

***Engineering Report:***

Lassen National Forest

Hat Creek Ranger District

Analysis of

National Forest System Road (NFSR)

**# 33N13**

for Motorized Mixed Use Designation

Forest: Lassen

District: Eagle lake/Hat Creek

Road Number: 33N13

Road Name: Swains Hole Road

**Introduction:** The 33N13 Road segments studied are located on the east side of Lassen National Forest (LNF) in the Swains Hole quadrangle, on the eastern/western boundary of the Hat Creek/Eagle Lake Ranger Districts respectively.

NFSR 33N13/ML3 begins at the intersection of State Highway 44 in Section 12 of the Swains Hole quadrangle on the Eagle Lake Ranger District and trends due north and west to the Swains Hole, then trends north along the eastern upper extents of the Butte Creek Rim, continuing north through Halls Flat rangeland, and turns towards the northeast at Bufflehead Reservoir and continues northeast a short distance to Halls Flat Well and it's terminus at the intersection of Lassen County Road 111. The road length is approximately 10 miles.

Segment one starts on the Eagle Lake Ranger District at the intersections of 33N52/ML2 to 33N18Y/ML2 for approximately 0.25 miles.

Segment two starts on the Hat Creek Ranger District at the intersections of 33N27/ML2 to Unauthorized Route UNC401 for approximately 0.33 miles, respectively.

The entire road is currently managed by LNF as open only to highway-legal vehicles. The road segments analyzed were recommended in the LNF Travel Analysis (2008) for an engineering analysis of motorized mixed use. The purpose of this engineering analysis is to investigate the potentials, and

associated risks, for operating/transporting both highway-legal vehicles (motor vehicles, including the operators, that are licensed or certified for general operation on public roads within the State) and non-highway-legal vehicles (motor vehicles, including the operators, that are not licensed or certified for general operation on public roads within the State) on 33N13. The LNF Travel Analysis (June 2008) identified this road section as a connector for recreational off-highway vehicle (OHV) loop opportunities on the adjacent maintenance level two road network, of which a portion is currently managed as open to non-highway-legal vehicle use.

**Study Segment road data from the forest transportation atlas:**

Segment 1: Beginning Mile Post: 3.00 Ending Mile Post: 3.25

33N52 to 33N18Y

Traffic Service Level:  A  B  C  D

Objective Maintenance Level:  1  2  3  4  5

Operational Maintenance Level:  1  2  3  4  5

Segment 1: Beginning Mile Post: 7.00 Ending Mile Post: 7.33

33N27 to UNC401

Traffic Service Level:  A  B  C  D

Objective Maintenance Level:  1  2  3  4  5

Operational Maintenance Level:  1  2  3  4  5

Maintenance by: **Forest Service (FS)**

Non-Forest Service ROW or jurisdiction?  Yes  No

Any road use agreements, maintenance agreements, or other encumbrances?

Yes  No

Description of agreements or encumbrances:

***No agreements are documented.***

Subject to Highway Safety Act?  Yes  No

Non-highway-legal vehicles currently permitted?  Yes  No

Would motorized mixed use be consistent with State and local laws?  Yes  
 No

Description of State California Vehicle Code and Forest Service Directives:

According to California Vehicle Code section 38026, *Designating Highways: Combined Use*, off-highway operators on a Combined Use highway must be in possession of a valid driver's license.

Based on the Forest Service Directives and Travel Management purpose and need, to allow all motor vehicles on this segment with a designation of motorized mixed use for a segment or segments with a cumulative distance of 3 miles or less could be consistent with state and federal laws and directives with appropriate mitigation for safety concerns.

Description of road management objectives (RMOs), existing use, and proposed use:

The road currently encourages use as an objective and operational ML3 collector road and functions as ingress/egress access for the Swains Hole, Bufflehead Reservoir, and Halls Flat grazing allotment areas.

Road 33N13 provides access from State Highway 44, a two lane all weather asphalt surfaced highway, to the Swains Hole reservoir in a northwesterly alignment along the east upper elevations of the Butte Creek Rim, through the Halls Flat grazing allotments, to the Bufflehead Reservoir, and then in a northeasterly direction to Halls Flat Well and the terminus of the road with an intersection of Lassen County Road 111. 33N13 is utilized by forest personnel for access to/from the Halls Flat grazing allotments, wildlife management, fire detection and suppression. The road is a transportation corridor for livestock commodity management that runs 10 miles between a State Highway and County forest highway.

Most of the year it is currently managed as open only to highway legal traffic. The road is considered a highway by the forest service and is managed in accord with the Highway Safety Act.

