Comments submitted via email to: 4FRI_comments@fs.fed.us
cc:afredette@fs.fed.us

August 11th, 2016

Attn: 4FRI Interdisciplinary Team
Coconino National Forest
1824 S. Thompson Street
Flagstaff, Arizona 86001

RE: 4FRI Rim Country Project Proposed Action Comments

Dear Mrs. Fredette,

Trout Unlimited (TU) is the nation's largest coldwater conservation organization with over 160,000 members, some 1,800 belonging to Arizona's council of four chapters. Our mission is to protect, conserve, and restore the nation's coldwater fisheries and their watersheds for the next generation. Because these watersheds provide the habitat for outstanding coldwater fisheries and are homes for high quality wildlife populations that are enjoyed by sportsmen/women and recreationists across the West, above all TU is dedicated to protecting and enhancing watersheds. The Four Forest Restoration Initiative (4FRI) Rim Country Project (RCP) is an outstanding opportunity to have a long-lasting and widespread positive impact on the landscape, and we are thankful for the opportunity to participate in the planning process. Trout Unlimited supports all the Rim Country Project needs, and hopes to provide input specifically to; improving terrestrial and aquatic species habitat, improving the condition and function of streams and springs; and the restoration of woody riparian vegetation.

Some of the most storied and productive coldwater fisheries in Arizona and vital watersources for thousands of people are found within the Rim Country Project Environmental Impact Statement (EIS) footprint. The project area is home to native Gila trout in conservation populations and recreation settings. We would like to see these resources protected, and we believe that the proposed forest restoration combined with thoughtful hydrologic rehabilitation can produce resilient, sustainable and highly functioning watersheds.

Upon review of the 4FRI Rim Country Proposed Action, Trout Unlimited has supplied recommendations to strengthen the subsequent Draft Environmental Impact Statement (DEIS) and work on the landscape. Two major concerns we would like to see addressed as the Rim Country Project moves forward; 1) The recommendation that *all* waterways – perennial, ephemeral, or intermittent – as well as upland dry

drainages, be eligible under the EIS to receive restoration and or improvements and 2) Prioritizing and formalizing evaluation of the hydrologic impacts to streams, aquatic ecosystems, and riparian areas *prior* to mechanical or fire restoration prescriptions in their watersheds. We feel that using soft infrastructure where needed throughout watersheds, combined with a robust monitoring program to assess impacts from forest restoration prescriptions would lead to the best possible outcome for the 4FRI Rim Country Project watersheds.

Major Concerns / Topics

Eligibility of all waterways to receive restoration and or improvements

In the Proposed Action on page 14, mileages are identified for stream channels (ephemeral), and stream habitat (perennial). These numbers are presented as the maximum to be evaluated for restoration or other physical work in riparian areas. We believe that it is unnecessary to: identify the maximum total number of miles for restoration, restrict potential locations for restoration, and separate the types of stream classifications and the corresponding restoration techniques. Instead, we recommend that the restoration and improvements on all drainages within the 4FRI Rim Country Project footprint be considered regardless of classification or form of implementation.

All drainages have an impact downstream and cumulative effects are greater moving down a watershed. Forest restoration treatments will be watershed wide and landscape scale, and as such, impactful to every collection of water regardless of size. We suggest a blanket approval of hydrologic management across the 4FRI Rim Country Project area, provided that it follows an evaluation for suitability and fits the best management practices and desired project conditions. If strict definitions of stream miles are necessary for the proposed action and subsequent EIS, at a minimum a re-evaluation of the mapping needs to happen. Local knowledge and other mapping efforts do not match the numbers in the Proposed Action, or in Figure 6.

Similarly restrictive is the separation between perennial and ephemeral or intermittent streams and the corresponding language of stream habitat and riparian improvements. Because watershed restoration does not fit neatly into these categories, the recommendations for restoration techniques and desired conditions should reflect the diverse ways of meeting the goal for a functioning watershed and waterway. What is good for a stream's hydrology is good for the fish and other aquatic biota of the riparian corridor. Likewise, restorative changes to dry upland drainages are intended to have the same desired effects of attenuating peak flows in abnormally large events, capturing sediment, promoting vegetative cover, and increasing groundwater infiltration. To separate these categories seems at odds with the rest of 4FRI's intention to be holistic and multifaceted.

If the divide between perennially wet, seasonally flowing, and intermittent steams needs to be in place, the definition needs to be strengthened, as does the reasoning for the split.

