

**PROPER FUNCTIONING CONDITION ASSESSMENT  
OF THE  
RUBY MOUNTAINS, ZONE 1**

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August/September 2010**

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## EXECUTIVE SUMMARY

The Humboldt-Toiyabe National Forest, Ruby Mountains/Jarvis Ranger District has initiated a Proper Functioning Condition (PFC) Assessment of the Ruby Mountains as part of a Creeks and Communities Effort initiated by the Humboldt-Toiyabe National Forest, University of Nevada Cooperative Extension, the National Riparian Service, and the Nevada Riparian team. This report is for the first year of field work that focused on Zone 1 of the Ruby Mountains, geographically located on the Southwest side of the Ruby Mountains. The interdisciplinary team (ID Team) selected to carry out this assessment identified 23 creeks/drainages in Ecozone 1 (Table 1). Of those 23, 12 creeks were ephemeral and lacked sufficient riparian vegetation for PFC assessment. One creek, Brown, exceeded Rosgen slope parameters (too steep), leaving 10 creeks to be fully assessed. Riparian flora, potential plant communities were identified, and stream and hydrologic information were collected along 29 stream segments (reaches), totaling 39.14 miles.

We observed approximately 40 vascular plant species in the stream reaches of Ecozone 1. Most of the reaches were dominated by woody vegetation with numerous sedge and rush communities interspersed. Beavers are playing, or have played, a major role in the development of the existing condition of most of these creeks, with 24 reaches composed of a series of beaver dam complexes. Most of the creeks in this part of the Rubies are relatively flat and narrow. Gradients are generally less than 5%, and have low to moderate sinuosity. These segments generally classify out as Rosgen stream type B (Rosgen, 1996). Some of the steeper segments classify out as A or G. Sands and gravels dominate the stream channel material. The low gradient segments, and abandoned beaver dam complexes have been filled in with dark, organic rich silts that are turning into productive meadows. The geomorphology of the landscape combined with the limited discharge from the springs results in narrow riparian systems, generally no more than 50 feet wide, with a few notable exceptions.

48 percent of the stream miles in Zone 1 are in Proper Functioning Condition (PFC). The remaining stream segments are either Functional – At Risk (FAR) (46 %) or Nonfunctional (NF) (6 %). North Fork Lindsey Creek and one reach of Toyn Creek are in the worst condition. North Fork Green Mountain and South Fork Mitchell Creeks are in the best condition. Most of the longer multiple reach creeks have reaches that are both in PFC and FAR.

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## INTRODUCTION

In August of 2010, the Ruby Mountains PFC ID Team, with assistance from the National Riparian Service Team (NRST) conducted a PFC assessment of the Southwestern end of the Ruby Mountains. The 118,149 acre area is comprised of over 15 separate watersheds originating on National Forest lands and flowing westward off the forest onto BLM and private lands. The ID team is comprised of a range/vegetation specialist, hydrologist, fish biologist, and soil scientist. After one week of initial field training by the NRST, as part of the Creeks and Communities effort to bring the stakeholders together and develop a more collaborative approach to NEPA planning, a community workshop was held on August 17 and 18 to bring the diverse group of stakeholders together with the Ruby Mountains PFC ID team and the NRST to develop a common understanding of the PFC process. The goal was to encourage the stakeholders to participate with the ID team in conducting the PFC assessments. Grazing, both sheep and cattle have long occurred in the Ruby Mountains with many of the permittees having a long history in these mountains. Their participation in the field with the ID team provided the team with valuable history in the management and use of the different allotments and watersheds.

The Ruby Mountains PFC ID team and selected members of the National Riparian Service team, with the stakeholders and cooperators (University of Nevada state Cooperative Extension Service, Nevada Department of Wildlife, Nevada State Creeks and Communities Team, Jiggs Conservation District, and Bureau of Land Management) observing on some of the reaches, conducted PFC assessments on 10 separate creeks in the 2010 survey area. These creeks were broken down into 29 separate reaches, resulting in 39.14 miles walked and

assessed. The results of this work are presented here in the document. Field forms completed for this project have been electronically entered and are available upon request from the Wells District office.

## METHODS

### Proper Functioning Condition Assessment

Proper functioning condition (PFC) is a qualitative method developed by the U.S. Bureau of Land Management and U.S. Forest Service to assess the condition of riparian-wetland areas based on hydrology, vegetation, and erosion/deposition (soils) attributes.

The riparian communities that the field team assessed are all lotic systems, which is a broad hydrological class that includes running water. A standard checklist that was developed for lotic systems has a list of 17 “yes/no” questions that are posed about the characteristics of the stream, resulting in one of three ratings that reflect stream resiliency: (1) proper functioning condition; (2) functional-at-risk; or (3) nonfunctional (Prichard, 1998).

A rating of “proper functioning condition” means that a stream is resilient, *i.e.*, the riparian-wetland area is stable during most high-flow events. A resilient stream produces desired values such as high quality fish, bird, and wildlife habitat. “Functional-at-risk” means the stream reach is currently functional, but is at risk of becoming non-functional due to an observed condition that could impact the reach in the future. “Non-functional” indicates that there is a condition in the reach or watershed interfering with the natural functions of the stream.

Using aerial photographs, and topographic maps, all creeks were identified in the survey area. Preliminary reaches were then broken out for each creek. (see Appendix 1) Creeks can have more than one reach. Noticeable changes in vegetation, geomorphology (landform) on the air photos, in addition to pasture fences found on allotment maps can result in separate of reaches. The field team then walked and surveyed each reach from the upper end and working downstream.

Keeping the questions of the checklist in mind each member of the field team collecting information on vegetation, hydrologic system, stream channel characteristics (Rosgen, 1996), erosion/deposition (soils), and floodplain, as well as location and potential impacts of natural and anthropogenic disturbances.