The proposed use for this segment of 33N13/ML3 identified in this analysis is to authorize motorized mixed vehicle class use. The proposal is to utilize the ML3 road segment to connect adjacent ML2 roads into a loop for off highway motorized vehicle use.

General Considerations:

All motor vehicle operators need to be cognizant of the applicable state laws, and how they pertain to each age group, vehicle type, and national forest system road classification (see next bullet).

Through authorities delegated by the Secretary, the Forest Service may restrict or control use to meet road management objectives (36 CFR 212.5). The LNF currently manages this road as a highway, in accordance with the Highway Safety Act. The road is therefore subject to the provisions of the California Vehicle Code (CVC) for highways.

State OHV Regulations: any motor vehicle must have a street-legal license plate to operate on highways. To operate on public lands, off of highways, motor vehicles must have either a street-legal license plate or a red sticker or a green sticker. For more information, see the CA State Parks Off-Highway Motor Vehicle Recreation site, available @ <http://ohv.parks.ca.gov/>

California has:

- requirements for ATV safety
- conditions for operating ATVs
- OHV equipment requirements
- OHV operation requirements

**Summary of Findings:**

Implementing the universal mitigation measures, especially improved signing and better communication, will reduce crash probability.

Road mitigation should be prioritized regardless of mixed use, along with implementing a comprehensive communication, management, and enforcement plan. Associated implementation costs will depend on the designated allowed use for the road.

NFSR road 33N13 is an observed 1+ lane operational maintenance level 3 standard throughout its extent.

The road is maintained to a standard allowing efficient passenger car through traffic at speeds up to 40 mph for reasonable and prudent drivers on straightaways. Based on speeds and their associated risk for crash severity, designating the road segments as open only to highway-legal vehicles will provide the lowest crash probability and severity.

## Factors Considered:

### 1. Operator considerations:

- Based on engineering judgment and experience/observation on other national forest management units, the LNF has an above average standard of road. The Lassen is not "typical" in its road system's adherence to maintenance levels. This road is an objective ML3 as it provides forest livestock grazing area access and fire suppression access which necessitates a high level ingress/egress access road for the DOT Class 8 (26,001 – 33,000 GVWR) trucks that use it.
- Although the road rests upon the top of the fault block of the Butte Creek Rim, topologically the unit is dry and flat and contains the Halls Flat meadows. The operational level of this road is classified as a 3. The road has a management objective and maintenance level of 3 to provide for all-weather (during fire season May to October) fire staffing access and fire vehicle emergency access. The objective of the road is to provide access for livestock grazing, wildlife management, emergency fire detection and suppression response.
- Allowing non-highway-legal vehicles to use the road segment can involve both non-highway-legal equipment and non-licensed operators, including children.
- In California, children under the age of 18 must take a prescribed safety course, be under direct supervision of an adult possessing appropriate safety certificate, or possess the appropriate safety certificate in order to operate an ATV. In addition, children under the age of 14 cannot operate an ATV without direct supervision by parent, guardian, or authorized adult.
- The Lassen National Forest currently manages this road as a highway, in accordance with the Highway Safety Act. The road is subject to the provisions of the California Vehicle Code (CVC) for highways.
- The current use on NFSR 33N13 appears to be consistent with state law and forest policy for operational maintenance level 3 roads.

2. Crash history:

At the time of this analysis, there are no records of vehicle crashes on this road.

3. Traffic volume and type:

Non-highway-legal vehicles:

< 12 inch tread width    < 50 inch tread width    >50 inch tread width

Highway-legal vehicles:

< 12 inch tread width    < 50 inch tread width    >50 inch tread width

Passenger cars    Commercial vehicles    Recreation vehicles (RV's)

Vehicle distribution from a 1-hour observation July 30, 2008.

1 Forest Service Fire Patrol vehicle was observed along the road.

4. Speed - Anticipated average speed (85<sup>th</sup> percentile):

The speed greatly varies, depending on the roadway conditions. The 85th percentile would be estimated at: 40 mph.

5. Road surface type:

The road has a combination of native crushed rock aggregate and red volcanic cinder surfacing. Portions of the traveled way are raised and the road has culverts. The road is approximately 16' wide. The road traveled way is very dry and contains many fine aggregate components and produces prodigious quantities of dust when driven over. Road shoulders are soft and unconsolidated.

#### 6. Intersections with other roads and trails:

Road segment 1 intersects with the following forest roads.

- 33N52/ML2
- 33N18Y/ML2

Road segment 2 intersects with the following forest roads.

- 33N27/ML2
- UNC401/Unauthorized Route

The maintenance level 2 roads have historically provided forest management access, fire suppression access, commodity access, forest grazing access, and hunting and firewood gathering access. The proposed MMU intersections of 33N13/ML3 may result in higher traffic merging speeds.

