westslope Cutthroat, Brook                   | WCT population. Mining development concerns. Mixed ownership high in watershed.   |
| Cottonwood                  | Gallatin National Forest             | Shields River              | 76 | Yellowstone Cutthroat, Brown, Brook, Rainbow | Mixed ownership higher in watershed, FWP water reservation.   |
| Albert Creek                | Lolo National Forest                 | Middle Clark Fork          | 75 | Bull, Westslope, Brook,                      | Very small piece of FS property at bottom of watershed, lots of timberland upstream, bull trout, WCT genetically pure.          |
| Big Creek                   | Gallatin National Forest             | Yellowstone River          | 75 | Yellowstone Cutthroat                        | Some mixed ownership, FWP reservations and leases. Imp YCT stream. Some streamflow data.  |
| Cottonwood Creek            | Lolo National Forest                 | Blackfoot                  | 75 | Bull, Westslope, Brown, Rainbow, Brook       | Some FS towards the top of watershed, although protections would be limited. Biologically sig. Lots of restoration work.        |
| Hay Creek                   | Flathead National Forest             | Trib to N Fork of Flathead | 75 | Bull, Westslope                              | Mixed ownership with FS parcel at the bottom of watershed.  |
| Bitterroot River            | Bitterroot National Forest           | Clark Fork River           | 74 | Bull, Westslope, Brown, Brook, Rainbow       | Not much FS land along river. One or two very small parcels where a portion of the river flows through FS land.                 |
| Monture Creek               | Lolo National Forest                 | Blackfoot                  | 74 | Bull, Westslope, Brown,                      | FS land main in upper watershed and would only prohibit water development on one parcel. Very                                   |

|                                  |                                      |                            |    |   |  |
|----------------------------------|--------------------------------------|----------------------------|----|---|--|
|                                  |                                      |                            |    | Rainbow, Brook                                      | biologically sig. w/ lots of restoration.  |
| Muskrat Creek                    | Helena National Forest               | Jefferson River            | 74 | Westslope Cutthroat, Brook                          | Important WCT stream. Severe dewatering. Mining claims at top of watershed, BLM land intermixed, restoration projects.                                       |
| Whitetail Creek                  | Beaverhead Deerlodge National Forest | Jefferson River            | 72 | Westslope Cutthroat, Brown, Brook, Rainbow          | Important isolated WCT population. Downstream irrigation.  |
| O'Brien Creek                    | Kootenai National Forest             | Kootenai                   | 71 | Westslope, Bull Trout, Hybridized Bull/Brook, Brook | Lots of mixed ownership and development along creek including private timberland.  |
| Steel Creek                      | Beaverhead Deerlodge National Forest | Big Hole River             | 71 | Grayling, Westslope, Brown, Brook, Rainbow          | FS land mainly in top of watershed, no upstream private. FWP reservation, biologically sig. Potential Wetted P data. 303(d)                                  |
| Coal Creek                       | Flathead National Forest             | Trib to N Fork of Flathead | 70 | Bull, Westslope                                     | All private is in bottom of watershed, with no FS land below. Biologically sig., although protections wouldn't protect against water development downstream. |
| Crawford Creek                   | Lewis and Clark National Forest      | Belt Drainage              | 70 | Westslope, Rainbow, Brook                           | Private ownership in top of watershed. Good opportunity to prevent future water use.   |
| Emery Creek                      | Flathead National Forest             | Trib to Hungry Horse Res.  | 70 | Bull, Westslope                                     | No apparent development pressures, although biologically sig.  |
| Little Prickly Pear (north Fork) | Helena National Forest               | Missouri                   | 70 | Rainbow, Brown, Brook                               | Westslope??, dewatering, passage barriers. Mixed ownership and development with FS land below. 303(d)  |
| Mill Creek                       | Gallatin National Forest             | Yellowstone River          | 70 | Yellowstone Cutthroat, Brown, Brook, Rainbow        | Lots of mixed ownership, FWP reservations and leases.  |