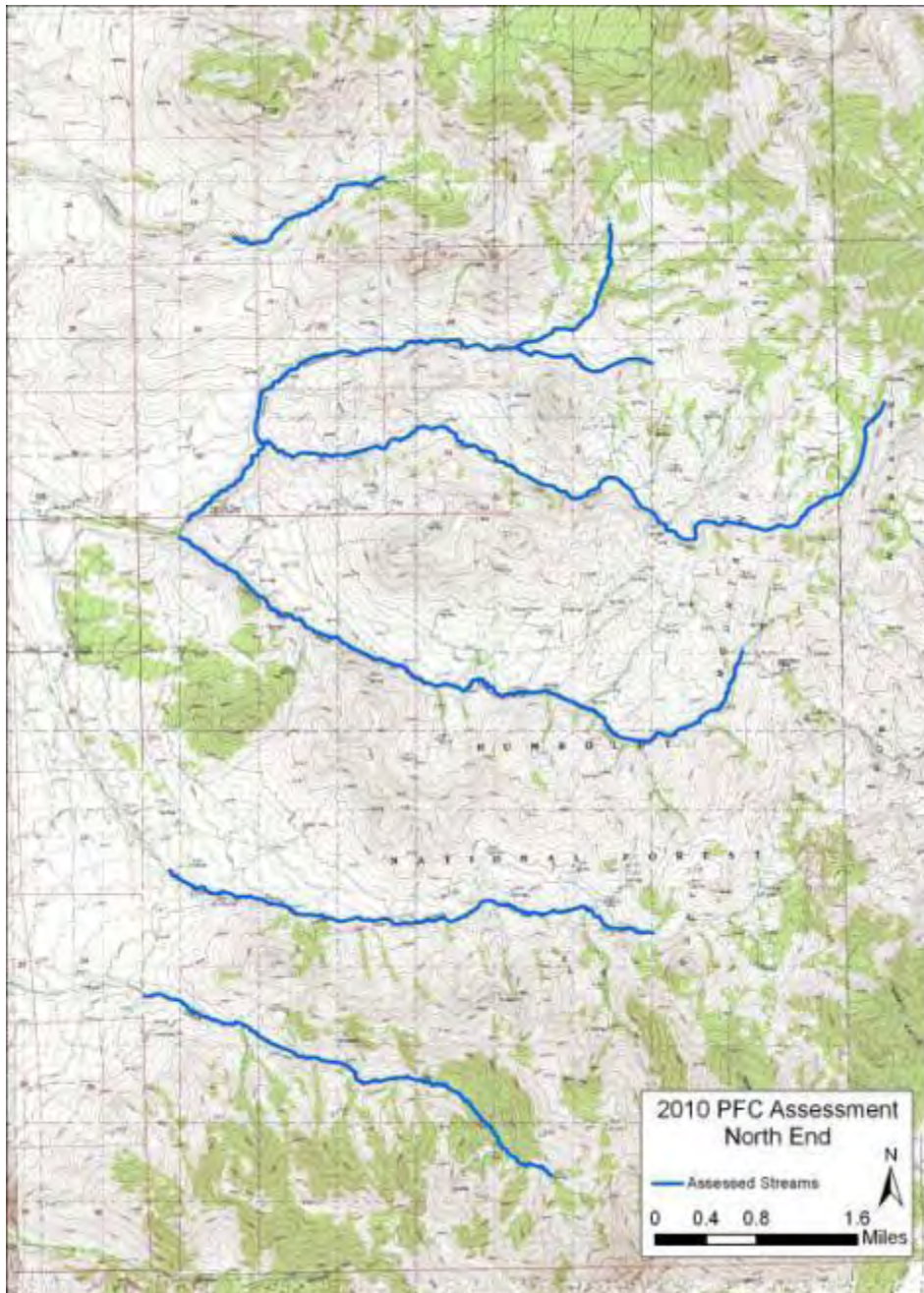
The locations of top and the bottom of the reach and anything significant were recorded using a Garmin Global Positioning System (GPS) handheld unit. The on-the-ground survey refined the actual size each reach. Some reaches were combined if no actual significant change in structure occurred or were broken out to smaller segments if the opposite were true. The minimum size of a reach is .25 miles. This is to prevent undue splitting up of the riparian zone.

Upon completion of each reach, the team immediately gathered, discussed, and collaboratively completed the checklist. Completing the checklist right after completing the reach ensured accurate responses since the data was fresh in the team members' minds.

## **RESULTS**

Our PFC assessment of the SW portion of the Ruby Mountains (Zone 1 - Map 1) took place between August 10 and August 31, 2010. Ten streams were surveyed, totaling 39.14 miles. Each stream was divided into shorter segments (reaches) to accommodate the PFC assessment methodologies (Pritchard, 1998). Twenty nine segments were assessed in the survey area (Table 2). Twenty three drainages were pre-delineated for survey during the pre-work. Twelve of those were reconnaissance surveyed and were determined to be ephemeral or riparian areas were determined to be too short (less than a quarter of a mile) to have a reach broken out. One creek, Brown creek, was determined to have too steep of a gradient and too narrow to have a PFC assessment. Three tributaries of our assessed streams were also reconnoitered and determined not to be significantly different from the assessed reach. Our assessment results are summarized in the following sections. Refer to the field form notebooks for more detailed information. Field forms and notes completed for this project have been electronically entered and are available upon request from the Wells District office.

Map 1. Ruby Mountains 2010 PFC map North part





Map 2. Ruby Mountains 2010 PFC map South part.





Table 1. Drainages surveyed during 2010 Field Season. Arranged from North to South.

<b>Drainage</b>	<b>Segment Code</b>	<b>Length (mile)</b>	<b>PFC/RECON</b>
Carville Creek	CARV01	0.91	PFC
	CARV02	1.1	PFC
	CARV03	0.47	PFC
	CARV04	4.3	Recon
North Fork Green Mountain	NFGM01	0.8	PFC
	NFGM02	1.24	PFC
	Tributary		Recon
Mid Fork Green Mountain	MFGM01	0.82	PFC
	MFGM02	0.3	PFC
South Fork Green Mountain	SFGM01	1.21	PFC
	SFGM02	1.7	PFC
	SFGM03	1.12	PFC
	SFGM04	0.95	PFC
	Tributary		Recon
Green Mountain Creek	GR01	2.41	PFC
	GR02	0.95	PFC
	GR03	2.53	PFC
	GR04	1.01	PFC
Toyn Creek	TOYN01	1.9	PFC
	TOYN02	3.7	PFC
	TOYN03	2.7	PFC
Corral Creek	CORR01	0.91	PFC
	CORR02	1.08	PFC
	CORR03	1.7	PFC
	CORR04	1.16	PFC
Pearl Creek	Upper watershed		Recon
	PERL01	1.07	PFC
	PERL02	1.2	PFC
	PERL03	0.8	PFC
	PERL04	1.2	PFC
Brown Creek	Rosgen Type "A": Drainage		Recon
North Fork Lindsey Creek	NFLI01	1.1	PFC
	Ephemeral		Recon
Middle Fork Lindsey Creek	Ephemeral		Recon
South Fork Lindsey Creek	Ephemeral		Recon

Cass House	Ephemeral		Recon
Belmont Creek	Ephemeral		Recon
North Fork Mitchell Creek	Ephemeral		Recon
South Fork Mitchell Creek	SFMI01	3.1	PFC
Washout Creek	Ephemeral		Recon
School Creek	Ephemeral		Recon
Sherman Creek	Ephemeral		Recon
Sestanovich Creek	Ephemeral		Recon
Willow Creek	Ephemeral		Recon
Walker Canyon	Ephemeral		Recon
Cherry Springs	Ephemeral		Recon

### **Riparian Flora**

We observed approximately 40 vascular plant species in the riparian zones of Ecozone 1. Species lists compiled in conjunction with the reach assessments identify the important plants that were observed at each reach (see Attachment 1).

