

## **STUDY 3: ROUTE REHABILITATION RECOMMENDATIONS**

*'IT IS THE MISSION OF THE BUREAU OF LAND MANAGEMENT TO SUSTAIN THE HEALTH, DIVERSITY, AND PRODUCTIVITY OF THE PUBLIC LANDS FOR THE USE AND ENJOYMENT OF PRESENT AND FUTURE GENERATIONS.'*

*from [http:// www.blm.gov / flpma/](http://www.blm.gov/flpma/)*

### **A. STUDY GOAL**

#### **Facilitate the enjoyment and protection of the public lands**

While the BLM is mandated to **protect natural resources** this is only half of the mission. The mission guides the agency to protect the resources **WHILE** still allowing for the **'use and enjoyment** of the public land by present and future generations'.

The team was fortunate to have a professionally trained and licensed expert in **storm water management and erosion control** – who happens to be an accomplished motorcycle rider. Based on this experience in environmental permitting and compliance, her recommendations for intervention and rehabilitation are included in this report. Noted were areas that appeared deeply rutted, were widening with use, and showed signs of erosion or negatively impacted vegetation. **By understanding the nature and causes of these impacts, those lessons can be applied to mitigate impacts.**

Use of travel routes by special recreation permits and by all users in the district needs to be addressed in the travel management plan.

**B. METHODS**

Project data was collected in accordance with BLM state and federal standards. To address project goals, attributes such as specific trail conditions and assessments were added to the NV BLM standard road data dictionary. These attributes are indicated by asterisks and these terms are thoroughly defined and discussed in text and photos in the following within the study data and discussion.

**ROUTE ASSESSMENT**

**Specific Condition \***

- "Needs Rehab" – as defined in the following page
- "Good Example"– as defined in Study 4 – Data and Results
- "Excellent Example"– as defined in Study 4 – Data and Results
- "Does Not Apply"

**ROUTE CONDITIONS**

**Vertical Variance \***

- "Flat"
- "Gentle Slope"
- "Undulating"
- "Steep"
- "Whoops"
- "Whooped Out"
- "Sidehill" - None in this project*
- "Downhill Only"
- "Does Not Apply"

**Condition**

- "Rocky; Rough"
- "Rutted"*
- "Washed Out"*
- "Brushed In"*
- "Loose Sand; Silt"
- "Steep"*
- "Impassible"*
- "Rocks in Road"*
- "Poor Drain"*
- "Does Not Apply"

**Braided \***

- "No", "Yes"

**Soil Type \***

- "Rocky & Sandy"
- "Rocky"
- "Sandy"
- "Hardpack"
- "Wash"
- "Boulders"*
- "Waterfall"*
- "Does Not Apply"

Grayed values were not encountered in this project.

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## C. DATA AND RESULTS

3.7 % of the collected routes were **recommended for rehabilitation**

Miles detailed by route condition and project area –

Miles	NTG	N WLk	SAH	S WLk	TOU	TOTAL	%
None of the Above	43.8	70.0	77.0	124.1	92.8	<b>407.7</b>	85%
Good Example	5.4		25.2	9.7	0.5	<b>40.8</b>	9%
<b>Recommend Rehab</b>	<b>2.8</b>		<b>15.1</b>			<b>17.9</b>	4%
Excellent Example	8.5		4.7			<b>13.3</b>	3%
<b>TOTAL</b>	<b>60.5</b>	<b>70.0</b>	<b>122.0</b>	<b>133.8</b>	<b>93.3</b>	<b>479.7</b>	

Team observations and recommendations were made from the **professional expertise** and **cumulative experience** of the team in storm water management and surface erosion, motorcycle course design and riding, land management and GIS. The team noted routes that were **candidates for rehabilitation**. These areas were –

