

Rim Fire Recreation Facilities and Trails BAER Report

Resource Specialty: Recreation, Trails

Fire Name: Rim Fire

Month and Year: September, 2013

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I. Potential Values at Risk (identified prior to the on-the-ground survey)

A. Critical Values

Potential values at risk identified and addressed in this report include Forest Service recreation facilities and trails. Risks include threat to life and safety of BAER implementation team and visiting public, threat to facility infrastructure, and threat of invasive weed spread, and threat to ecosystem recovery. In some cases, there is a threat to humans and the environment related to exposed human waste from burned over toilet facilities.

B. Resource Condition Assessment

(a) Resource Setting

Recreation facilities impacted in the burned area include:

- *Developed Campgrounds:*
 - Dimond O Campground
 - Lost Claim Campground
 - Lumsden Bridge Campground
 - Lumsden Campground
 - South Fork Campground
 - Sweetwater Campground

Developed campgrounds within the affected area each have highly developed infrastructure, including vault toilets, signage, barrier posts, interior roads, campfire rings, grills and picnic tables. Generally, these sites received minimal fire damage to infrastructure, and the threat is limited to hazard trees directly adjacent to public common areas. All locations have numerous hazard trees representing major threats to both life and property. South Fork Campground has a vault toilet that was burned over, resulting in an exposed vault containing human waste, which is an immediate risk to the public health and environment.

- *Day Use Areas:*

- Carlon Day Use Area
- Cherry Creek Boat Launch
- Merals Pool Boat Launch
- Middle Fork Day Use Area
- Rainbow Pool Day Use Area
- Rim of the World Vista

Day use areas within the affected area have varying levels of developed infrastructure, typically including signage, vault toilets, picnic tables, campfire rings, grills, and interior roads and trails. All other sites are affected by the presence of hazard trees, which threaten life and property in those areas.

- *Dispersed Camping/Concentrated Use Areas:*

- Camp Clavey (3N56Y/3N01)
- Cherry Borrow (Vault Toilet)
- Cherry Lake
- Joe Walt Run (Vault Toilet)
- Spinning Wheel (Vault Toilet)

Dispersed camping areas exist within the affected area and are evaluated in this report due to the concentrated public use, and in some cases infrastructure at those sites. Spinning Wheel Dispersed Camping/Concentrated Use Area has a vault toilet that was burned over, resulting in an exposed vault containing human waste, which is an immediate risk to the public health and environment. All sites are affected by the presence of hazard trees, which threaten life and property in those areas.

- *Whitewater Recreation Areas:*

According to American Whitewater's National Whitewater Inventory¹, whitewater activities within the Rim Fire perimeter include the following whitewater runs:

- Tuolumne River from Meral's Pool Boat Launch to Ward's Ferry Bridge (main or lower Tuolumne run).
- Cherry Creek and Tuolumne River from Cherry Creek Boat Launch to Meral's Pool Boat Launch (upper Tuolumne run)
- Tuolumne River from Yosemite National Park to Early Intake
- Cherry Creek from Cherry Lake to Holm Powerhouse.
- South Fork of the Tuolumne River from State Highway 120 Bridge to Rainbow Pool Day Use Area
- Clavey River from Cottonwood Road bridge (Forest Route 1N04) to Forest Route 1N01 bridge

¹ <http://www.americanwhitewater.org/content/River/state-summary/state/CA/>

- Clavey River from Forest Route 1N01 bridge to Ward’s Ferry Bridge on the Tuolumne.

Expected increases in settleable material and flows will possibly modify the rapids of these whitewater runs. Increased floating material in the form of wood hazards might also affect the character and safety of the whitewater runs. Physical damage to transportation networks associated with river access might also be affected – particularly access via the Lumsden Road. Additionally, the South Fork of the Tuolumne is listed as a wintertime run. The higher potential for fire-induced increases in flow, floating material, and mass wasting during the winter period might affect human life and safety for whitewater users in the South Fork of the Tuolumne.

