

***Engineering Report:***

Lassen National Forest

Eagle Lake Ranger District

Analysis of

National Forest System Road (NFSR)

**# 32N09**

**#32N09A**

for Motorized Mixed Use Designation

Forest: Lassen

District: Eagle Lake

Road Number: 32N09/A Road Name: Bogard Buttes/Cone Lake

**Introduction:** The 32N09/A Road segments studied are located on the west side of Lassen National Forest (LNF) in the Bogard Buttes quadrangle.

NFSR 32N09 ML3 begins at the intersection with 32N10 in Section 14 of said quadrangle and trends west by north along the northern flanks of the four Bogard Buttes, meanders past Lost Spring and Pole Springs in the Prospect Peak quadrangle and within ¼ mile of the northern boundary of the Lassen Volcanic National Park, then intersects with a terminus at 32N21, the Butte Lake Campground Road. The approximate road length is approximately 6.0 miles.

Segment 1 (32N09) starts at approximate road mile 1.00 at the intersection with 32N10 and intersects with 32N09A and 32N09A1 for a distance of approximately 1.00 miles.

Segment 2 (32N09A) starts at the intersection with 32N09 and intersects with 32N09A1 for a distance of approximately 0.25 miles.

These roads are 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 32N09 / ML3. 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: 1.00 Ending Mile Post: 2.00

32N10 to 32N09A

Traffic Service Level:  A  B  C  D

Objective Maintenance Level:  1  2  3  4  5

Operational Maintenance Level:  1  2  3  4  5

Segment 2: Beginning Mile Post: 0.00 Ending Mile Post: 0.25

32N09 to 32N09A1

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:

Road 32N09/A / ML3 currently encourages use as an objective ML3 and operational ML3 collector road and functions as a forest highway connecting the 32N10 road to the Hat Creek Ranger District, tree seed plantations, and defensible fuel profile zones.

These forest highways connects to all weather asphalt surfaced State Highway 44 via 32N21 the Butte Lake Campground road and provides ingress and egress to a myriad of defensible fuel profile zones – DFPZ's, forest plan units for timber harvesting, and wildlife management areas.

32N09 is utilized by forest personnel for ingress and egress to Defensible Fuel Profile Zones – DFPZ's and their associated vegetation management and fire suppression functions, for wildlife management, and for recreation access to a forest destination, Butte Lake Campground.

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 this segment of 32N09/A / 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 mitigation measures, especially improved road / safety signing and comprehensive public education / outreach, will reduce crash probability.

Road mitigation should include implementing a comprehensive communication, management, and enforcement plan. Associated implementation costs will depend on the designated allowed use for the road.

NFSR road 32N09/A are 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. Crash severity is determined by the dynamics of a vehicles speed or combined speeds, mass, and configurations.

**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. These roads are an objective ML3 and an operational ML3. It provides forest commodity haul 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.
- The objective level of this road is classified as a 3, and the operational level is a ML3. This provides 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 commodity haul, 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 a licensed 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 32N09/A appears to be consistent with state law and forest policy for operational maintenance level 3 roads.

2. Crash history:

There are no reported motor vehicle crashes on these roads.

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)

2 civilian motor vehicles were observed along the 32N09 road during the field observation.

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 volcanic cinder surfacing. The majority of the traveled way is constructed upon a raised roadbed and the road has drainage ditches, singular culverts, and ditch-relief culverts. The road is approximately 16'-20' 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.

- 31N83
- 32N60
- 32N09L
- 32N09A
- 32N09A1

Road segment 2 intersects with the following forest roads.

- 32N09
- 32N09A1

The maintenance level 2 roads have historically provided forest management access, fire suppression access, commodity haul, forest grazing access, and hunting and firewood gathering access. The proposed MMU intersections of 32N09 /ML3 may result in higher traffic merging speeds.

7. Other roadway factors:

- Roadway alignment was adequate for the assigned maintenance level. Alignment provides for vehicle closing speeds of approximately 80 mph.
- The road was maintained with a traveled way width of 16'-20".
- Raised roadbed creates soft unconsolidated shoulders. Emergency vehicle run-out among numerous lava rocks, Juniper trees, mixed conifer trees, and brush may lead to loss of control for vehicle operators and/or collisions with immobile objects.
- The road provides administrative access for commodity haul, fire prevention patrol access, fire suppression access, wildlife management,

and recreation. Summer and fall seasons will experience peak use, winter and spring can bring snowy and icy conditions.

8. Roadside conditions:

- The segments run through high elevation, 5,000 ft., open conifer forest, open Juniper, brush, native grass and lava rock forest land.
- Cross slope is 0-2%.
- Grade is 0-2%.
- Pine and Juniper 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 and safety 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 road-parallel 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 segments 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/enq/roads\\_trails/signs\\_05/index.htm](http://fsweb.wo.fs.fed.us/enq/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:**