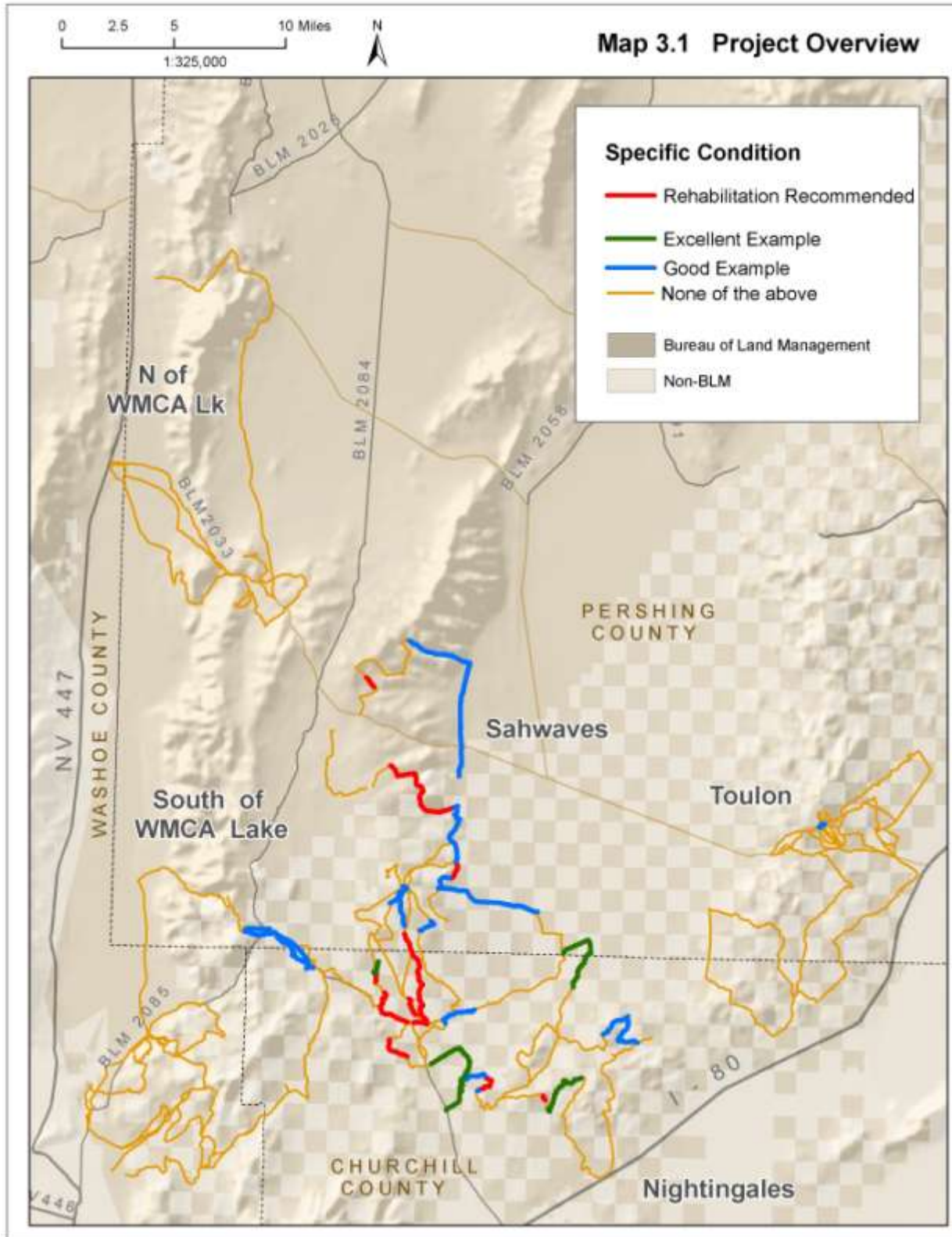
- Whooped out
- Braided, or
- Eroded

These terms are thoroughly defined and discussed in text and photos within the study data and discussion.

