

# ***Engineering Report:***

Lassen National Forest

Eagle Lake Ranger District

Analysis of

National Forest System Road (NFSR)

**# 33N08**

for Motorized Mixed Use Designation

Forest: Lassen

District: Eagle Lake

Road Number: 33N08

Road Name: Harvey Mountain Lookout Road

**Introduction:** The 33N08 Road segment studied is located on the east side of Lassen National Forest (LNF) in the Harvey Mountain quadrangle, on the flanks of Harvey Mountain. NFSR 33N08 begins at a 5-way intersection, primary of which is 35N04, and ends at Harvey Mountain Lookout. The road starts approximately 10 miles due north of State Highway 44, approximately 1.5 miles south of the Eagle Lake RD and Hat Creek RD boundary on NFSR ML3 35N04. From this point the 33N08 road travels east approximately 2 miles to the toe of slope of Harvey Mountain where the road follows a due north traverse up the west flank of the mountain approximately 1 mile to the summit.

The entire road is currently managed by LNF as open only to highway-legal vehicles. The road segment analyzed was 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 33N08, from the intersection of 35N04 to the summit of the mountain. The LNF Travel Analysis (June 2008) identified this road section as a connector for recreational off-

highway vehicle (OHV) loop opportunities on the adjacent 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: 0.00 Ending Mile Post: 2.47

35N04 to terminus/summit

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 inconsistency with State and local law:

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 purpose and need of allowing all motor vehicles on this segment, designation for motorized mixed use would involve the preemption of state law if the road is to remain a highway.

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

The road currently serves as a ML3 local road and functions as a fire lookout station access as well as commodity extraction from Harvey Mountain to the State of California Highway 44.

The road provides summit access from a saddle on the west flank of Harvey Mountain which is the intersections of 35N04/ML3, 33N85/ML2, 34N37/ML2, 35N04/ML3, and 33N08A/ML2. Road 33N08 provides an important function as an ML3 local road providing access to a staffed fire lookout tower. From the lookout tower it is approximately 12.5 miles on NFSR maintenance level 3 roads to State Highway 44 which is an all-weather two lane asphalt highway. This intersection is approximately 2 miles west of the forest service Bogard Work Center which is home to the Lassen Hotshot fire crew as well as Engine xx and Water Tender xx.

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 accordance with the Highway Safety Act.

The proposed use for 33N08/ML3 identified in this analysis is to authorize motorized mixed vehicle class use. The proposal is to utilize the ML3 road 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.

The road is an observed 1-lane operational maintenance level 2+ standard throughout it's length.

The road is maintained to a standard allowing efficient passenger car through traffic at speeds up to 25 mph for reasonable and prudent drivers on straightaways. Based on speeds and their associated risk for crash severity, designating the road 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. A "typical ML2" road is a two-track through the forest, usually without culverts, and many times without a constructed road-prism. The Lassen is not "typical" in it's road's adherence to maintenance levels. This road is an objective ML3 as it provides fire lookout tower access which necessitates a higher level emergency access road that is not a recreational opportunity and is not identified in the ROS or Recreational Opportunity Spectrum. As a remote emergency fire detection and communication station the road does not receive much public traffic but does provide daily access in all-weather spring-summer-fall conditions for the lookout's staff as well as weekly deliveries of drinking/cooking/bathing potable water via a large commercial water truck as well as regular deliveries of propane via a large commercial propane gas truck. Topologically, the unit is semi-mountainous, fairly dry, and sandwiched between the Pacific Southwest Research Station's research forest, Black's

Mountain Experimental Forest to the west, and the forest rangeland of the Champs Flat area to the east. The operational level of this road is classified as a 2+ or 3-, something we call a Super-2 here on the Lassen. The road has a management objective of maintenance level 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 emergency fire detection access. Lookout tower staff perform a vital fire crew communication, area dispatch, and area navigation function for interagency Wildland fire suppression forces. As an existing ML3 road public access for visitors is provided to visit the lookout which provides a public educational opportunity as well as a scenic driving opportunity for highway legal vehicles. All-terrain vehicle access may not benefit unrestricted access of professional forest fire detection and suppression staff and large fire vehicles.

- 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 33N08 appears to be consistent with state law and forest policy for operational maintenance level 3 roads.
- Many roads in this vicinity, including the study segment, were dry and contributed significant dust when driven over.

## 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.

No vehicles observed.

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: 25 mph.

5. Road surface type:

The road has a combination of crushed rock aggregate and red volcanic cinder aggregate surfacing. Portions of the traveled way are raised and the shoulders are soft and non-compacted. The road is approximately 16' wide. The surface appeared well-maintained.

6. Intersections with other roads and trails:

The beginning of 33N08 is a five-way intersection with the following;

- 35N04/ML3
- 35N04/ML2
- 33N85/ML2
- 34N37/ML2
- 33N08A/ML2

There are also four additional forest roads with access from 33N08, they are;

- 33N30Y/ML2
- 34N01/ML2
- 33N08B/ML2
- 33N32Y/ML2

These maintenance level 2 roads have historically provided forest management access, fire suppression access, commodity access, and hunting and firewood gathering access.

The proposed MMU intersection of 35N04/ML3 may result in higher traffic merging speeds.