Trails within the burn area include:

- *Non-Motorized Trails:*
 - Andresen Mine Trail (18E12)
 - Carlon Falls Trail (19E76)
 - Golden Stairs Trail (18217)
 - Hamby Trail (17E57)
 - Humbug/Duluke Trail (16E12)
 - Indian Creek Trail (17E40)
 - Kibbie Ridge/Huckleberry Trail (20E11)
 - North Mountain Trail (19E19A)
 - Preston Falls Trail (19E18)
 - Tuolumne River Canyon Trail (17E56)
 - West Side Rail Trail (FR15091)

The system non-motorized trails within the burn perimeter are typically Trail Class 3 level developed and improved trails. A number of these trails access various points of interest along the Wild and Scenic River corridor of the Tuolumne River and serve as important emergency access points for river users floating Class IV+ portions of this river. High country trails provide access into the Emigrant and Yosemite Wilderness Areas. Infrastructure associated with these trails includes the trail tread, drainage features, constructed features such as staircases, trailheads, trailhead signage and kiosks, and directional signage.

- *Motorized Trails:*
 - Jawbone Pass Area: 18EV272, 18EV273, 18EV274, 19EV104, and 19EV105
 - Pilot Ridge Area: 17EV411, 17EV412, 18EV433, 18EV26, 18DC434, 18EV432, 18EV444, 19EV151, 19EV150, 19DC149, 19DC134, 19DC132, 19EV140, 19EV135, 19EV131, 19EV133, 19EV139, 19EV130, 19EV137, 19EV141, and 19EV129

- Tuolumne Rim (Ferretti Road) Area: 17EV317, 17EV318, 17EV320, 17EV321, 17EV322, 17EV323, 17EV324, 17EV325, 17EV326, and 17DC407
- Twomile, Middle Clavey, and Reynolds Area: 17EV11, 17EV14, 17EV15B, 17EV34, 31736A, 17EV58, 17EV60, 17EV299, 18EV34, 18EV56, 18EV258, and 18EV277
- West Side Rail Tour: 17EV37, and 17EV51

The system motorized trails within the burn perimeter are typically Trail Class 3 level developed and improved trails. A number of these trails access various points of interest such as historic sites, scenic overlooks, and hunting areas within the Designated Wild and Scenic Tuolumne River Proposed Wild and Scenic Clavey River watersheds. Infrastructure associated with these trails includes the trail tread, drainage features, constructed features such as trailheads, trailhead signage and kiosks, retaining walls, barriers, and directional signage.

(b) Findings of the On-The-Ground Survey

Recreation facilities:

- Following this survey it was determined that there were no values at risk requiring treatments except for signage and monitoring at Cherry Borrow Dispersed Camping Area.
- Following this survey it was determined that there were no values at risk requiring treatments at the Cherry Creek Boat Launch. However, closure and signage is recommended since the take-out is proposed for closure.
- Numerous hazard trees were observed at recreation facilities and along access routes and present a life and property risk to administrative and public users.
- Burned vault toilets at South Fork Campground and Spinning Wheel Dispersed Camping/Concentrated Use Area are in an hazardous condition and present a public health and environmental risk.
- Barriers were burned resulting in exposed rebar along some access routes and adjacent to some dispersed sites within the Spinning Wheel and Camp Clavey areas and present a life and safety, noxious weed infestation, cultural resource protection, and ecosystem recovery risk.

Trails:

Non-motorized trails:

An on the ground survey was conducted for all of the above mentioned trails. Following this survey it was determined that there were no values at risk requiring treatments except for signage and monitoring on the Indian Creek Trail and North Mountain Trail. The Humbug/Duluke Trail and Golden Stairs Trail have not been actively maintained since the 1987 Stanislaus Complex

Fire and it was determined that there were no values at risk but the recommended treatment is closure to protect life and safety.