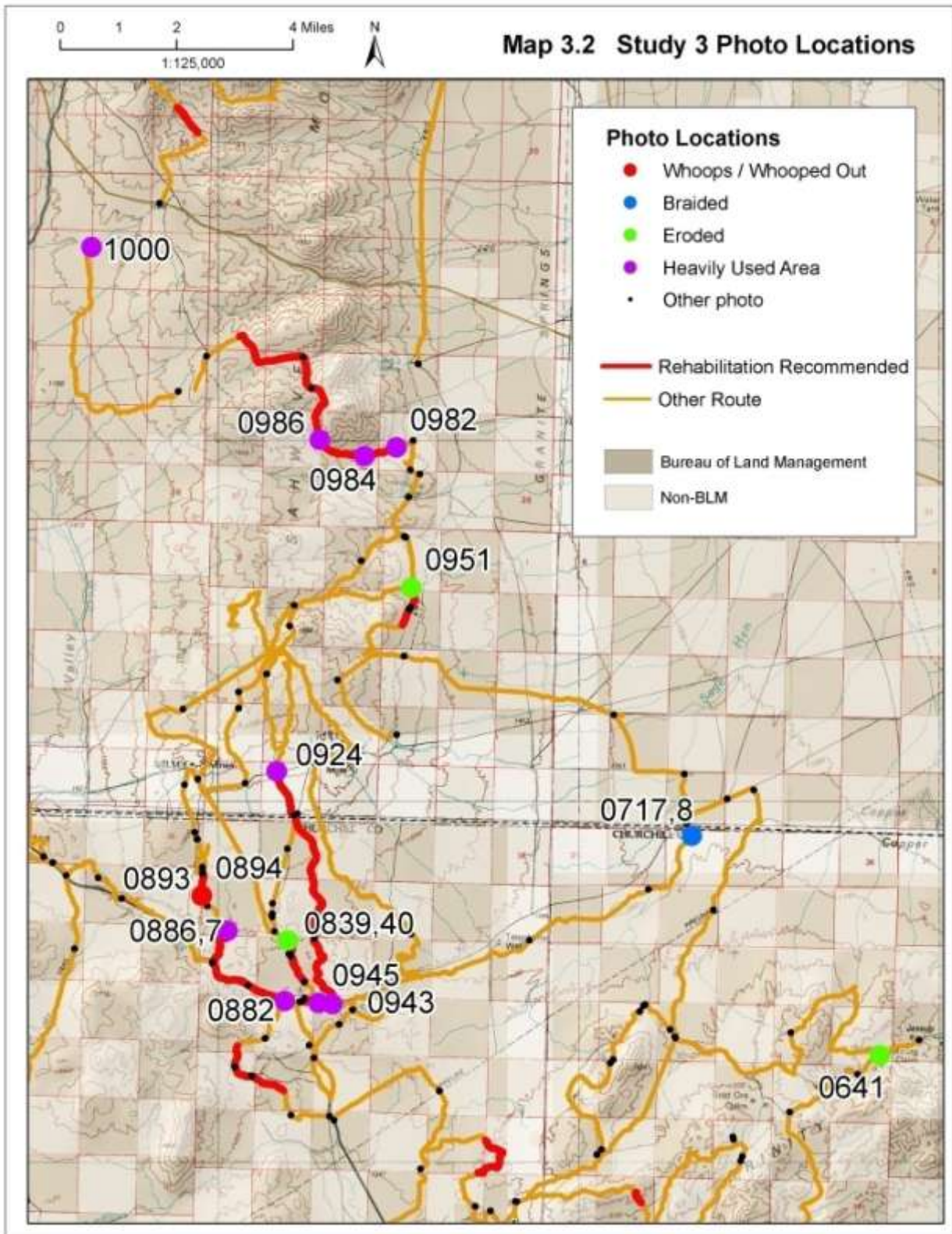
### NOTE –

It is not the intention of this report to offer a comprehensive discussion to impacts to all resources (i.e. wildlife, cultural, minerals etc).

Gaps in routes are areas lacking GPS satellite and/or team coverage



Point label displays the last 4 digits of photos displayed in this study. Other photo locations marked by black dots can be viewed electronically in the project dataset.