### **Streams and Hydrology**

The majority of the stream channels that were assessed within Ecozone 1 of the Ruby Mountains PFC Pilot Project area would be classified as Rosgen “B” channels, meaning they are single thread stream systems that are moderately entrenched, have moderate width to depth ratios, moderate sinuosity, and slopes that range from 2 to 4 percent. The substrate within these channels is dominated by larger gravels and cobbles. Extensive beaver activity, both historic and current, was observed throughout the upper reaches of many of the streams. Historic beaver dam complexes have resulted in the creation of localized low gradient meadow systems with Rosgen “E” and “C” stream types present. The channels within these meadow systems had lower entrenchment ratios, varying width to depth ratios, higher sinuosity, and lower slopes than were observed within the more typical “B” channel types. The substrate within these channels was generally dominated by finer sized particles ranging from sands to gravels.

In reaches where a functional rating of less than PFC was assigned, the most common impairments related to stream channel morphology were higher than expected width to depth ratios, higher than expected levels of stream channel entrenchment, poor flood plain accessibility due to channel downcutting, and accelerated rates of streambank erosion. The impairments that were observed were usually the result of a localized activity and not caused by upland watershed processes. The most common Rosgen stream types in the functional at risk and non-functional reaches were over-widened “B” channels and downcut “G” channels.

Streamflow data has not been regularly recorded on the streams within the assessment area. However, upstream snowpack telemetry (SNOTEL) sites in the Ruby Mountains and downstream gages on the Humboldt River suggest that the streamflow regime is dominated by snow melt runoff, with peak flows occurring in the late spring and early summer.

### **Geology, Geomorphology, and Soils**

All the riparian areas that had PFC assessed on them came from springs emanating from bedrock. Granite dominated the headwaters of the Northern most drainages while limestone dominated the Southern end of Ecozone 1. Gneiss, schist, and metaconglomerates dominated the mid-elevations. The lower reaches were dominated by alluvial foothills. While some of the narrower portions of the drainages were structurally controlled by the bedrock dominated hillsides, there were numerous wider alluvial bottoms where the channel substrate was composed primarily of sands and fine silts.

The vegetative cover in these bottoms developed rich, dark, deep, fine-loamy soils. The low gradient of most of the drainages provided an opportunity for beavers to develop a series of dam complexes that provided a medium for the fines to get deposited and build up into rich meadows. Where the channel bottoms structurally controlled by the neighboring bedrock controlled hillsides, cobbles and stones littered the channel bottom. And, these were only in short stretches. Only in the upper reach of North Fork Green Mountain Creek did the channel flow over bedrock and large boulders and this was only for no more than 200 ft.

Through conversations with the permittees it was learned that back in the 1800's, 1000s of sheep and cattle dominated the hillsides resulting in the removal of all vegetation and exposing the bare soil to the elements. As a probable result, numerous deep, alluvial fans developed from the dry drainages on either side of the main channel. Observation of the exposed profiles of these fans show them being composed primarily of fine soils and few rocks, indicating large storm events washing off the barren hillsides into the fans we see today. These have constricted the width of the channel and direction of flow. In the intervening years the streams have attempted to reclaim their natural sinuosity resulting in deep bank cuts (up to 15 feet) in some of these fans. Notably, Corral and Pearl Creeks exhibit these geomorphic features.

Cut banks and downcut areas in lower Corral and Green Mountain Creeks show evidence of the water table having been closer to the surface, evidenced by gleyed soils and redoximorphic features exposed in the banks.

**Proper Functioning Condition Assessment Summary.**

Tables 2 and 3 summarize our Proper Functioning Condition assessment for the SW Ruby Mountains. Forty eight percent of the stream miles in Ecozone 1 are in PFC. The remaining stream segments are either Functional – At Risk (46 %) or Nonfunctional (6 %). Of those At Risk 33 % of the reaches are improving, 5 % shows no apparent trend, and 8 % are in decline. Pasture fences identify the reach breaks for most of these streams. Historic and current beaver activity factored into the ratings. A number of reaches have old and/or recently abandoned beaver dam complexes. While most have remained stable, some of the dams have been breached and drained either naturally or by human influence, resulting in incision of the interconnected stream, leaving vegetation free dried ponds, some appear to have been breached by human activity (historic blasting) leaving the streamside ecosystem at risk.

**Table 2.** 2010 functioning ratings for stream reaches in Ecozone 1, SW portion of Ruby Mountains. Rating abbreviations: PFC = Proper Functioning Condition: FAR = Functional – At Risk: NF = Nonfunctional

<b>Drainage</b>	<b>Segment</b>	<b>Length</b>	<b>PFC</b>	<b>FAR</b>	<b>Trend</b>	<b>Non Funct.</b>
Carville Creek	CARV01	0.91		X	Upward	
	CARV02	1.1	X			
	CARV03	0.47		X	Downward	
North Fork Green Mountain	NFGM01	0.8	X			
	NFGM02	1.24	X			
Mid Fork Green Mountain	MFGM01	0.82		X	Not Apparent	
	MFGM02	0.3	X			
Green Mountain Creek	GM01	2.41	X			
	GM02	0.95		X	Upward	
	GM03	2.53		X	Upward	
	GM04	1.01	X			
South Fork Green Mountain	SFGM01	1.21	X			
	SFGM02	1.7		X	Downward	
	SFGM03	1.12	X			
	SFGM04	0.95		X	Upward	
Toyn Creek	TOYN01	1.9	X			
	TOYN02 - Lotic	1.11				X
	TOYN02 - Lentic	2.59		X	Upward	
	TOYN03	2.7		X	Upward	
Corral Creek	CORR01	0.91	X			

	CORR02	1.08		X	Not Apparent	
	CORR03	1.7		X	Downward	
	CORR04	1.16		X	Upward	
Pearl Creek	PERL01	1.07		X	Upward	
	PERL02	1.2	X			
	PERL03	0.8		X	Upward	
	PERL04	1.2	X			
North Fork Lindsey Creek	NFLI01	1.1				X
South Fork Mitchell Creek	SFMI01	3.1	X			
	<b>Total</b>	<b>39.14</b>				