Surveys indicate a potential for post-fire storm damage to the trail infrastructure on the Andresen Mine Trail, Hamby Trail, Kibbie Ridge/Huckleberry Trail, Preston Falls Trail, and Tuolumne River Canyon Trail. Each of these trails contains segments that lie within and/or below areas that experienced moderate burn severity. Watershed response is expected to increase in these areas due to lack of vegetation and impacted soils, resulting in increased run-on of water and sediment during heavy precipitation events. Additionally there is potential for sedimentation, dry ravel, rock-fall, and loss of trail tread in these affected areas.

The existence of fire-damaged hazard trees presents a life and safety risk to administrative and public users on Andresen Mine Trail, Carlon Falls Trail, Golden Stairs Trail, Hamby Trail, Humbug/Duluke Trail, Kibbie Ridge/Huckleberry Trail, Tuolumne River Canyon Trail, and West Side Rail Trail.

A property risk exists to the infrastructure of the Hamby Trail, Kibbie Ridge/Huckleberry Trail, and Tuolumne River Canyon Trail. The anticipated increased runoff in the first year following the fire has the potential to cause erosion and associated trail incision along segments of these trails. If this trail incision was to occur, this would represent a loss to the forest investment in the construction and maintenance of the infrastructure of these recreation features.

The Tuolumne River Canyon had several staircases constructed with dimensional lumber and rebar that burned during the fire. These fire-damaged staircases, which served as grade stabilizers in steep sections of trail, represent a risk to both life and property.

Motorized Trails:

An on the ground survey was conducted for all of the above mentioned trails. Following this survey it was determined that there were no values at risk requiring treatments except for signage and monitoring in the Twomile, Middle Clavey, and Reynolds Area, Jawbone Pass Area, and Pilot Ridge Area.

It was determined that potential for damage to infrastructure on motorized trails in the Tuolumne Rim (Ferretti Road) area and West Side Rail Tour area. These trails contain segments that lie within and/or below areas that experienced moderate to severe burn severity. Watershed response is expected to increase within these areas and trail sections may experience increased water run-off and sedimentation during heavy precipitation events. These trails are anticipated to see higher potential for erosion and tread incision

within affected segments. Additionally there is potential for sedimentation, dry ravel, debris-fall, and loss of trail tread in these affected areas.

The anticipated increased runoff in the first year following the fire has the potential to cause erosion and associated tread incision along segments of these trails. If tread incision does occur, this would represent a loss to the forest investment in the construction and maintenance of the infrastructure of these off highway vehicle trail features.

The existence of fire-damaged hazard trees on trails in the Tuolumne Rim (Ferretti Road) area and West Side Rail Tour area present a life and safety risk to administrative and public users of these trails. A life and safety risk also exists where these trails traverse drainages as anticipated sedimentation and loss of trail tread along segments of these trails may occur.

The Tuolumne Rim (Ferretti Road) area and West Side Rail Tour area had several wooden barriers constructed with dimensional lumber and nails that burned during the fire. These fire-damaged barriers, which served to restrict motorized vehicles on designated routes, represent a risk to noxious weed infestation, cultural resource protection, and ecosystem recovery.

(c) Consequences of the fire on values at risk

The Rim Fire has resulted in major threats to life, public health, property, noxious weed infestation, cultural resource protection, and ecosystem recovery at several recreation facilities and trails.

II. Risk Assessment:

The Values at Risk for recreation facilities and trails subject to an increased number of hazard trees, erosion, runoff and sediment flows caused by hydrologic response, retaining wall and barrier loss, and hazardous waste presence and exposure of damaged construction materials are:

- Threat to life and safety
- Threat to public health
- Threat to infrastructure
- Threat to noxious weed infestation
- Threat to cultural resources
- Threat to ecosystem recovery

The following conditions describe in detail the consequences of the fire on Values at Risk:

- There is an immediate risk of hazard trees within and adjacent to recreation facilities and trails posing life and safety threat to BAER implementation members and public visitors.