| North Fork of Running Wolf Creek | Lewis and Clark National Forest      | Judith River Drainage      | 70 | Westslope Cutthroat, Brook                          | Very high priority. Mixed ownership.   |
| Petty Creek                      | Lolo National Forest                 | Middle Clark Fork          | 70 | Bull, Westslope, Brown, Rainbow, Brook              | Mixed ownership with large chunks of FS.   |
| Phillips Creek                   | Kootenai National Forest             | Trib to Sophie Lake        | 70 | Bull, Westslope                                     | FS land is at bottom of watershed, lots of private above and development pressure.   |
| SF                               | Gallatin                             | Shields                    | 70 | Yellowstone   | Mixed ownership in top of  |

|                    |                                      |                            |    |   |  |
|--------------------|--------------------------------------|----------------------------|----|---|--|
| Flathead Creek     | National Forest                      | River                      |    | Cutthroat                                   | watershed with FS parcel below.  |
| Whale Creek        | Flathead National Forest             | Trib to N Fork of Flathead | 70 | Bull, Westslope                             | All private is in bottom of watershed, with no FS land below. Biologically sig., although protections wouldn't protect against water development downstream.   |
| Mill Creek         | Lolo National Forest                 | Middle Clark Fork          | 65 | Westslope, Brook, Brown, Rainbow, Westslope | Recent restoration, important WCT spawning, no mixed ownership   |
| Prickly Pear Creek | Helena National Forest               | Missouri River             | 65 | Cutthroat, Brook, Brown, Rainbow            | Important WCT population. Residential water development concerns. Only FS is high in watershed, limited protections. 303(d)  |
| Landers Fork       | Helena National Forest               | Blackfoot                  | 62 | Bull, Westslope, Brown, Brook               | All FS land is high in watershed, no mixed although lots of private down low.  |
| Flathead Creek     | Gallatin National Forest             | Shields River              | 60 | Yellowstone Cutthroat, Brown, Brook         | FS land is very high in watershed, with a couple of private mixed parcels. FWP Water Reservation.  |
| Pintler Creek      | Beaverhead Deerlodge National Forest | Big Hole River             | 60 | Grayling, Westslope, Brown, Brook, Rainbow  | FS land only high in watershed, no private mixed. FWP water reservation.   |
| Sinclair Creek     | Kootenai National Forest             | Trib of Tobacco River      | 60 | Bull, Westslope, Rainbow, Brook             | Hybridized Westslope, No mixed private lands. FS land is solid in top of watershed. Imp bull trout spawning habitat.   |
| Ninemile Creek     | Lolo National Forest                 | Middle Clark Fork          | 57 | Westslope, Brown, Rainbow, Brook            | Lots of private ownership, although very little FS ownership until headwaters--questionable whether there could be any meaningful FS rights. Identified in recent restoration projects as important WCT spawning stream. |
| Warm Springs Creek | Bitterroot National Forest           | Bitterroot River           | 57 | Bull, Westslope, Brown, Brook, Rainbow      | Bottom is private; FS is only above one parcel.  |
| Flower Creek       | Kootenai National Forest             | Kootenai River             | 56 | Bull, Westslope, Brook, Rainbow             | Unknown extent to which diversions cause seasonal dewatering. FS land only in top of watershed, one state piece mixed in.  |
| Burnt Fork         | Bitterroot National Forest           | Bitterroot River           | 55 | Bull, Westslope, Brown, Brook, Rainbow      | Mixed Ownership, but no FS land lower in watershed. Protections wouldn't do much.  |
| McVey Creek        | Beaverhead                           | Big Hole River             | 55 | Westslope, Brown,                           | Mostly FS and State with only a couple private sections near the   |



|                |                                      |                                   |    |  |  |
|----------------|--------------------------------------|-----------------------------------|----|--|--|
|                | Deerlodge National Forest            |                                   |    | Rainbow, Brook                               | bottom. No private w/in or upstream of FS. 303(d)  |
| Shields River  | Gallatin National Forest             | Yellowstone River                 | 55 | Yellowstone Cutthroat, Brown, Brook, Rainbow | FS land is only in the top of the watershed with no upstream private. Protections would not do much.   |