Evaluating watershed hydrology and aquatic ecology prior to forest treatments

Evaluation of hydrologic and ecologic impacts before mechanical or fire treatments is essential to the long-term success of the 4FRI Rim Country Project. As identified on page 26 of the Proposed Action, we strongly agree that hydrologic evaluations and aquatic ecosystem characterization must be done prior to any physical alteration of the landscape. This proactive decision will ensure the long-term health of the entire ecosystem at a watershed level. Trout Unlimited is a strong proponent of the proposed landscape level forest restoration; we believe it is the right course for the landscape and its users. By thoroughly evaluating the hydrology and aquatic ecosystems, especially macroinvertebrate assemblages in the drainages to be treated with forest restoration prescriptions, mitigation of potential negative effects and opportunities for positive improvements through adaptive management would be identified.

The RCP is full of unique spring fed, bedrock dominated waterways. Their hydrology is largely a product of feast or famine – flood events or spring fed baseflow. And though intrinsically dynamic, these creeks will be greatly impacted by what is done on the land they drain. On one hand, populations of fish like the Gila Trout of Dude Creek could be devastated by a single post burn flood as has happened before. On the other Canyon Creek's legendary brown trout could benefit from an influx of small gravel sediment in strategic locations, delivered, for example, after a disturbance to the surrounding forest. Knowing the specific hydrology and aquatic biota of each drainage, and what can help or hurt, will ultimately mean the success of Proposed Action's goals for aquatic systems, but also for the forest restoration prescriptions as a whole.

TU believes that upland forest treatments and inchannel restoration can go hand in hand, and that this Proposed Action and 4FRI Rim Country Project is an opportunity to match the proposed forest treatments with similar restoration to the hydrology for a mutually beneficial end. Actions like soft infrastructure channel design, habitat improvement projects, and tributary restoration would possibly offset any negative impacts, but also provide a basis for utilizing the changes to the watershed (from forest operations) for a positive hydrologic effect.

Though already identified in the Proposed Action, we would like to see a higher value put on the aquatic and hydrologic evaluations prior to forest management work and acknowledgement of the parallel importance of riparian and inchannel work to compliment the robust effort to restore the Rim Country's forest ecology.

General Comments

Monitoring

Monitoring and adaptive management are major components within the first 4FRI Project, however, the Rim Country Project Proposed Action does not define or outline how it would be used in the Rim Country Project. Monitoring of fish and wildlife resources is necessary for determining if restoration activities are effective, and that treatments are managed adaptively to avoid and/or minimize the potential for impacts to species and their habitat. The Arizona Game and Fish Department (AZGFD) has developed

and implemented stream habitat monitoring techniques within the project area. We believe the two agencies should partner with TU to continue to implement the appropriate monitoring techniques.

Trout Unlimited promotes and supports citizen science based application of monitoring techniques. Our local membership stands ready to aid the Forest Service in these protocols. We strongly urge the Forest Service to take advantage of these partnerships specifically for stream temperature monitoring and macroinvertebrate sampling. In the past the Arizona council and TU chapters have procured funding to do stream temperature monitoring, and would like to continue as partners in this area.

Collaboration and data sharing is crucial to the bottom line of aquatic ecosystem health in the RCP. Projects like the Rocky Mountain Research Station's NorWeST[1] are putting together large datasets of stream temperatures which could serve as a host or model for this scenario. Trout Unlimited suggests the creation of a local initiative to work toward a useful stream temperature monitoring program that can engage local partners, provide meaningful scientific contributions to managing agencies, and accumulate the best possible information for the management of the resource.

Macroinvertebrates in aquatic ecosystems are well documented indicator species. As a proxy for overall watershed health and a reliable indicator of major disturbance, especially without continuous water quality monitoring, benthic macroinvertebrates should be included in monitoring protocols and partnerships.

Socio-economic contributions of sporting tradition

Arizona has a rich history of sporting tradition. The Rim Country is widely considered the heart and soul of the coldwater fisheries in the state. In 2015, according to a report by Southwick and Associates[2], Arizona's first congressional district saw a total of 90,000 anglers, an economic multiplier effect of $155 million, and supported 1,200 jobs from fishing alone. Like fishing, all forms of traditional sporting recreation are greatly impacted by land management decisions. We hope that the outdoor recreation economy in the RCP area is considered when making decisions for forest treatments.