- Burned infrastructure has eliminated public restroom facilities at South Fork Campground and Spinning Wheel Dispersed Camping Area. Burned vault toilets pose a risk of human waste exposure to the public and environment.
- Segments of the Tuolumne River Canyon, Hamby, and Kibbie Ridge Trails along steep slopes within the burn area are subject to increased erosion from large runoff producing storms. Without installation of additional water drainage and soil erosion controls and maintenance of existing drainage features on the trail for maximum efficiency further loss of trail tread, trail stability and incision is likely to occur.
- Barriers were burned resulting in exposed rebar along some access routes and adjacent to some dispersed sites within the Spinning Wheel and Camp Clavey Dispersed Camping/Concentrated Use Areas as well as within the Tuolumne Rim (Ferretti Road) and West Side Rail Tour motorized trail areas. The loss of these barriers presents a life and safety, noxious weed infestation, cultural resource protection, and ecosystem recovery risk.

C. Emergency Determination –

The BAER team has concluded these risks pose an emergency due to:

- Risk to life and safety
- Risk to public health
- Risk to infrastructure
- Risk to noxious weed infestation
- Risk to cultural resources
- Risk to ecosystem recovery

D. Treatments to Mitigate the Emergency

Recreation Facility Treatment Descriptions: An emergency determination was made that the following BAER treatments are required for recreation facility treatments in the Rim Fire burned area to protect infrastructure and reduce life/safety hazards:

- Site Closures
- Warning Signs
- Treatment of Hazard Trees
- Storm-proofing Trails
- Removal and replacement of damaged grade stabilizing trail staircases
- Removal of exposed human waste from exposed toilet vaults, sealing/removal of vaults to eliminate risk of people falling into open vaults
- Monitor recreation sites for additional threats to values at risk not identified in this assessment, specifically hazard trees not evident at the time of initial survey
- Remove and replace traffic control barriers

Treatment Type (including monitoring if applicable)	Temporary Site closure
Objective	Mitigate safety concerns, allow for implementation and monitoring of treatment
Description	Install appropriate signs and barricades at access points, take appropriate administrative action (Forest Order), open when hazard has been removed or mitigated
Cost	REDACT
Probability of treatment completion	Very Likely
Probability of treatment success	Likely
Treatment Locations	<p><i>Developed Campgrounds:</i> Dimond O, Lost Claim, Lumsden Bridge, Lumsden, South Fork, Sweetwater</p> <p><i>Day Use Areas:</i> Carlton, Cherry Creek Boat Launch, Merals Pool Boat Launch, Middle Fork, Rainbow Pool</p> <p><i>Dispersed Camping/Concentrated Use Areas:</i> Joe Walt Run, Spinning Wheel</p> <p><i>Non-Motorized Trails:</i> Andresen Mine, Carlton Falls, Golden Stairs, Hamby, Humbug/Duluke, Kibbie Ridge/Huckleberry, Preston Falls, Tuolumne River Canyon, West Side Rail</p> <p><i>Motorized Trail:</i> West Side Rail Tour area (17EV51)</p>
Treatment Type (including monitoring if applicable)	Signs
Objective	Alert public and working personnel to hazards resulting from burned areas
Description	Install warning signs at appropriate locations
Cost	REDACT
Probability of treatment completion	Very Likely
Probability of treatment success	Very Likely
Treatment Locations	All recreation facilities and trails
Treatment Type (including monitoring if applicable)	Treatment of Hazard Trees
Objective	Protect implementation members, public and recreation site infrastructure from falling trees compromised by fire