| Sixmile Creek  | Lolo National Forest                 | Middle Clark Fork                 | 53 | Westslope, Brook, Brown, Rainbow, Bull,      | Lots of mixed ownership including upstream private timber, potential hybridization of WCT  |
| Alice Creek    | Helena National Forest               | Blackfoot                         | 52 | Westslope, Brown, Brook                      | All FS land is high in watershed, no mixed although lots of private down low.  |
| Big Creek      | Bitterroot National Forest           | Bitterroot River                  | 52 | Bull, Westslope, Brown, Brook, Rainbow       | Mixed Ownership, but no FS lands lower in watershed. Protections wouldn't do much.   |
| Cooney Creek   | Kootenai National Forest             | Swan Drainage                     | 52 | Bull, Westslope, Brook                       | Development risks. Private in bottom of watershed, but no mixed higher in watershed, only FS. No FS parcels below private.                         |
| Tobacco River  | Kootenai National Forest             | Kootenai                          | 52 | Bull, Westslope, Rainbow                     | Migratory for route for spawning Bull T, hybridized Westslope, ID in NWPCC conservation Plan, Lots of Development, Mixed FS parcels lower on River |
| Fishtrap Creek | Beaverhead Deerlodge National Forest | Wise River                        | 51 | Grayling, Brown, Brook, Rainbow              | 303(d)   |
| Gold Run Creek | Lewis and Clark National Forest      | Judith River Drainage             | 50 | Westslope                                    | Mixed ownership, possible mining, questionable access. Genetically pure Westslope.   |
| Good Creek     | Kootenai National Forest             | Stillwater River                  | 50 | Westslope, Brook, Rainbow                    | FS land is only in the top of the watershed with no upstream private. Protections would not do much.   |
| Hallowat       | Flathead National Forest             | Trib to Big Creek, Flathead River | 50 | Bull, Westslope                              | All FS Land. Little purpose for reservation.   |
| Kootenai Creek | Bitterroot National Forest           | Bitterroot River                  | 50 | Bull, Westslope, Brown, Brook, Rainbow       | Mixed Ownership, but no FS lands lower in watershed. Protections wouldn't do much.   |
| Miner Creek    | Beaverhead Deerlodge National Forest | Big Hole River                    | 50 | Grayling, Rainbow, Brown, Brook              | FS land only high in watershed, no private mixed. FWP water reservation. 303(d)  |

|                               |                                      |                       |    |  |  |
|-------------------------------|--------------------------------------|-----------------------|----|--|--|
| North Fork of Teton River     | Lewis and Clark National Forest      | Teton Drainage        | 50 | Westslope, Rainbow, Brook              | No mixed ownership higher in watershed.  |
| Savenac Creek                 | Lolo National Forest                 | Middle Clark Fork     | 50 | Westslope, Brown, Rainbow, Brook       | Mostly FS, w/ 2 private parcels near bottom. FS land at very bottom of creek. Potential hybridization of WCT   |
| West Fork of Cottonwood Creek | Lewis and Clark National Forest      | Smith Drainage        | 50 | Westslope                              | Very high priority. Irrigation and private land. Only one private owner higher in watershed. Access is questionable.   |
| Ray Creek                     | Helena National Forest               | Missouri River        | 47 | Westslope Cutthroat, Brook             | Important WCT population. FS land high in watershed, only 2 parcels in the North Fork mixed. FS land is only in the top of the watershed with no upstream private. Protections would not do much. 303(d) |
| Camas Creek                   | Helena National Forest               | Smith Drainage        | 45 | Westslope, Rainbow, Brook              | Important WCT population. Mining development concerns. Only a small parcel of FS in headwaters. No Private upstream. Primarily BLM and mining. 303(d)  |
| High Ore Creek                | Beaverhead Deerlodge National Forest | Jefferson River       | 44 | Westslope Cutthroat Bull,              | Mixed Ownership, but no FS lands lower in watershed. Protections wouldn't do much.   |
| Chaffin Creek                 | Bitterroot National Forest           | Bitterroot River      | 40 | Westslope, Brook                       |  |
| East Fork Big Spring Creek    | Lewis and Clark National Forest      | Judith River Drainage | 40 | Westslope, Brook, Brown, Rainbow,      |  |