#### 7. Other roadway factors:

- Roadway alignment was adequate for the assigned maintenance level.
- The road was maintained with a traveled way width of 16', approximately.
- Raised roadbed creates soft unconsolidated shoulders and emergency run-out among numerous lava rocks and brush, all of which may lead to loss of control for vehicle operators.
- The road provides administrative access for the Hall Flat meadows, fire suppression access, grazing allotment access, and commodity haul. Summer and fall seasons will experience peak use, winter and spring can bring snowy and icy conditions.

#### 8. Roadside conditions:

- The segment runs through high elevation native grass with brush meadows.
- Cross slope is 0-1%.
- Grade is 0-2%.
- Pine trees are  $\leq 18''$  and numerous lava ejecta rocks.
- Emergency run-out is limited.

9. Risk without mitigation:

Crash probability:  High  Med  Low

Crash severity:  High  Med  Low

Crash probability was assessed based on:

- Traffic volume, dust, rates of speed, alignment, sight distance, traveled way surface and width.

Crash severity was assessed based on:

- Roadway geometry (including embankments), difference in vehicle sizes, difference in speeds of OHVs and full-size passenger vehicles.

**Alternatives and Mitigation Measures:**

Alternatives and mitigation measures are presented to assist with safe road management. They are to be considered, should the agency have the appropriate time, workload, and funding based on competing priorities.

For all situations, the following mitigation measures apply:

- Clear communication and education to the visitors on allowed uses, safe motor vehicle use, and natural resources (informational signing and kiosks, maps, website, etc.).
- Improved route identification signing. Repair and replace devices as needed.
- Clear brush, especially along curves, to improve sight distance.
- Combine the appropriate enforcement measures with the allowed uses for the road.
- Coordinate with other agencies to improve enforcement consistency.
- Utilize a monitoring program to better determine the appropriate management strategy for the types of use, new technologies, changes in visitor demands, and resource protection measures.

In addition, these mitigation measures would apply to the following alternatives. Although the following alternatives are not comprehensive for the situation, they represent the most likely and/or practical options based on engineering

judgment.

**Alternative 1:** Designate the road segments as “open to highway-legal vehicles only”. Manage the road in accordance with maintenance level 3 standards.

- Maintain all roadway signing to MUTCD standards.
- Consider designing new trails, a new trailhead, and/or a new camping area to provide better opportunities for non-highway-legal motor vehicle traffic to access the area and the adjacent maintenance level 2 roads.
- Approximate Implementation Cost: \$ 0
- Expected risk:

**Crash probability:**  High  Med  Low

**Crash severity:**  High  Med  Low

**Alternative 2:** Designate the road segment as “open to all motor vehicles”, including highway-legal and non-highway-legal vehicles.

- Recognize that this situation would involve different allowed uses and would complicate communication and enforcement.
- Improve education and enforcement communication to explain the complexities of various allowed uses on the road.
- Install appropriate signs of a type approved by the Department of Transportation on and along the highway to identify and communicate the potential hazards related to motorized mixed use.
- Notify the Commissioner of the California Highway Patrol and review their opinion.
- Approximate Implementation Cost: \$ 3500
- Expected risk:

**Crash probability:**  High  Med  Low

**Crash severity:**  High  Med  Low

**Final Comments:**

Signing on national forest system roads should conform to the standards presented in the FS sign and poster guidelines (available @ [http://fsweb.wo.fs.fed.us/eng/roads\\_trails/signs\\_05/index.htm](http://fsweb.wo.fs.fed.us/eng/roads_trails/signs_05/index.htm)).

In addition, roads managed under the highway safety act, including the study segments here, must comply with the standards in the MUTCD (available @ <http://mutcd.fhwa.dot.gov/>).

According to the Sign and Poster Guidelines for the Forest Service (2005):

The following priorities are to be used to minimize the potential conflicts of mixed use:

- Provide separate facilities.
- Separate use periods. Roads may be designated for separate use periods such as season, weekday/weekend, or day/night. Notify the public of the locations, effective dates, times, and duration that the roads may or may not be used. Provide appropriate signs as shown in Chapter 3A.
- Manage concurrent use.

Upon designation and prior to allowing any mixed use, the Forest Supervisor is responsible for appropriately signing and mapping the route such that the dual traffic use is clear to all users.