Description	Identify and remove compromised trees adjacent to recreation sites
Cost	REDACT
Probability of treatment completion	Likely
Probability of treatment success	Very Likely
Treatment Locations	<p><i>Developed Campgrounds:</i> Dimond O, Lost Claim, Lumsden Bridge, Lumsden, South Fork, Sweetwater</p> <p><i>Day Use Areas:</i> Carlton, Merals Pool Boat Launch, Middle Fork, Rainbow Pool, Rim of the World Vista</p> <p><i>Dispersed Camping/Concentrated Use Areas:</i> Joe Walt Run, Spinning Wheel</p> <p><i>Non-Motorized Trails:</i> Hamby, Kibbie Ridge/Huckleberry, Tuolumne River Canyon</p> <p><i>Motorized Trails:</i> West Side Rail Tour area</p>
Treatment Type (including monitoring if applicable)	Infrastructure removal and sealing exposed vault toilets
Objective	Remove damaged infrastructure and mitigate safety concerns at damaged vault toilets
Description	Remove burned infrastructure, remove human waste, seal or remove exposed toilet vaults
Cost	REDACT
Probability of treatment completion	Likely
Probability of treatment success	Very Likely
Treatment Locations	<p><i>Developed Campgrounds:</i> South Fork</p> <p><i>Dispersed Camping/Concentrated Use Areas:</i> Spinning Wheel</p>
Treatment Type (including monitoring if applicable)	Storm-proofing Trails
Objective	To protect system trails from trail incision and loss of tread and to reduce off trail erosion and protect investment.
Description	Maintain all existing water control structures on trails, including water bars, rolling dips, off trail drains and swales for best effectiveness and install additional erosion controls on trails.

	Install grade stabilizing checks in areas vulnerable to further incision. Install additional rolling dips and over-side drains in trails sections where lacking. Increase out board drainage (berm removal) where possible. (See BAER Treatment Catalog, Trail Stabilization, page 153 ²)
Cost	REDACT
Probability of treatment completion	Very likely.
Probability of treatment success	Likely
Treatment Locations	<i>Non-Motorized Trails:</i> Hamby (3 miles), Kibbie Ridge/Huckleberry (1 mile), Tuolumne River Canyon (2 miles) <i>Motorized Trails:</i> West Side Rail Tour area (17EV51)
Treatment Type (including monitoring if applicable)	Remove and Replace Traffic Control Barriers
Objective	Remove burned out control barriers and exposed rebar, replace in kind.
Description	Removal of existing barriers to eliminate hazard presented by exposed rebar, replace in kind to prevent public from traveling off established routes into burned areas.
Cost	REDACT
Probability of treatment completion	Likely
Probability of treatment success	Very Likely
Treatment Locations	<i>Dispersed Camping/Concentrated Use Areas:</i> Spinning Wheel (Cultural Resources Team will be lead on implementation) <i>Motorized Trails:</i> Tuolumne Rim (Ferretti Road) area, West Side Rail Tour area
Treatment Type (including monitoring if applicable)	Remove and replace grade stabilizing trail staircase
Objective	Remove burned out staircases and remaining rebar, replace with native materials
Description	Remove burned out grade stabilizing trail

² Napper, Carolyn . 2006. Burned Area Emergency Response Treatments Catalog (BAERCAT). 0625 1801P. San Dimas, CA: U.S. Department of Agriculture, Forest Service, San Dimas Technology and Development Center. 204 p.

	staircases (64 steps) and exposed rebar, replace with native materials in order to stabilize steep trail segments
Cost	REDACT
Probability of treatment completion	Very Likely
Probability of treatment success	Very Likely
Treatment Locations	<i>Non-Motorized Trails:</i> Tuolumne River Canyon Trail
Treatment Type (including monitoring if applicable)	Monitoring
Objective	Monitor affected areas and maintain implemented treatments.
Description	Evaluate and maintain treatments and identify any additional emergency response measures needed to protect the values at risk identified in this report.
Cost	REDACT
Probability of treatment completion	Very Likely
Probability of treatment success	Very Likely
Treatment Locations	All recreation facilities and trails
Total	\$140,850