**i. Whoops or Whooped Out**

***'Whoops'** are the road equivalent of washboard areas or the ski equivalent of moguls.*

**Whoops are undulations or bumps that form in trails through repeated usage.** Whoops form as a consequence of riders turning and riding through dirt or sand. As a natural or manmade depression is repeatedly ridden through, a miniature ramp is formed behind it. When riders loft up out of the depression and land in front of this ramp, a new depression or compaction forms. The process duplicates itself until a series of these ramps, or whoops are formed. Subsequent riding reinforces the process.

**Whoops are a desired feature** for riders who, with enough speed, can skim across the tops.

This area has whoops but they are not yet in need of rehabilitation.



When the whoops get too deep and jar the rider, they are **no longer a desirable feature** for the rider or the environment. This s discussed in the next pages.

At this stage  
the route has  
**progressed**  
from  
having  
'whoops'  
**to being**  
**'whooped out.'**



## Whooped out

A route is '**whooped out**' when the size of the formation is large enough to cause a majority of riders to move to the outside of the trail in evasive action.

Heavy usage can cause the size of the whoops to increase to the point that they will inhibit riding and speed for all skill level of riders. The trail is widened or braided. Vegetation compacted or destroyed at the trail edges. Sandy soils in flat areas are more prone to this type of whooped out condition than other soils.

In an attempt to avoid the whooped out areas, riders from this race course are moving towards the edges and into the vegetation.



This is at the start of a 2009 race where racers are tightly bottle-necked and jockeying for position. Just off the edge of the photo is a ravine. As riders go over the edge, vegetation is being torn out and bug dust is piling up. **The whoops are very deep.**



This area is whooped out as shown in the these November 2009 photos. After data collection for this project was completed, this route was raced again by a team member in Feb 2010. While photos were not taken during that race, it was noted that the deep whoops continued over a stretch of 30 miles and made for extremely uncomfortable riding. **The course is greatly in need of much R & R – rest and rehabilitation.**



Whooped out conditions are highly undesired as it limits the speed and safety by which the route can be covered. It also encourages the **route to widen** and for **riders to leave the designated route altogether** in search of better terrain.



The length at which this continues supports the recommendation that **race route use** (particularly at the race starts) **should be rotated** to allow the area to recover.



ii. Braided trail or braiding

*A trail is considered **'braided'** when there are multiple lines or tracks weaving in and out of each other.*

Braiding is the result of **multiple lines being taken repeatedly**, either around an obstacle, at the merge point of multiple trails, whooped out areas, or anywhere the terrain encourages multiple choices of lines for riders to travel.

The race course at the leftmost side of the photo is in such bad condition that racers are popping out of the wash and creating the **braided routes that dominate the foreground**. The loose bug dust is easily impacted as seen by the deeply rutted, braided routes.



iii. Eroded

***'Eroded'** conditions are where the desert topsoil is thinned and eventually stripped down to the hardpan by trail usage.*

Desert topsoil is a mixture of sand, silty fines, decomposed rock and desert vegetation. Although poor by agricultural standards, this desert topsoil does cover the underlying hardpan and rock. It supports the delicate flora which provides food for wild animals and holds the soils in place. Storm water flows and subsequent trail usage make these areas continue to expand. **Barren areas are created where vegetation cannot grow due to lack of topsoil cover.**

Visible marks in the road show the beginnings of erosion, but rehabilitation is not yet required.



Race Route Inventory 2009

R0010951  
11/15/2009



This route was part of a 2009 race. It shows good drainage and has held up well. However, the **surface is slowly starting to erode.**

The sides should be re-shaped to divert drainage to a single area or this will eventually turn into a gully.

UTM NAD 83 Zone 11N  
11N 0325272 4436146

R0010660  
09/24/2009

All the **topsoil has been eroded away** on this route.





There is no defined track here but the route is starting to wash out and get wider. **The topsoil is being stripped down to hardpack.**

Eventually, this will keep vegetation from growing.



## D. DISCUSSION

**Travel routes with high levels of use, accessibility and visibility should be prioritized for intervention.** For race courses, the **indicative conditions** to which the need for rehabilitation **could be tied to the users** since impacts occurred by their direct use translate to the resources.