| Fairy Creek                   | Gallatin National Forest             | Shields River         | 40 | Yellowstone Cutthroat, Brown, Brook    | FS land high in watershed, all private lower. Questionable access.   |
| Hyde Creek                    | Gallatin National Forest             | Madison Drainage      | 40 | Westslope, Brown                       | FS in top of watershed, rest is public land. Ditch on State land.  |
| Middle Fork Judith River      | Lewis and Clark National Forest      | Judith River Drainage | 40 | Westslope, Brook, Rainbow              | No private w/in or above FS. Little purpose for protections. FWP water reservation. 303(d)   |
| Tolan Creek                   | Bitterroot National Forest           | Bitterroot River      | 40 | Bull, Westslope, Brown, Brook, Rainbow | Only two private parcels at bottom, rest is FS and above private. Not much reason for WR.  |
| Wigwam Creek                  | Gallatin National Forest             | Madison Drainage      | 40 | Westslope                              | Lots of development in lower watershed, but no signs of FS land lower in watershed.  |
| Dayton Creek                  | Flathead National Forest             | Trib to Flathead Lake | 37 | Westslope, Brook                       | Very little FS land, limited to top of watershed. Lots of development below, but no FS land. Protections would do little.  |
| Hall Creek                    | Helena National Forest               | Missouri River        | 37 | Westslope Cutthroat, Brook,            | Important WCT population. No private lands w/in FS. Little purpose for establishing reserved   |

|                                  |                                      |                      |    |  |   |
|----------------------------------|--------------------------------------|----------------------|----|--|---|
|                                  |                                      |                      |    | Rainbow                                    | right.  |
| English George Creek (two forks) | Gallatin National Forest             | Madison Drainage     | 35 | Westslope, Rainbow, Brown                  | Very little FS land, limited to top of watershed. The rest is public land. Important WCT spawning stream.   |
| Hells Canyon Creek               | Beaverhead Deerlodge National Forest | Jefferson River      | 35 | Westslope, Brown, Rainbow, Brook           | Hybridized with rainbow. All FS land is in the top of watershed, FWP water reservation and leases.  |
| Little Willow Creek              | Lewis and Clark National Forest      | Sun River Drainage   | 35 | Westslope, Brook                           | Virtually no FS land.   |
| Wall Creek                       | Gallatin National Forest             | Madison Drainage     | 35 | Westslope, Rainbow, Brown                  | FS land in the top of watershed, private in bottom. Protections wouldn't do much.   |
| Woodward Creek                   | Flathead National Forest             | Trib to Swan River   | 35 | Bull, Westslope, Rainbow, Brook            | Very little FS land except in top of watershed, protections would do very little, despite mixed ownership lower in watershed.   |
| Tincup Creek                     | Bitterroot National Forest           | Bitterroot River     | 34 | Hybridized Bull Trout, Westslope, Rainbow, | FWP Leases, Only one private landowner not immediately adjacent.  |
| Halfway Creek                    | Beaverhead Deerlodge National Forest | Jefferson River      | 33 | Westslope Cutthroat                        | Strong WCT population w/slight hybridization, no private mixed in FS, very little use for FS right, existing FWP reservation  |
| Elk Creek                        | Gallatin National Forest             | Shields River        | 32 | Yellowstone Cutthroat, Brown               | Virtually no FS land, except a tiny bit at the top of the watershed that appears inaccessible. One parcel above in the watershed that has storage potential or could impact the small FS piece below. |
| Rumble Creek                     | Kootenai National Forest             | Swan Drainage        | 32 | Brook, Westslope                           | Development risks. Private in bottom of watershed, but no mixed higher in watershed, only FS. No FS parcels below private.  |
| Cabin Creek                      | Gallatin National Forest             | Madison Drainage     | 31 | Westslope, Rainbow, Brown                  | All FS Land. Little purpose for reservation.  |
| Half Moon Creek                  | Lewis and Clark National Forest      | Musselshell drainage | 31 | Westslope Cutthroat                        | Mixed Ownership, but no FS land lower in watershed. Protections wouldn't do much.   |