III. Discussion/Summary/Recommendations

In summary, the prescribed treatments for recreation facilities and trails are designed to help preserve life, safety, public health, infrastructure, cultural resources, ecosystem recovery, and prevent noxious weed infestation. Trail treatments are designed to minimize damage caused by hazard trees, increased runoff and sediment transport across steep slopes, and erosion from drainage channels in correlation with burn areas. Implementation of the prescribed trail treatments will mitigate potential risk to life and further trail damage. Additional treatments are proposed at two developed recreation sites to control exposed hazardous waste. The risk assessment for trails and recreational sites showed areas of very likely probability of damage with major consequences resulting in a very high risk for areas with life/safety threats.

IV. Appendices

- A. Summary table of treatments by location
- B. Treatment cost summary

Appendix A: Summary table of treatments by location

LOCATION \ TREATMENT	Closure	Signs	Hazard Tree Removal	Vault Toilet Capping	Storm-proofing	Barrier Replacement	Staircase Replacement	Monitoring
<i>Developed Campgrounds:</i>								
Dimond O	X	X	X					X
Lost Claim	X	X	X					X
Lumsden	X	X	X					X
Lumsden Bridge	X	X	X					X
South Fork	X	X	X	X				X
Sweetwater	X	X	X					X
<i>Day Use Areas:</i>								
Carlton	X	X	X					X
Cherry Creek Boat Launch	X	X						X
Merals Pool Boat Launch	X	X	X					X
Middle Fork	X	X	X					X
Rainbow Pool	X	X	X					X
Rim of the World Vista		X	X					X
<i>Dispersed Camping/Concentrated Use Areas:</i>								
Camp Clavey		X						X
Cherry Borrow		X						X
Cherry Lake		X						X
Joe Walt Run	X	X	X					X
Spinning Wheel	X	X	X	X		X		X
<i>Non-Motorized Trails:</i>								
Andresen Mine Trail (18E12)	X	X						X
Carlton Falls Trail (19E76)	X	X						X
Golden Stairs Trail (18217)	X							
Hamby Trail (17E57)	X	X	X		X			X
Humbug/Duluke Trail (16E12)	X							
Indian Creek Trail (17E40)		X						X
Kibbie Ridge/Huckleberry Trail (20E11)	X	X	X		X			X
North Mountain Trail (19E19A)		X						X
Preston Falls Trail (19E18)	X	X						X
Tuolumne River Canyon Trail (17E56)	X	X	X		X		X	X
West Side Rail Trail (FR15091)	X	X						X
<i>Motorized Trails:</i>								
Jawbone Pass Area		X						X
Pilot Ridge Area		X						X
Tuolumne Rim (Ferretti Road)	X	X						X
Twomile, Middle Clavey, and Reynolds		X						X
West Side Rail Tour Area	X	X	X		X	X		X

Appendix B: Treatment cost summary

Implementation Crew Labor Cost

- REDACT

Vehicles

- REDACT

Barracks

- REDACT

Crew Per Diem

- REDACT

Supplies and Equipment

- REDACT

Crew Cost with Barracks and Per Diem

- REDACT

Crew Cost without Barracks and Per Diem

- REDACT

Implementation Crew Administrative costs

- REDACT

Monitoring and Maintenance

- REDACT

Temporary Site Closures

- 35 sites @REDACT

Signage

- REDACT

Treatment of Hazard Trees

- REDACT

Infrastructure removal and sealing exposed vault toilet

- REDACT

Remove and Replace Traffic Control Barriers

- Remove burned barriers (potential hazardous material disposal) = REDACT
- REDACT

Trail Dozer

- REDACT

Tuolumne Canyon Trail 17E56

- Storm Proofing/ REDACT
- Grade Stabilization/ REDACT

Hamby Trail 17E57

- Storm Proofing/REDACT

Kibbie Ridge Trail 20E11

- Storm Proofing/ REDACT