*Tim Dedrick*

*July 29, 2009*

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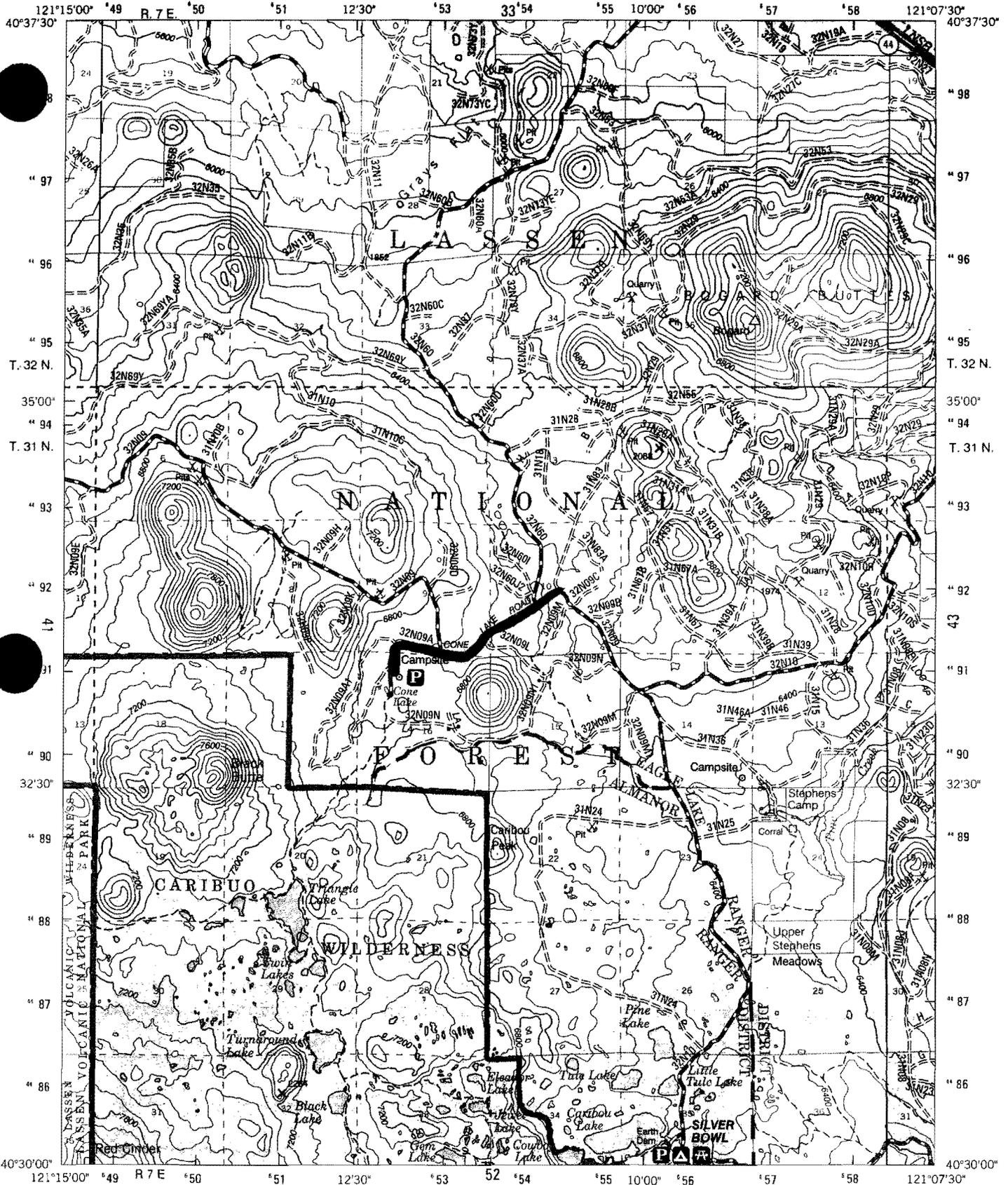
Prepared by Tim Dedrick  
Lassen NF Civil Engineer

Date

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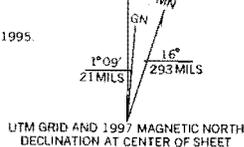
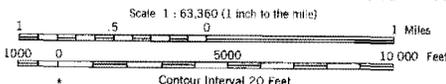
George Kulick  
Region 5 Qualified Engineer

Date



Produced by the U.S. Geological Survey  
Revised by the U.S. Forest Service  
as outside the National Forest System lands may not have been revised.  
Control by USGS and NOS/NOAA  
Compiled from aerial photographs taken 1980. Revised from aerial  
Photographs taken 1991 and 1993. Partial field check by U.S. Forest Service 1995.  
North American Datum of 1927 (NAD 27). Projection: California coordinate  
system, zone 1 (Lambert Conformal Conic).  
National Forest System lands. Revised 1997.

This map is not a legal land line or ownership document. Public lands are  
subject to change and leasing, and may have access restrictions; check  
with local offices. Obtain permission before entering private lands.



QUADRANGLE LOCATION

1	2	3	1 Swains Hole
4	5	6	2 Poison Lake
7	8	7	3 Harvey Mountain
		8	4 Prospect Peak
			5 Pine Creek Valley
			6 Mount Parkness
			7 Red Cinder
			8 Swain Mountain

ADJOINING 7.5' QUADRANGLES

HIGHWAYS AND ROADS

- 395 U.S. Primary Highway
- 139 State Secondary Highway
- 11 County Improved Road, Paved
- 30 National Forest Improved Road, Gravel
- OHV Unimproved Road, Dirt
- OHV Composition Unspecified
- OHV 4 Wheel Drive Road
- OHV National Recreation Trail
- Gate Trail