Native species

Trout Unlimited has interest in all coldwater fisheries, but would like to highlight the existing populations for native trout recovery efforts in the 4FRI RCP. Conservation of southwest native fish was identified in 2015 as a priority initiative by Trout Unlimited's strategic plan. Trout Unlimited's southwest native trout initiative will provide additional focus and funding opportunities for recovery of native trout within the project area. For decades, volunteers and staff have been working in partnership with the Forest Service and Arizona Game and Fish Department among other partners to support the recovery of Apache and Gila trout in their original ranges across the state.

[1] http://www.fs.fed.us/rm/boise/AWAE/projects/NorWeST.html
[2] Economic Contributions of Recreational Fishing: U.S. Congressional Districts, Southwick Associates, October 2015, http://asafishing.org/uploads/Congressional_District_Sportfishing_Impacts_2015_Report.pdf

Where appropriate, TU supports the pursuit of conservation and recreation populations of native fish in their native ranges. In the case of the RCP, Gila trout exist in small numbers currently, and Apache trout may be of future consideration for reintroduction. TU suggests that any indications of Apache trout found within the EIS analysis area be reported to the recovery team and AZGFD.

Comments to Purpose and Needs

Undesirable Fire Effects (p. 4)

Trout Unlimited agrees with the need for reduction of potential post fire effects. The Proposed Action identifies that a change in fire regime can help to offset risks, but fails to note that so can properly functioning and healthy streams and riparian areas. We suggest that multiple ways to reduce risk be noted, in this case the complimentary proposed hydrologic restoration.

Comments to Desired Conditions

Trout Unlimited generally agrees with the statements in the Desired Conditions section. Specifically, the section about upland treatments providing increased flows downstream and cooler water temperatures we feel should be elaborated on in the Proposed Action and Treatments sections. These types of treatments have been documented by L. M. Norman Et Al. [3] to show positive hydrologic response in similar conditions.

Though explained through individual pieces of hydrology, there is not sufficient discussion about overall watershed health in the Desired Conditions. By simply stating that riparian streams need be capable of filtering sediment and transporting bedload, it does not address the need for moving watershed condition and function from non-functioning or at risk designations to properly or highly functioning conditions. As outlined in the Riparian Streams section of 4FRI RCP Proposed Action's page 9, "*Many riparian streams in the Rim Country project area, are currently non-functioning or functioning-at-risk, with accelerated erosion and increased peak flows."* If the goal of the Proposed Action as detailed on page 13 is to, "*make the forest more resilient to natural disturbances such as fire, insect and disease, and climate change*," then watershed and riparian health should follow the same logic and would necessitate goals of systems which can handle the immediate impacts of forest restoration treatments but also the larger flood events predicted post burn or in more severe climate change scenarios. This is important not only to wildlife, but also the human communities of the Rim Country.

Trout Unlimited would like to highlight the importance of wet meadows in the Rim County landscape. As noted in the Existing Conditions section, page 8, there are places on the forest which have shown meadow function change from wet conditions to dry due to erosive gullies and encroaching trees, causing poor soil condition and loss of vegetative diversity. But most impactful in these scenarios is the loss of water

[3] Norman, L. M., Brinkerhoff, F., Gwilliam, E., Guertin, D. P., Callegary, J., Goodrich, D. C., Nagler, P. L., and Gray, F. (2016) Hydrologic Response of Streams Restored with Check Dams in the Chiricahua Mountains, Arizona. River Res. Applic., 32:

storage high in watersheds[4]. These wet meadow systems are the source of annual baseflow for many waterways of the RCP footprint. These types of impacts are felt hardest in coldwater fisheries, and have serious implications to TU's organizational concerns. In accordance with those concerns and AZGFD recommendations, we ask for specific direction of wet meadow restoration in the Desired Conditions and Proposed Treatments.

Comments to Proposed Action

As referenced in the Main Arguments section of this document, the language around the Proposed Action's definition of riparian vs non-riparian is confusing and sometimes incorrect. Footnoted number 3 on page 14 states that ephemeral and intermittent streams do not have perennial groundwater or riparian vegetation. Trout Unlimited cautions against this distinction. Though we understand the desire to separate dry, upland drainages and lower lying wetter sites, information produced by this attempted distinction is incorrect in Figure 6.

In many of the streams defined as non-riparian on and below the rim there is typically year round groundwater, sufficient to support riparian vegetation. These riparian zones, although not used by fish year round, do provide corridors of migration during high flow events, are suitable habitat for many other species, and regardless of definition an important part of watershed and overall health of a stream[5].