| East Fork of Haymaker Creek      | Lewis and Clark National Forest      | Musselshell drainage | 30 | Yellowstone Cutthroat, Westslope Cutthroat | FS land is high in drainage. No private mixed, all private is lower. Mixed in bottom of watershed, but no FS land, except higher.   |
| Sixmile Creek                    | Kootenai National Forest             | Swan Drainage        | 30 | Westslope Cutthroat                        | Limited use of protection.  |
| Suce Creek                       | Gallatin National                    | Yellowstone River    | 30 | Yellowstone Cutthroat,                     | FS land is all in top of watershed, no mixed higher up.   |

|                | Forest                          |                       |    | Rainbow, Brown        |  |
|----------------|---------------------------------|-----------------------|----|-----------------------|--|
| Beaver Creek   | Gallatin National Forest        | Madison Drainage      | 25 | Rainbow, Brown        | All FS Land. Little purpose for reservation.   |
| Pine Creek     | Gallatin National Forest        | Yellowstone River     | 25 | Rainbow, Brook, Brown | Potential for Yellowstone Cutthroat. FS in upper watershed, not mixed ownership.   |
| Trumbull Creek | Flathead National Forest        | Flathead River        | 25 | Westslope, Brook      | Potential dewatering. Hybridized, only tiny bit of FS in top of watershed.   |
| Cherry Creek   | Gallatin National Forest        | Madison Drainage      | 22 | Westslope, Rainbow    | One private parcel above FS. Mixed ownership.  |
| Jack Creek     | Gallatin National Forest        | Madison Drainage      | 20 | Westslope, Rainbow    | Virtually no FS land. 303(d)   |
| Lost Creek     | Lewis and Clark National Forest | Judith River Drainage | 20 | Westslope             | No private except at the bottom of the creek. Very short watershed.  |
| Pilgrim Creek  | Lewis and Clark National Forest | Belt Drainage         | 14 | Westslope, Brook,     | Watershed is almost all FS, with one very small parcel at the bottom. FS right would make more sense on Belt Creek itself. |

*Appendix E- Unranked Stream List*

| <b>Stream Name:</b>              | <b>National Forest:</b>              | <b>Sub Basin:</b>               |
|----------------------------------|--------------------------------------|---------------------------------|
| Albert Creek                     | Lolo National Forest                 | Middle Clark Fork               |
| Alice Creek                      | Helena National Forest               | Blackfoot                       |
| Arrastra Creek                   | Lolo National Forest                 | Blackfoot                       |
| Bear Creek                       | Flathead National Forest             | Trib to Middle Fork of Flathead |
| Beaver Creek                     | Helena National Forest               | Missouri River                  |
| Beaver Creek                     | Gallatin National Forest             | Madison Drainage                |
| Big Creek                        | Gallatin National Forest             | Yellowstone River               |
| Big Creek                        | Bitterroot National Forest           | Bitterroot River                |
| Bitterroot River                 | Bitterroot National Forest           | Clark Fork River                |
| Blackfoot River                  | Lolo National Forest                 | Clark Fork River                |
| Brackett Creek                   | Gallatin National Forest             | Shields River                   |
| Burnt Fork                       | Bitterroot National Forest           | Bitterroot River                |
| Cabin Creek                      | Gallatin National Forest             | Madison Drainage                |
| Cache Creek                      | Gallatin National Forest             | Shields River                   |
| Camas Creek                      | Helena National Forest               | Smith Drainage                  |
| Carpenter Creek                  | Lewis and Clark National Forest      | Belt Drainage                   |
| Chaffin Creek                    | Bitterroot National Forest           | Bitterroot River                |
| Cherry Creek                     | Gallatin National Forest             | Madison Drainage                |
| Clark Fork River                 | Lolo National Forest                 | Clark Fork River                |
| Coal Creek                       | Flathead National Forest             | Trib to N Fork of Flathead      |
| Cooney Creek                     | Kootenai National Forest             | Swan Drainage                   |
| Cottonwood                       | Gallatin National Forest             | Shields River                   |
| Cottonwood Creek                 | Lolo National Forest                 | Blackfoot                       |