**Table 3.** Summary of 2010 Functioning Ratings in Ecozone 1, SW portion of the Ruby Mountains by stream miles.

<b>Functioning Rating</b>	<b>Stream Miles (# of segments)</b>	<b>Percent of assessed channels</b>
Proper Functioning Condition	18.85	48.16044967
FAR - Upward	13.06	33.36739908
FAR - Downward	3.12	7.971384773
FAR - Not Apparent	1.9	4.854368932
Nonfunctional	2.21	5.646397547
<b>Total</b>	<b>39.14</b>	<b>100</b>

The reasons for Functional – At Risk and Nonfunctional ratings vary by drainage. In reaches 1 and 3 of Pearl Creek and lower Corral Creek, reaches 3 and 4, the loss of beavers in those reaches resulted in the old dams losing integrity, the active stream blowing out the dam and causing severe downcutting, therefore putting those reaches at risk. In reaches 2 and 3 of Green Mountain Creek old beaver dam remnants indicate that they may have been historically blown up resulting in the degradation of the stream channel. In 1984 and 1992, heavy winter snowpacks rapidly melted in the spring causing significant flooding. Pearl Creek and Lindsey Creek still show the effects of those floods. Historic and/or current grazing practices and management appear to be contributing factors in the remaining reaches rated as either Functional – At Risk or Nonfunctional.

North Fork Lindsey Creek is the only creek that we identified as being Nonfunctional. In addition to the floods, the proximity of the road next to the creek causing sedimentation and



concentrated flow, grazing impacts and old decomposed and blown out beaver dams are all contributing to the non-functional rating. Appendix 1 displays a map each drainage and their respective PFC rating(s).

## Monitoring Plan

The PFC assessment has provided an excellent opportunity for the district staff to view the condition of the drainages first hand. As a result monitoring plots were identified and located, using Global Positioning System (GPS) devices, in most of the reaches to monitor the effects of the different activities over a period of time. Table 4 lists the locations and the activity for these points. Two types of monitoring locations are identified: Key Areas and Critical Areas. Key areas are intended to represent conditions of the reaches as a whole. Critical areas are intended to monitor impacts of influences in a specific area within a reach.

**Table 4.** Monitoring site locations and study focus for selected reaches.

<b>Drainage</b>	<b>Segment</b>	<b>Key Area Monitoring Location</b>	<b>Key Area Study</b>	<b>Critical Area Monitoring Location</b>	<b>Critical Area Study</b>
Carville Creek	CARV01	40 22 59.2 115 39 09.3	utilization and hoof action, photo point	40 22 56.0 115 34 30.9	utilization and hoof action, photo point
	CARV02				
	CARV03	40 22 41.0 115 36 28.6	utilization and hoof action, photo point		
	CARV04				
North Fork Green Mountain	NFGM01	none recorded			
	NFGM02	40 21 58.7 115 32 20.5	utilization and bank trampling	40 22 00.5 115 32 16.2	photo point
Middle Fork Green Mountain	MFGM01	40 21 42.6 115 31 52.4	utilization and hoof action	40 21 43.9 115 32 20.4	Species comp and utilization
	MFGM02	none recorded			
Green Mountain Creek	GM01	40 21 51.8 115 33 32.4	utilization and bank trampling		
	GM02	40 21 45.7 115 34 47.3	willow regen and bank width		
	GM03	40 21 26.7 115 35 15.3	photo point utilization	40 21 17.6 115 35 19.9	Species comp and utilization
	GM04	none recorded			
South Fork Green Mountain	SFGM01	40 21 15.4 115 29 45.6	utilization and hoof action	40 21 08.0 115 29 50.5	Aspen use and regeneration
	SFGM02	40 20 34.3 115 31 37.1	utilization and hoof action	40 20 51.1 115 31 59.1	species comp and utilization

	SFGM03	None recorded			
	SFGM04	None recorded			
Toyn Creek	TOYN01	40 19 17.7 115 31 08.7	Species comp and utilization		
	TOYN02	40 19 09.7 115 31 36.1	Species comp and bank stability	40 19 09.9 115 31 36.1	Species comp and utilization
	TOYN03	40 19 28.1 115 33 11.7	bank stability		
Corral Creek	CORR01	40 20 26.7 115 33 55.1	Species comp and bank stability	40 19 03.6 115 33 46.1	Willow regeneration
	CORR02	40 19 50.0 115 33 19.3	Species comp and bank stability		
	CORR03	40 19 37.4 115 33 40.8	utilization, species comp and hoof action	40 19 42.9 115 33 15.3	Hoof actions and species comp.
	CORR04	40 13 57.9 115 34 09.9	bank stability		
Pearl Creek	PERL01	40 16 47.1 115 34 09	utilization and hoof action		
	PERL02	40 16 27.3 115 33 21.0	utilization and hoof action		
	PERL03	40 17 20.2 115 35 46.5	utilization, species comp and hoof action		
	PERL04	none recorded			
North Fork Lindsey Creek	NFLI01	40 13 54.2 115 35 42.9	utilization hoof action		
South Fork Mitchell Creek	SFMI01	40 9 25.3 115 34 43.1	utilization, species comp and hoof action		

## RECOMMENDATIONS

These general recommendations are made based on the current health of the riparian system and the apparent trend in recovery. There is no single approach that will be successful in meeting the needs of riparian recovery and operational logistics. Any revised grazing management systems should factor in the overall operational needs of permittees, working out where possible timing and frequency with other lands utilized by the permittee including private. Working to improve other habitat conditions, such as beaver reintroduction or reintroduction of native fish, should also be carefully considered in the context of expense of operational projects and the priority for restoration across larger landscapes. Several of the streams surveyed are considerably below their potential. Collaboration and cooperation will be

essential to make some of these recommendations successful for all parties. Funding and current policies may limit implementation of recommendations listed below.

Some recommendations suggested during the performance of the PFC assessments were:

1. Middle Fork Green Mountain Creek: An offsite water source be made available.
2. Middle Fork Green Mountain Creek- Headwaters: Use strategic felling of dead aspen to minimize use on riparian meadows/bogs.
3. Green Mountain Creek: Fence to restrict use of stream along reach 3.
4. Green Mountain Creek: Treatment of Medusahead and scotch thistle along reach 4.
5. Corral Creek change permittee rotations and season of use.
6. Corral Creek: Repair road crossings. Remove or clean out culverts.
7. Toyn Creek: Repair electric fence to make a riparian pasture.
8. Toyn Creek: Install sediment barriers on trail that parallels creek.
9. Toyn Creek: Address unauthorized motorized use of trail that parallels creek.
10. N. Fork Lindsey Creek- Source spring: Fence meadow and spring source.
11. N. Fork Lindsey Creek: Move and/or close road paralleling creek.
12. N. Fork Lindsey Creek: Strategic felling of juniper to limit access of stream.
13. N. Fork Lindsey Creek: Physical restoration of spring and stream.
14. Pearl Creek: Strategic falling of juniper and dead aspen to limit access to watering points along creek.
15. Pearl Creek: Create hardened designated watering points.
16. N. Fork Mitchell Creek: Create exclosure around springs and heritage resources.
17. S. Fork Mitchell Creek: Fence spring and stream above pond/reservoir.
18. S. Fork Mitchell Creek: Eliminate woody species (aspen and willow) on reservoir dam.