7. Other roadway factors:

- Substantial horizontal and vertical curves are present.
- Roadway alignment was adequate for the assigned maintenance level.
- The road was maintained with a traveled way width of 16', approximately.
- The road provides administrative access for fire lookout access. Summer and fall seasons will experience peak use, winter and spring can bring snowy and icy conditions.

8. Roadside conditions:

- The segment runs through open pine forest.
- Cross slope is 0-35%.
- Grade is 0-8%.
- Pine trees are  $\geq 18''$  and numerous rocks. Emergency run-out is not possible for the majority of the road as it climbs up the flank of Harvey Mountain and vertical drops are commonplace.

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

- Approximate Implementation Cost: \$ 50,000
- 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.

**Maps & Photos:**

May 2008 DRAFT



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

0 0.5 1 Miles

Harvey Mtn

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

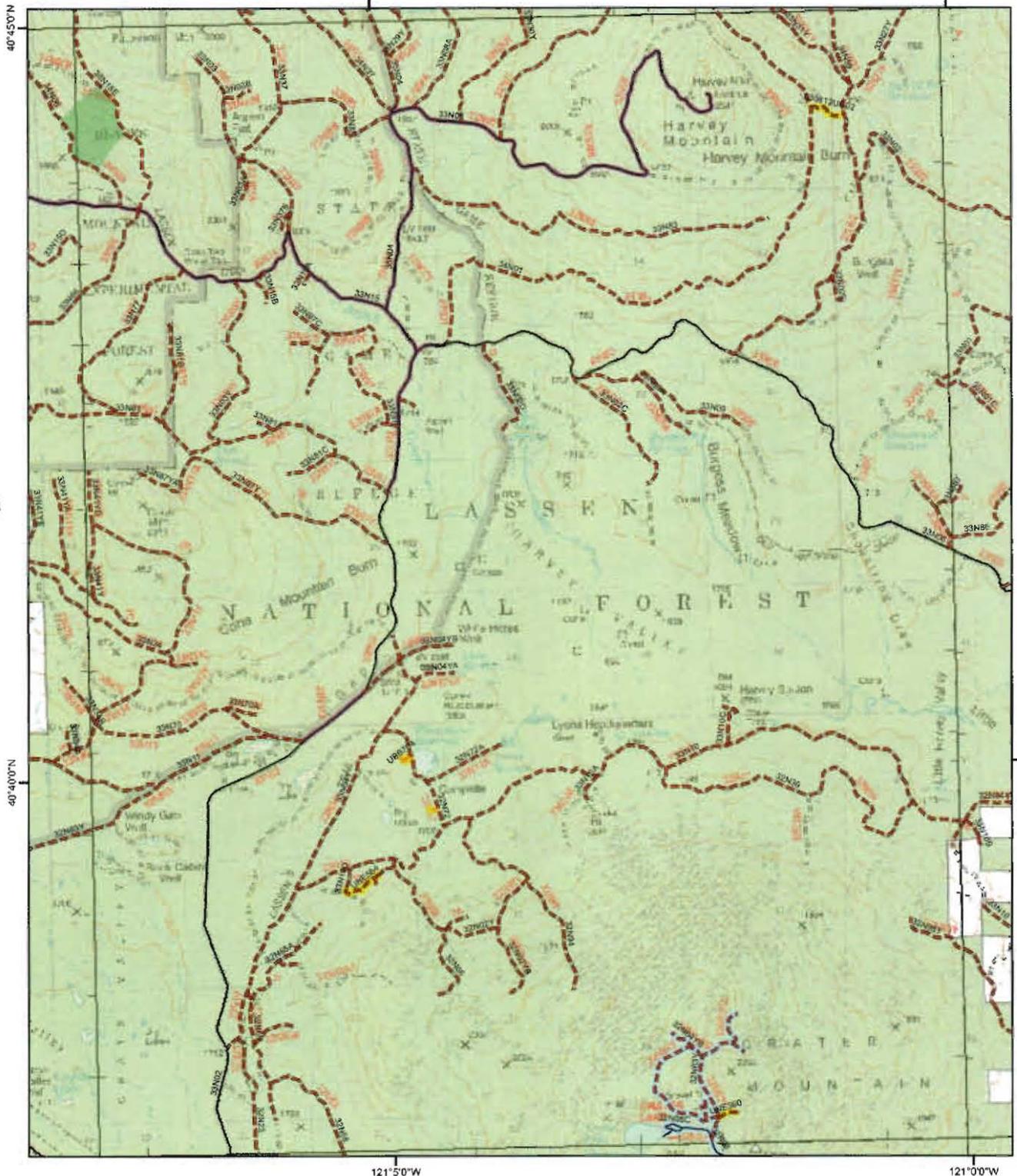
Restrict Season of Use to Summer/Fall (Winter Rec Trail)

Motor Vehicles Prohibited

Lassen National Forest

Private Land

Areas Open to Motorized Vehicle Use









---

Prepared by  
Tim Dedrick

*Tim Dedrick*

Forest Transportation Planner/Civil Engineer  
Lassen National Forest

Date *9/29/08*

Reviewed by  
George Kulick

Region 5 Qualified Engineer  
Region 5 Office of Engineering

Date