| Crawford Creek                   | Lewis and Clark National Forest      | Belt Drainage                   |
| Dayton Creek                     | Flathead National Forest             | Trib to Flathead Lake           |
| Dry Creek                        | Lolo National Forest                 | Middle Clark Fork               |
| East Fork Big Spring Creek       | Lewis and Clark National Forest      | Judith River Drainage           |
| East Fork of Bitterroot          | Bitterroot National Forest           | Bitterroot River                |
| East Fork of Haymaker Creek      | Lewis and Clark National Forest      | Musselshell drainage            |
| Elk Creek                        | Gallatin National Forest             | Shields River                   |
| Emery Creek                      | Flathead National Forest             | Trib to Hungry Horse Res.       |
| English George Creek (two forks) | Gallatin National Forest             | Madison Drainage                |
| Fairy Creek                      | Gallatin National Forest             | Shields River                   |
| Fishtrap Creek                   | Beaverhead Deerlodge National Forest | Wise River                      |
| Flathead Creek                   | Gallatin National Forest             | Shields River                   |
| Flower Creek                     | Kootenai National Forest             | Kootenai River                  |
| Gold Run Creek                   | Lewis and Clark National Forest      | Judith River Drainage           |
| Good Creek                       | Kootenai National Forest             | Stillwater River                |
| Grant Creek                      | Lolo National Forest                 | Middle Clark Fork               |
| Grave Creek                      | Kootenai National Forest             | Kootenai                        |
| Grayling Creek                   | Gallatin National Forest             | Madison Drainage                |
| Half Moon Creek                  | Lewis and Clark National Forest      | Musselshell drainage            |
| Halfway Creek                    | Beaverhead Deerlodge National Forest | Jefferson River                 |
| Hall Creek                       | Helena National Forest               | Missouri River                  |
| Hallowat                         | Flathead National Forest             | Trib to Big Creek, Flathead     |

|                                  |                                      | River                      |
|----------------------------------|--------------------------------------|----------------------------|
| Hay Creek                        | Flathead National Forest             | Trib to N Fork of Flathead |
| Hells Canyon Creek               | Beaverhead Deerlodge National Forest | Jefferson River            |
| High Ore Creek                   | Beaverhead Deerlodge National Forest | Jefferson River            |
| Hogum Creek                      | Lolo National Forest                 | Blackfoot                  |
| Hyde Creek                       | Gallatin National Forest             | Madison Drainage           |
| Jack Creek                       | Gallatin National Forest             | Madison Drainage           |
| Kootenai Creek                   | Bitterroot National Forest           | Bitterroot River           |
| Landers Fork                     | Helena National Forest               | Blackfoot                  |
| Little Prickly Pear (north Fork) | Helena National Forest               | Missouri                   |
| Little Willow Creek              | Lewis and Clark National Forest      | Sun River Drainage         |
| Lost Creek                       | Lewis and Clark National Forest      | Judith River Drainage      |
| McVey Creek                      | Beaverhead Deerlodge National Forest | Big Hole River             |
| Middle Fork Judith River         | Lewis and Clark National Forest      | Judith River Drainage      |
| Mill Creek                       | Gallatin National Forest             | Yellowstone River          |
| Mill Creek                       | Lolo National Forest                 | Middle Clark Fork          |
| Miner Creek                      | Beaverhead Deerlodge National Forest | Big Hole River             |
| Monture Creek                    | Lolo National Forest                 | Blackfoot                  |
| Muskrat Creek                    | Helena National Forest               | Jefferson River            |
| Nez Perce Fork of the Bitterroot | Bitterroot National Forest           | Bitterroot River           |
| Ninemile Creek                   | Lolo National Forest                 | Middle Clark Fork          |
| North Fork of Big Hole River     | Beaverhead Deerlodge National Forest | Big Hole River             |