Furthermore, these dry sections of otherwise ephemeral waterways will possibly see a positive influx of water post forest restoration. If so, the definitions of certain stream segments as laid out in the Proposed Action could possibly change during the lifespan of the EIS or the Forest Plans. It could be argued that to restore function to those non-riparian reaches would be to rewet them in some cases. Would the accomplishment of that goal remove them from the eligibility to do continued work on systems whose condition could still be improved? Because they should receive the same level of evaluation, and similar potential physical work, we would prefer all stream channels be treated similarly and more simply defined.

Trout Unlimited recognizes the differences between the upland dry drainages and the typical riparian corridors of the RCP footprint. However, we feel that putting a maximum length definition on the mitigation across the footprint, could lead to undesirable outcomes for overall stream health and aquatic wildlife communities.

Proposed Treatments

Grassland and meadow restoration (p. 25)

Not mentioned in the Proposed Treatment section is language specific to wet meadows. As mentioned above, these hydrologic features can have extremely important impacts to overall watershed and aquatic

[4] C.T. Hammersmark et al. 2008. Hydrologic effects of restoring montane meadows. River Res. Applic. 24:735-753.
[5] J.L. Ebersole et al. 2014. Predicting the occurrence of cold-water patches at intermittent and ephemeral tributary confluences with warm rivers. Freshwater Sci 34:111-124.

ecosystem health. In the subsequent DEIS, Trout Unlimited suggests the Forest Service identifies candidates and recommends management for the restoration and rewetting of historically wet meadows in the RCP landscape.

Trout Unlimited has been a partner on previous wet meadow restoration projects in the southwest. Similar techniques as listed by the Forest Service for upland erosion control can be used to restore the function of historically wet meadows, and in conjunction the watersheds they support. Please refer to the *Characterization and Restoration of Slope Wetlands in New Mexico* [6] for more information about these techniques.

Riparian Stream and Stream Channel Restoration and Stream Habitat Restoration (p. 26)

Trout Unlimited agrees that restoration is needed to restore watershed and stream function, but would like to add that both improvements to current conditions and increasing overall resiliency are of equal merit when evaluating potential future impacts to the watersheds of the RCP. Again, we stress the need for identification of overall watershed condition prior to specific treatment decisions for mechanical and fire forest treatments. Likewise, we see the Proposed Treatments for stream habitat and riparian and stream channel restoration to be very similar, and would likely use the same techniques to address both concerns.

We applaud the Forest's direction to emphasize soft infrastructure rather than structural. To best accomplish restoration of streams and drainages, we suggest examples of non-structural treatments be added with the other possible treatments listed, to a "toolbox" of approved Design Features, while still allowing for adaptive and creative solutions for situational prescriptions.

Conclusion

In a testimony to the Senate Committee on Agriculture, Nutrition, and Forestry, Trout Unlimited CEO Chris Wood reflected that, "The guiding principle of the federal government's action regarding wildfire—and all other management activities— should be to ensure the long-term ecological health of the lands and waters upon which we all depend."[7] The Four Forest Restoration Initiative and the Rim Country Project have an opportunity to accomplish a broad set of goals and directives. Trout Unlimited applauds the vision of these projects, and hopes our contributions to that vision are helpful. We are thankful to participate in the public input process for these important projects and decisions.

Though we believe that the forest restoration of the Rim Country is necessary and we trust in the process to guide that management, our goal is to see more importance put on the hydrology and aquatic ecosystems in the footprint, as you cannot have a healthy watershed without the cumulative health of the uplands and the waterways. Chris Wood also reminded the Senate Committee that Forest Service road and fish habitat projects have dropped from 250 to 40 in recent years, and that in 2015 alone watershed restoration projects were reduced by 35%. Trout Unlimited hopes this project will buck that trend.

[6] https://www.env.nm.gov/swqb/Wetlands/TechnicalGuides/02/SlopeWetlandTechnicalGuide02.pdf
[7] http://www.tu.org/blog-posts/chris-woods-full-testimony-on-fire-borrowing

Sincerely,

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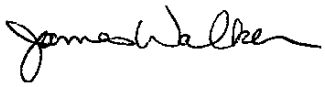
President, Grand Canyon Chapter Trout Unlimited, and Chairman, Arizona Council of Trout Unlimited



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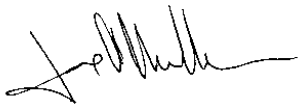

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