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**Maps & Photos:**



*Tim Dedrick*      *Sept. 14, 2009*

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Prepared by  
Tim Dedrick Civil Engineer

Date

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George Kulick  
Region 5 Qualified Engineer

Date

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# Alternative 5 (Motorized Emphasis) Travel Management Lassen National Forest

- NFS Surfaced Roads or Non-NFS Jurisdiction Roads Open to Highway Legal Vehicles Only (Includes NFS Maintenance Level 3-5 Roads, State and County Roads, etc.)
- Road Open to All Highway Legal and Non-Highway Legal Vehicles
- County Jurisdiction Native Surfaced Road
- 4WD Trail Open to High Clearance Vehicles
- Non-Motorized Trail
- Unauthorized Routes to be Added to the National Forest Transportation System
- Mixed Use Analysis Pending

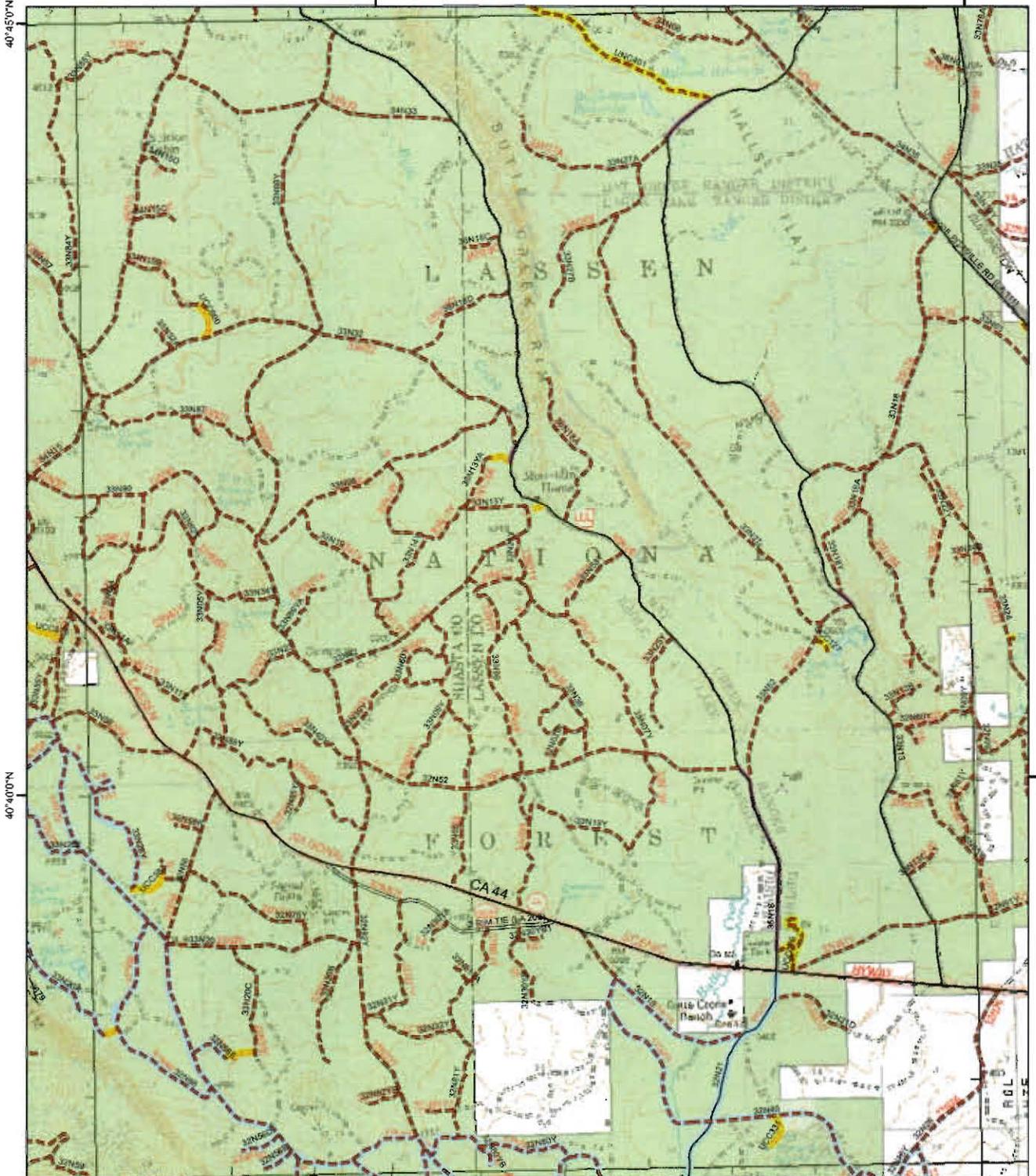
- Restrict Season of Use to Summer/Fall (Winter Rec Trail)
- Motor Vehicles Prohibited
- Lassen National Forest
- Private Land

0 0.5 1 Miles

Swains Hole

121°20'0"W

121°15'0"W



121°20'0"W

121°15'0"W

40°45'0"N

40°40'0"N

40°45'0"N

40°40'0"N