## **REFERENCES**

Prichard, D., Work Group Leader. 1998. Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas. Technical Reference 1737-15. USDI Bureau of Land Management, Denver, Co. 126 p.

Rosgen, D. 1996. Applied River Morphology. Wildland Hydrology, Pagosa Springs, CO. 352 p.

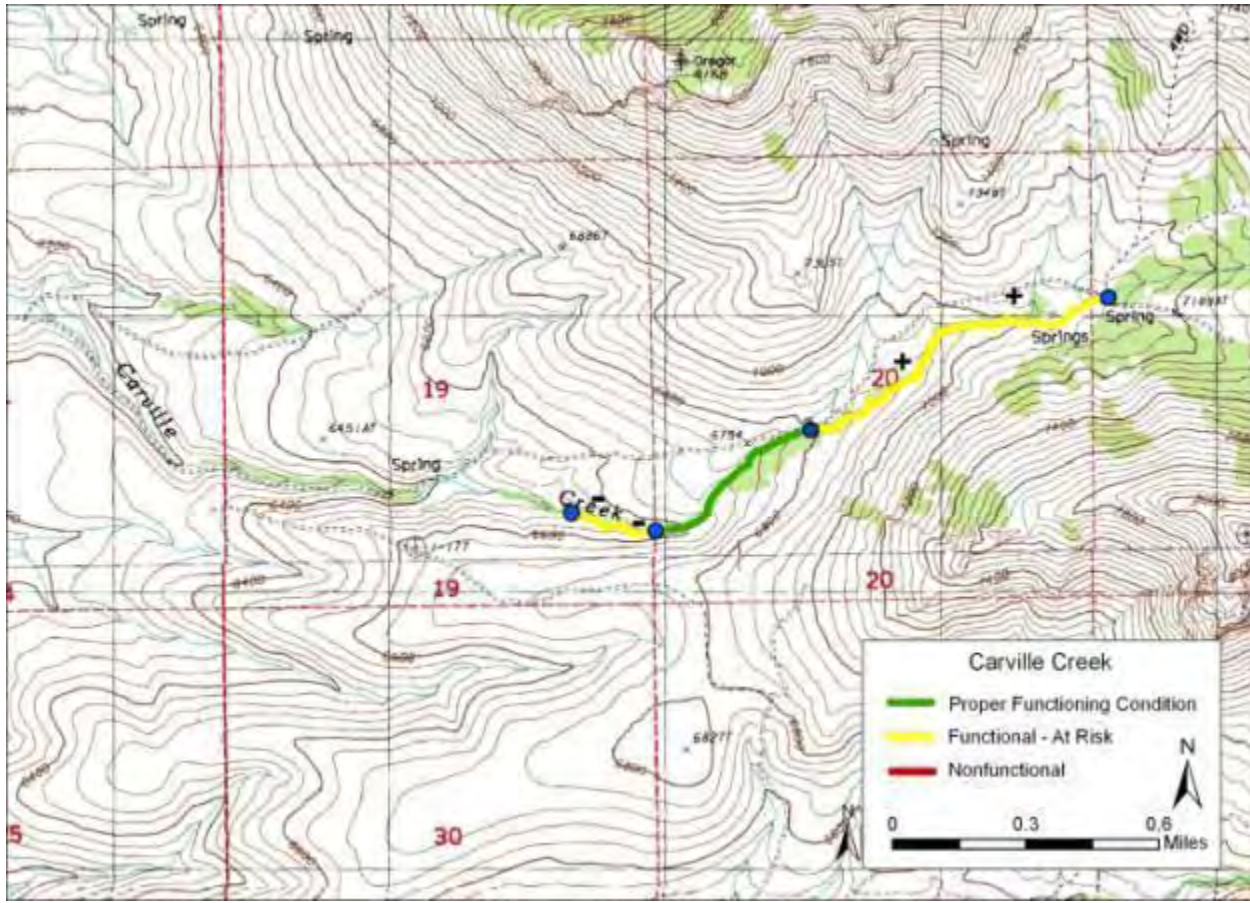
# Appendix 1

## Carville Creek



Carville Creek - Reach 1  
Functional – At Risk,  
upward trend

### Map 3: Carville Creek





**Carville Creek: Reach 3.  
Functional – At Risk.  
Downward trend.  
Dropping water table  
resulting in a drier  
community and loss of  
obligate species.**