A demanding route of washes, whoops (but not whooped out), rocky surfaces and elevation changes will ensure quick, challenging but safe travel. These **proper conditions encourage riders stay on the course and will lessen impacts to the adjacent resources.** Most riders will travel a short section of large whoops or a long segment of mildly whooped conditions easily. If the course is whooped out, fatigue and discomfort will increasingly drive riders off the center of the route and widen the course. In extreme cases, riders will exit the route looking for better lines. As a result, vegetation may be ridden over trail edges and adjacent terrain may become increasingly disturbed, a braiding may occur. This defeats the purpose of the designated trail route. These effects are harmful to that environment. As the route edges get broken down, drainage becomes poor, vegetation harmed, and necessary desert topsoil is washed away.

### **Identify the point at which rehabilitation is needed**

The **point before** riders are driven from the established route due to degraded conditions, and the **point before** the area is impacted beyond the point of self-repair, **when rehabilitation efforts should begin.** In **adaptive management** terms, this point is the **trigger point** at which a prescribed action should take place.

## Recommended rehabilitation methods

### Whooped out sections

To reshape trail surfaces, a variety of methods can be used. A device called a SWACO dragged behind a quad will knock down the bumpy formations known as whoops. Shovels, rakes and other hand implements will also **smooth out uneven features**. This type of rehabilitation is most effective when performed **at the beginning of the wet season** (approximately in November) so that precipitation over the winter may aid in compacting the resurfaced area.

In general, **washes tend to repair themselves**. The natural action of sheet flows from precipitation moving along the wash bottom from the higher elevation to the lower elevations resurfaces the wash during storm events. However, **whoops in washes should be smoothed out** since they interfere with normal drainage action. They force precipitation to pool in the low areas instead of flowing with the topography, compact depressions, and further reinforce the formation of whoops.

### Braiding

When braided trail conditions require rehabilitation, a determination must be made as to which trail or line to preserve and which to eliminate. **Vertical mulching** is recommended for the lines to be eliminated. This involves **resurfacing and seeding the surface** while obstacles such as a rocks, vegetative debris or even a relocated sage is put in place to prevent use of the old lines so the vegetation has a chance to reestablish itself.

### Erosion

Eroded trail conditions require **resurfacing** to repair gullies, replace the desert topsoil and reestablish vegetation. The resurfaced area must be prepared to continue to withstand concentrated flows. **A waterbar or rolling dip**, a common best management practice used for trail management will direct flows away from the trail surface and prevent the return of erosion.

### Areas of heavy use

Staging, camping areas often require re-vegetation as trails or washes that have been widened. Seeding of native vegetation assists in speeding up recovery and reestablishment of vegetation where it has been disturbed by use. **Native seed mixes spread on these areas by hand prior to the wet season** (November) or as per specification is recommended.

**Begin rehabilitation efforts during event**

These efforts should be initiated soon after the last race. By **utilizing riders and family members still present**, on site clean-up efforts and route rehabilitation where possible can be completed more efficiently.

## E. BENEFITS AND APPLICATIONS

Any travel across the public lands leaves some impact. However, it is neither practical, nor in line with the BLM mission to completely shut down all use and access.

### **Minimize impacts through route selections and rehabilitation**

Both the resources and the riders benefit by applying prescribed efforts to mitigate areas that are whooped out, braided or eroded. **The desert can restore these areas** back to their natural character. **Users get a better riding experience** now and in the future.

### **Incorporate report recommendations into permit stipulations**

Begin **rehabilitation efforts** during course clean-up and target their completion within a week of the race event when applicable. Work with MRANN to **establish standards** for the event weekend, clean-up and rehabilitation. **Monitor permit compliance** during the event and at post-event inspections.

### **Address route travel by all users**

By fostering land stewardship through Public Lands Days, Tread Lightly ethics and other measures, the BLM can **encourage responsible use**. To **ease impacts** in areas of heavy use, install culverts, gravel pads and other improvements. Where adverse effects do occur, **mitigate impacts** by restricting access with fences and barriers such as those installed at Coyote Springs on the Black Rock desert, or at the Water Canyon 'Ski Hill'. This will allow time for area to self-repair or site rehabilitation efforts to take effect.