| North Fork of Running Wolf Creek | Lewis and Clark National Forest      | Judith River Drainage      |
| North Fork of Teton River        | Lewis and Clark National Forest      | Teton Drainage             |
| O'Brien Creek                    | Kootenai National Forest             | Kootenai                   |
| Petty Creek                      | Lolo National Forest                 | Middle Clark Fork          |
| Phillips Creek                   | Kootenai National Forest             | Trib to Sophie Lake        |
| Pilgrim Creek                    | Lewis and Clark National Forest      | Belt Drainage              |
| Pine Creek                       | Gallatin National Forest             | Yellowstone River          |
| Pintler Creek                    | Beaverhead Deerlodge National Forest | Big Hole River             |
| Prickly Pear Creek               | Helena National Forest               | Missouri River             |
| Quartz Creek                     | Beaverhead Deerlodge National Forest | Jefferson River            |
| Ray Creek                        | Helena National Forest               | Missouri River             |
| Rock Creek                       | Gallatin National Forest             | Yellowstone River          |
| Rumble Creek                     | Kootenai National Forest             | Swan Drainage              |
| Rye Creek                        | Bitterroot National Forest           | Bitterroot River           |
| Savenac Creek                    | Lolo National Forest                 | Middle Clark Fork          |
| SF Flathead Creek                | Gallatin National Forest             | Shields River              |
| SF Madison                       | Gallatin National Forest             | Madison Drainage           |
| Shields River                    | Gallatin National Forest             | Yellowstone River          |
| Sinclair Creek                   | Kootenai National Forest             | Trib of Tobacco River      |
| Sixmile Creek                    | Lolo National Forest                 | Middle Clark Fork          |
| Sixmile Creek                    | Kootenai National Forest             | Swan Drainage              |
| Skalkaho Creek                   | Bitterroot National Forest           | Bitterroot River           |

|                               |                                      |                            |
|-------------------------------|--------------------------------------|----------------------------|
| Smith River                   | Lewis and Clark National Forest      | Missouri River             |
| Steel Creek                   | Beaverhead Deerlodge National Forest | Big Hole River             |
| Suce Creek                    | Gallatin National Forest             | Yellowstone River          |
| Swamp Creek                   | Beaverhead Deerlodge National Forest | Wise River                 |
| Tamarack Creek                | Lolo National Forest                 | Middle Clark Fork          |
| Tenmile Creek                 | Helena National Forest               | Missouri River             |
| Tincup Creek                  | Bitterroot National Forest           | Bitterroot River           |
| Tobacco River                 | Kootenai National Forest             | Kootenai                   |
| Tolan Creek                   | Bitterroot National Forest           | Bitterroot River           |
| Tom Miner Creek               | Gallatin National Forest             | Upper Yellowstone          |
| Trumbull Creek                | Flathead National Forest             | Flathead River             |
| Upper Blackfoot River         | Helena National Forest               | Blackfoot                  |
| Upper Nevada Creek            | Helena National Forest               | Blackfoot                  |
| Wall Creek                    | Gallatin National Forest             | Madison Drainage           |
| Warm Springs Creek            | Bitterroot National Forest           | Bitterroot River           |
| West Fork of Bitterroot       | Bitterroot National Forest           | Bitterroot River           |
| West Fork of Cottonwood Creek | Lewis and Clark National Forest      | Smith Drainage             |
| Whale Creek                   | Flathead National Forest             | Trib to N Fork of Flathead |
| White's Gulch (White Creek)   | Helena National Forest               | Missouri River             |
| Whitetail Creek               | Beaverhead Deerlodge National Forest | Jefferson River            |
| Wigwam Creek                  | Gallatin National Forest             | Madison Drainage           |
| Woodward Creek                | Flathead National Forest             | Trib to Swan River         |

# Montana Cadastral Mapping Project