# North Fork Green Mountain Creek



Map 4 – N. Fork Green Mountain Creek



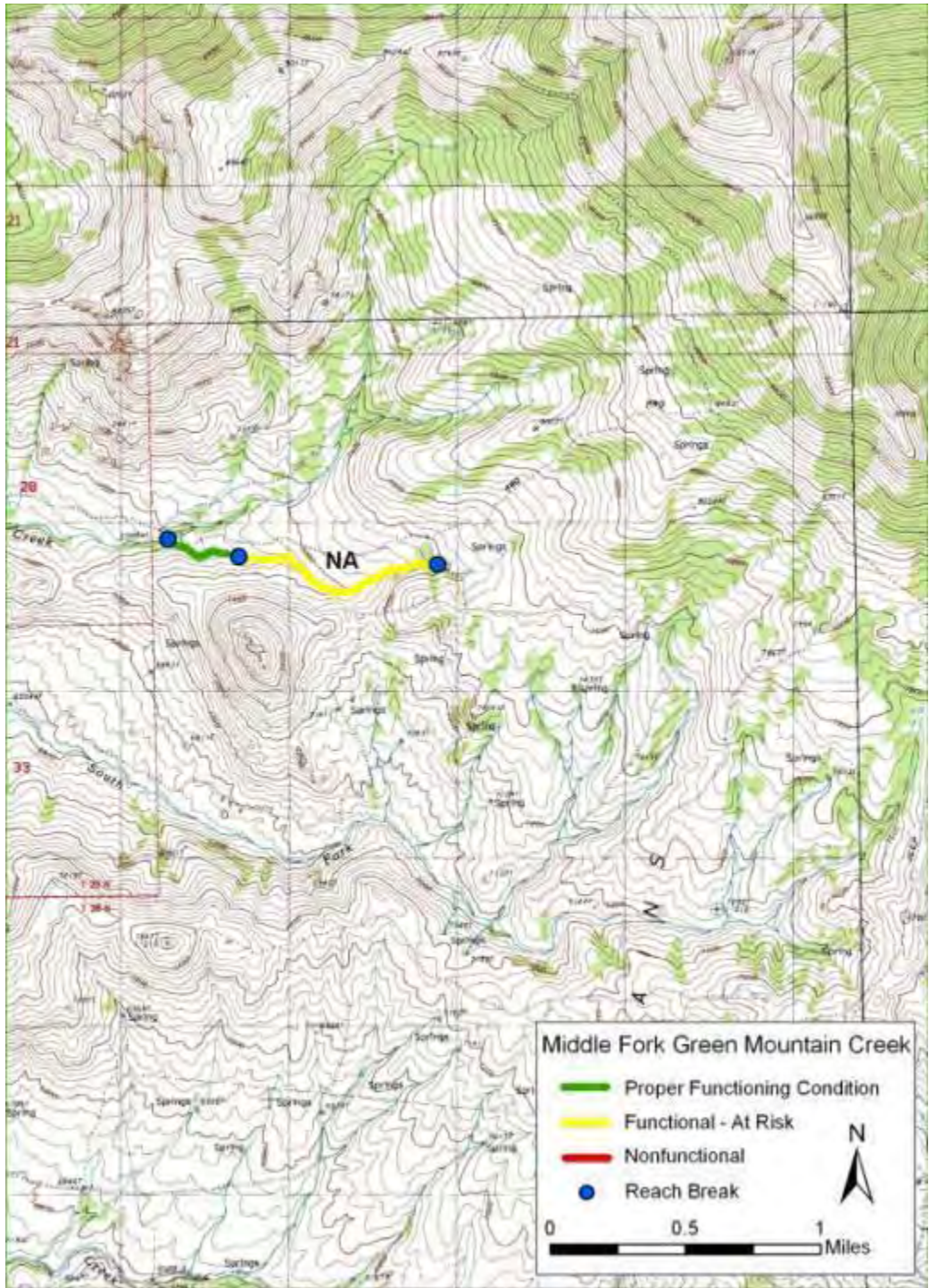
**North Fork Green  
Mountain Creek – Reach 1  
At PFC**



**North Fork Green Mountain  
Creek – Reach 2  
At PFC**



# Middle Fork Green Mountain Creek



Map 5 – Middle Fork Green Mountain Creek



**Middle Fork Green  
Mountain Creek – Reach 1.**

**Functional – At Risk. No  
apparent trend. Lacking  
large woody communities.**



**Middle Fork Green  
Mountain Creek – Reach 2**

**PFC**



# South Fork Green Mountain Creek



Map 6 – South Fork Green Mountain Creek



**South Fork Green  
Mountain Creek – Reach 1**  
**PFC**





**South Fork Green Mountain  
Creek – Reach 1**

**PFC – With isolated areas of  
concern**



**South Fork Green Mountain  
Creek – Reach 2**

**Functional – At Risk  
Downward trend**



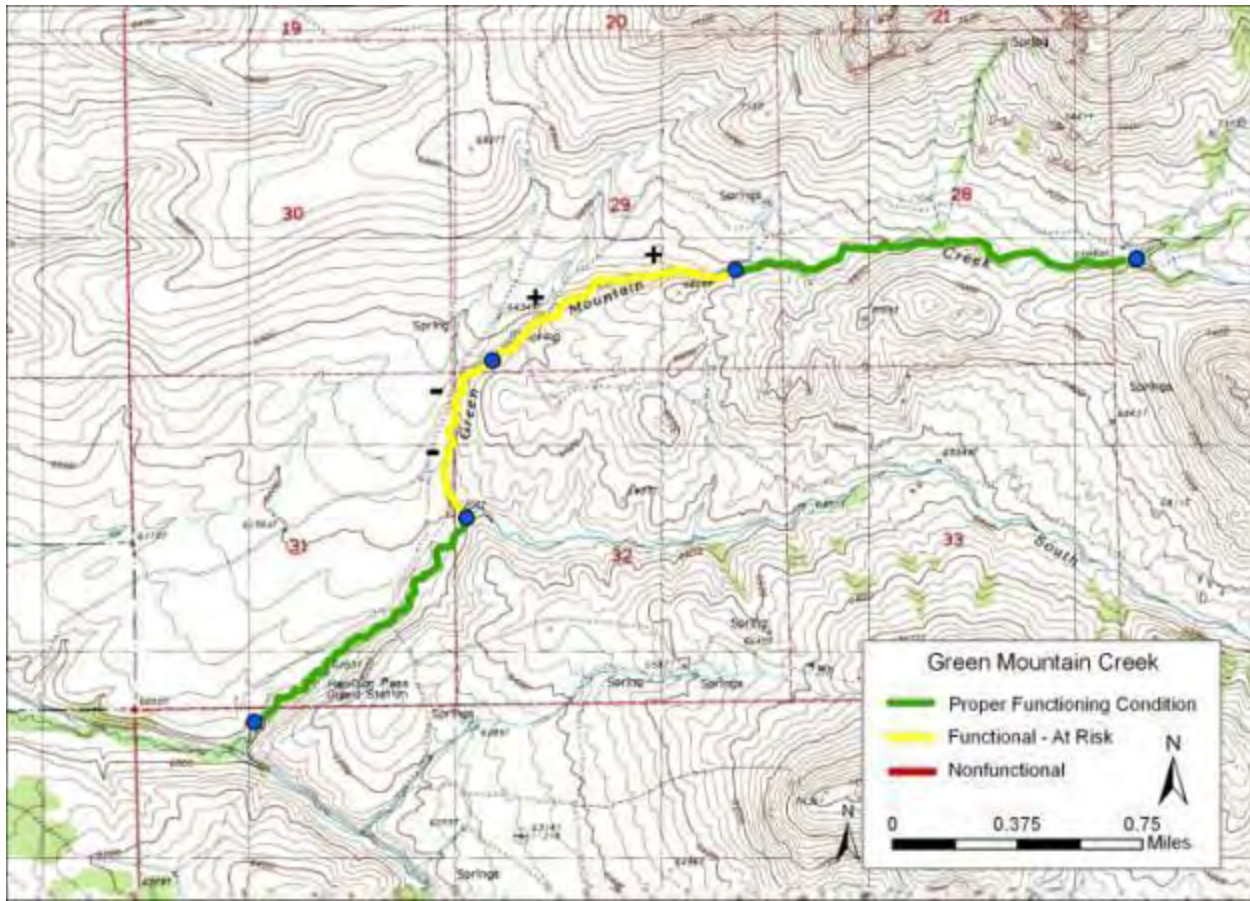
**South Fork Green  
Mountain Creek – Reach 3  
PFC**



**South Fork Green Mountain  
Creek – Reach 4  
Functional At Risk. Upward  
Trend**



# Green Mountain Creek



Map 7 – Green Mountain Creek



**Green Mountain Creek –  
Reach 2**

**Functional – At Risk  
Upward Trend**





**Green Mountain Creek –  
Reach 3**

**Functional – At Risk**  
**Downward trend**

**Lacking riparian  
vegetation**



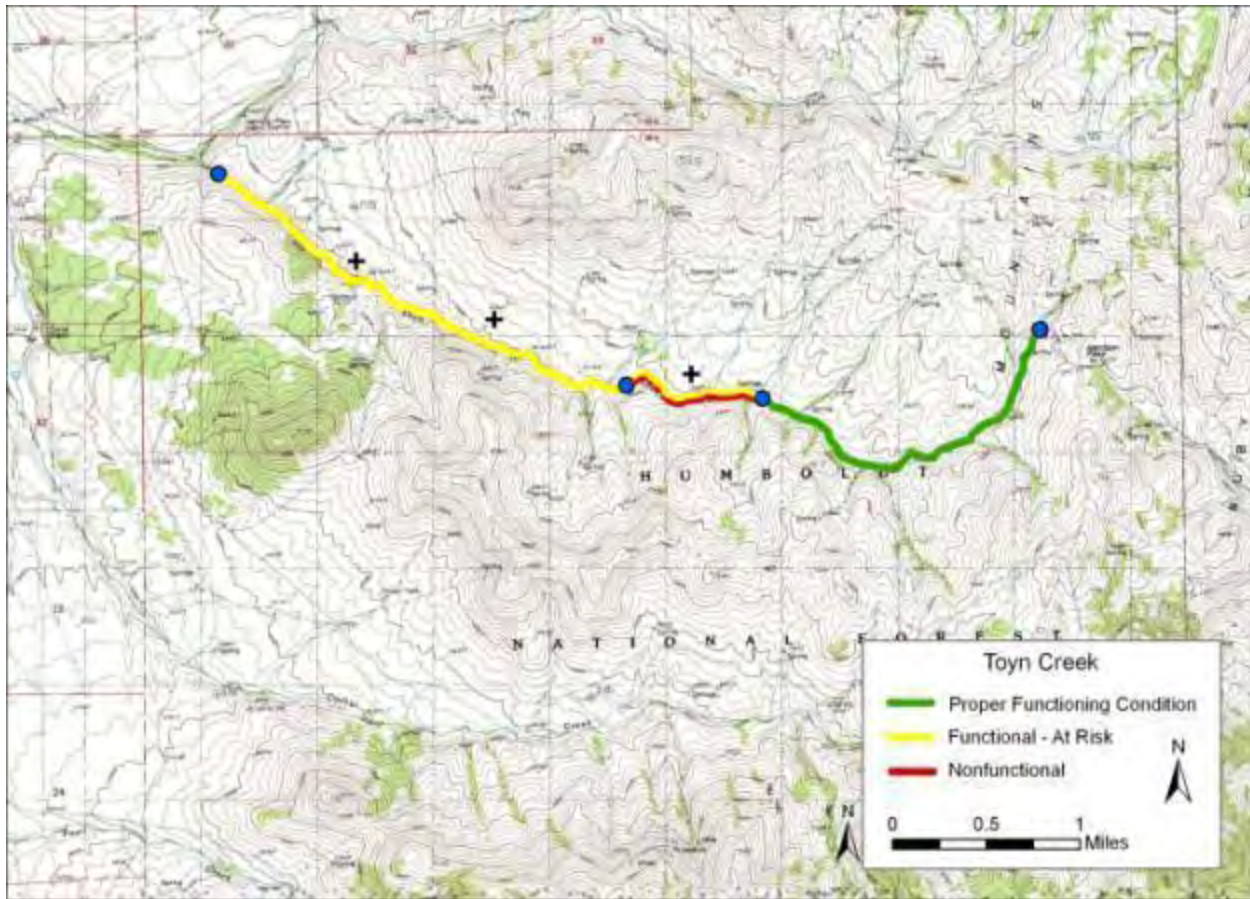
**Green Mountain Creek –  
Reach 3**

**Functional – At Risk**

**Few sedge communities  
and low vigor**



# Toyn Creek



Map 8 – Toyn Creek



Toyn Creek – Reach 1  
PFC





**Toyn Creek Reach 2**  
**Functional – At Risk Lentic**  
**Reach 30% Lotic, 70%**  
**Lentic**



**Toyn Creek Reach 2**  
**Lotic - Non Functional**



# Corral Creek



Map 9 – Corral Creek



Corral Creek Reach 1  
PFC





**Corral Creek Reach 2**  
**Functional – At Risk**  
**Trend not apparent**



Nebraska Sedge

Bluegrass

Bullrush

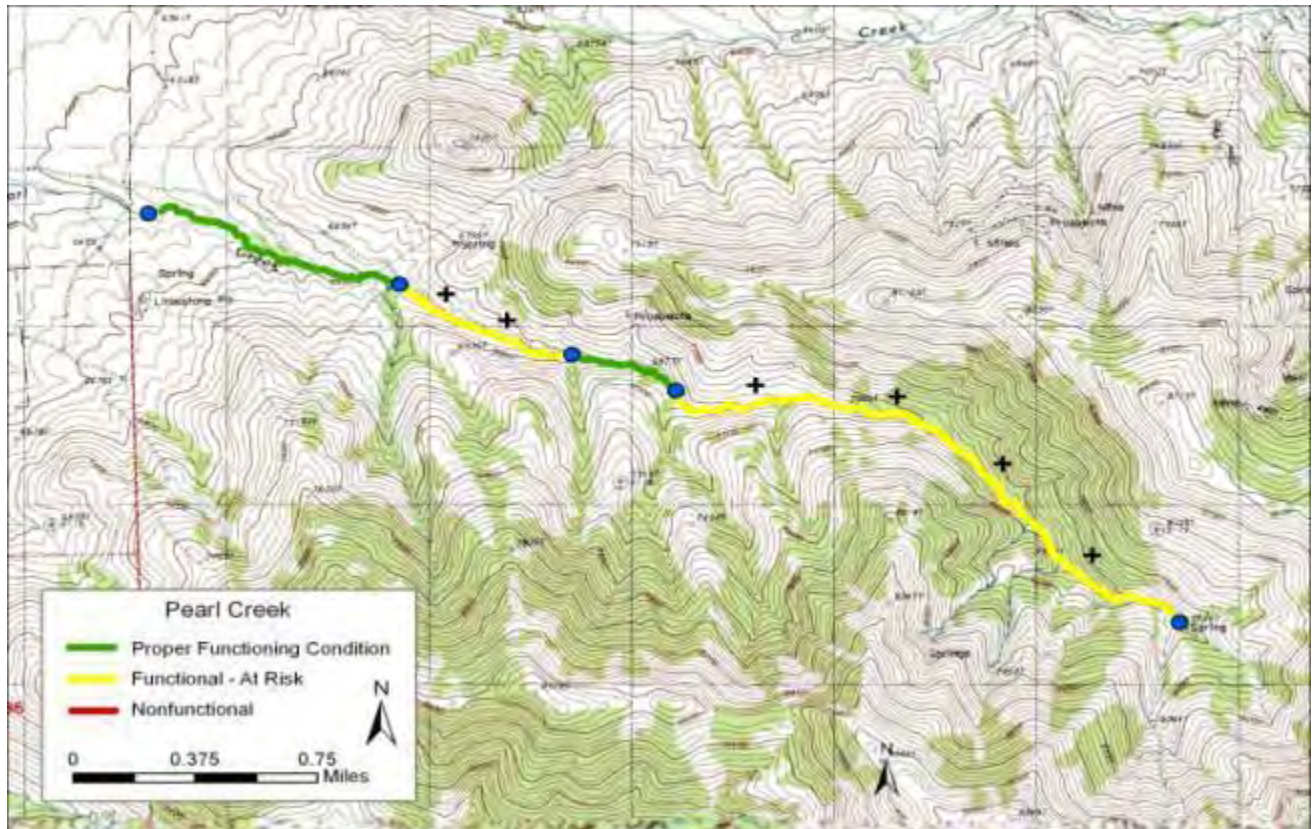
**Corral Creek Reach 3**  
**Functional – At Risk**  
**Downward Trend due to**  
**amount of bank**  
**trampling and**  
**hummocking**  
  
**Conversion of meadows**  
**and riparian areas to a**  
**drier community types**  
**and lack of maintenance**  
**of beaver dams also a**  
**concern.**





**Corral Creek Reach 4**  
**Functional – At Risk**  
**Upward Trend**

# Pearl Creek



Map 10 Pearl Creek



**Pearl Creek Reach 1**  
**Functional – At Risk**  
**Upward Trend**





**Pearl Creek Reach 2**  
**PFC**



**Pearl Creek Reach 3**  
**Functional – At risk**  
**Upward Trend**



# North Fork Lindsey Creek



Map 11 – North Fork Lindsey Creek





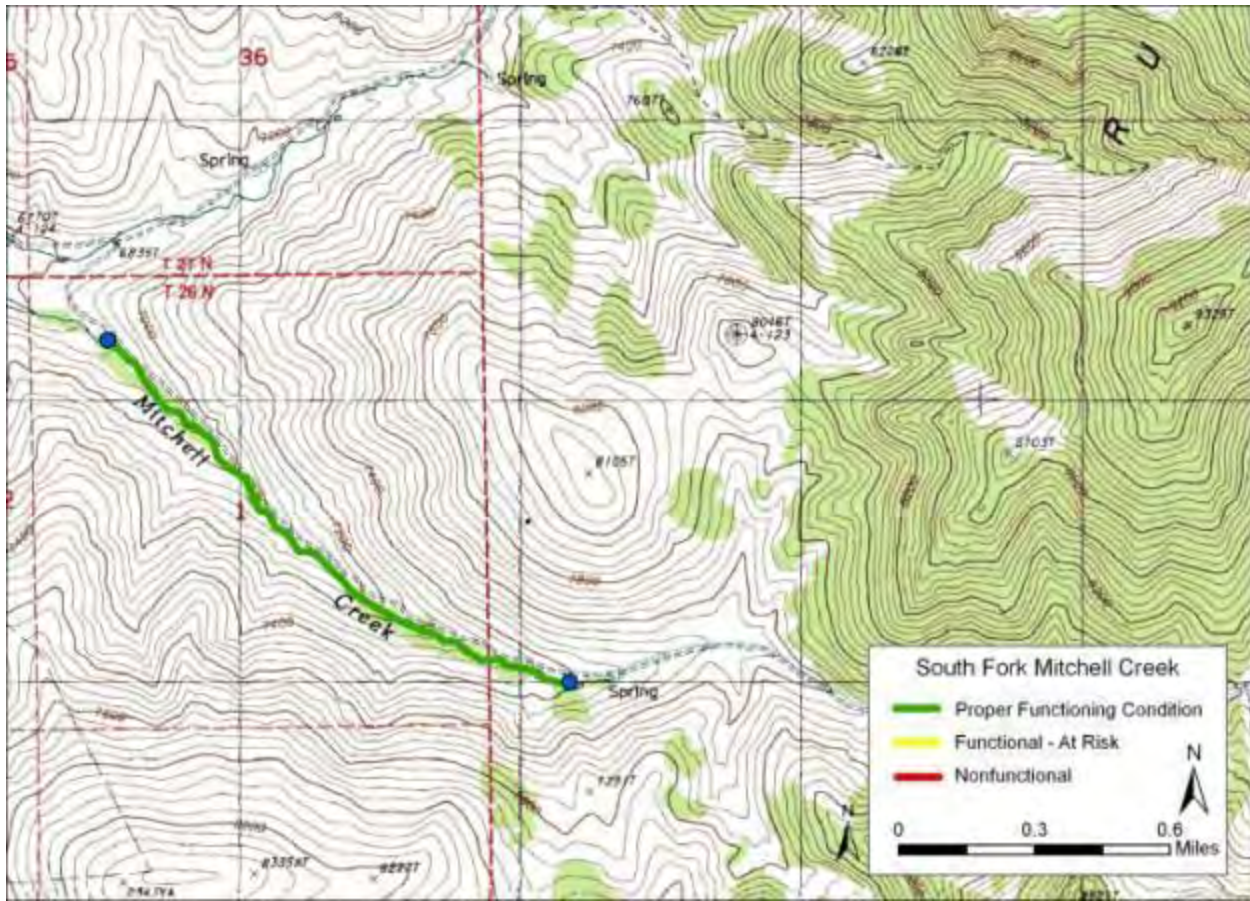
**North Fork Lindsey Creek  
Reach 1  
Non-functional**



**North Fork Lindsey Creek  
Non-Functional**



# South Fork Mitchell Creek



Map 12 – South Fork Mitchell Creek



South Fork Mitchell Creek  
PFC





South Fork Mitchell Creek  
PFC