

Exhibit 4

**2005 Engineering Report for
Motorized Mixed Use on the
Proposed Share the Dream Trail
Lassen National Forest**

February 3, 2005

Elizabeth Norton
Lassen National Forest

OHV use on NF system roads

I fully understand the liability and concerns to allowing non-street legal vehicles on level 3-5 roads! Please consider this proposal to minimize the risk.

I have in hand R-6 Supplement 7709.59-92-1 effective May 6, 1992, R-6 Supplement 7730-2003.1 effective April 10, 2003, an eastern forest's ATV Evaluation for FR 2231 documentation, the San Dimas Pre-project proposal for a July 2006 publication, my May 2004 Issue paper, and my 2004 Backcountry Discovery Trail Signing protocol.

Enclosed is a proposed methodology to evaluate and document the risk of allowing non-street legal vehicles to share use with street-legal vehicles on individual FS System roads.

Further, I propose that the Lassen NF evaluate the appropriateness of this methodology by applying it to BCDT 3B (Share-the-Dream) route around Lassen Volcanic National Park as a test effort during the 2005 field season. This will allow time for further feedback to San Dimas in their efforts to document a National process, due in July 2006.

And, finally, if this proposal is acceptable to the Lassen and Region, I will work with the Backcountry 4X4s Club in 2005 to perform the field data gathering to formally document an evaluation for use on BCDT 3B. The snow is already melting!

"Shared" terminology is already used on signs shown in the current MUTCD manual. When shared use is approved then the "shared use" signing protocol will need to be developed and could be made a part of the BCDT Signing Protocol for trial testing.

Dick Tatman
530-253-3054

Enclosure

cc: Laurie Tippen
Jack Walton
Rich Farrington
Bob Sutton
Ed Gililand, San Dimas
Sylvia Milligan



Laurie A
Tippin/R5/USDAFS
03/16/2005 11:37 AM

To Jack Walton/R5/USDAFS@FSNOTES, Elizabeth
Norton/R5/USDAFS@FSNOTES
cc
bcc
Subject Share the Dream Loop/Mixed Use traffic study

It's in our best interest to have volunteers from ROC assist us in a traffic study this field season to determine whether mixed use is appropriate on some or all of the Share the Dream Loop. Dick Tatman has submitted to us a methodology used elsewhere in the agency to figure out traffic use on our road system. Having this type of info will be useful in making a mixed use determination.

Prior to initiating any volunteer agreement w/ ROC, I want the two of you to jointly discuss, determine, & agree upon:

- the info we want ROC to collect for us using the methodology submitted by Dick
- the specific roads we want the info collected, create a priority list of roads
- what equipment or supplies we'll provide
- who the Forest Service contact will be and the critical check points where ROC needs to provide us updates
- the time frame in which we want the data collected
- the format that needs to use ROC to submit the summary data
- any other pertinent info you deem appropriate

I don't want to walk away from ROC's offer to assist us in gathering data this field season, which means your collaboration on this is extremely important. Thanks for your attention to this.

Laurie Tippin
Forest Supervisor
Lassen NF

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April 19, 2005

Forest Supervisor
Lassen National Forest
2550 Riverside Drive
Susanville, CA 96130

Ref: Share-the-Dream Loop Traffic Study

Dear Ms Tippen,

Enclosed for your consideration is a proposed Traffic Study to assist in deciding if non-street legal OHVs could *relatively safely* share use with street legal vehicles on the maintenance level 3 and 4 roads needed for the Share-the-Dream Loop (BCDT 3B). The study to be done by the Regional Office will not adequately cover this Loop.

The Back Country 4X4s Club (affiliated with ROC) agreed to take on the task of doing the surveillance work in June, July and August, 2005. We need to tie down dates to put a work party together. I will serve as Team Leader for this study.

We would appreciate your earliest decision so that logistics can be developed to have a work party training session on June 4, 2005 and start surveillance on June 5, 2005.

Sincerely,



H. R. (Dick) Tatman, Jr.
President, Back Country 4X4s
and California Licensed Traffic Engineer, TR1013, 12/31/06
707-620 Wingfield Rd.
Janesville, CA 96114
530-253-3054 dick@team-tnt.com

Enclosure

cc: Elizabeth Norton
Sylvia Milligan, Chairperson, ROC

Traffic Study

BCDT-3B Share-the-Dream Loop

Summer 2005

Problem: Which unpaved road segments of the proposed BCDT-3B Share-the-Dream Loop may have shared (mixed or combined) use between street legal vehicles and non-street legal OHVs?

Given: The unpaved road segments to be evaluated in this study are identified as coded A and 1(a) on pages 17 and 18 of the March 5, 2004 "Proposal for Alternate 3B through the Lassen National Forest".

There are 12 separate unpaved segments for 3B, two of which are County roads. In addition, there are 2 segments of BCDT 3 to complete the loop around Lassen Volcanic National Park. And this involves (or portions of) 17 classified forest development roads (FDRs).

Transportation inventory records need to be researched to obtain management and historical information to include on the Traffic Study Results form for each segment.

Data Collection:

Roadway Characteristics – data needs to be collected along each road segment to complete the Road's Characteristics form. This task will involve at least two vehicles driving together along each segment to gather the required data.

Traffic Flow – data needs to be collected at each of twelve (12) specified counter stations. One or two people must occupy each station from 7:00 AM until 7:00 PM on count days. Teams can work in 4 or 6 hour shifts, also, as long as continuous coverage is provided for the 12 hour count day. The resulting sample count will represent about 80 percent of the ADT for that day. The recording will determine the total number of vehicles, by class, that passes the station in either direction. Data is to be recorded on the Traffic Flow Data form.

Count days will be on the first Sunday and third Wednesday of June, July and August and first Sunday of September.

Data Analysis:

After the data is collected, the annual (seasonal) average daily traffic is calculated per FHWA definition and is recorded on the Traffic Study

Results form. The percent by class is calculated and added to the Results form. Average speed in miles per hour (MPH) is transferred to the Results form from the Roadway Characteristics form.

Finally, judgement comes into evaluating the information collected and assigning an accident probability and consequences.

If the decision is made to allow street legal–non-street legal shared use, then a closer look at roadway characteristics is needed to determine what, if any, spot work is needed to further reduce accident potential. Share use signing is required.

Enclosures

- Traffic Flow Data form with detailed instructions
 - Roadway Characteristics form with detailed instructions
 - Traffic Study Results form with detailed instructions
 - Traffic Study Methodology Documentation.
- Copies of selected cited references available by request.

Coding Instructions

Traffic Study Forms

Traffic Flow Data

The study team leader will complete the location information on the form prior to field work. The recorder is to note who he/she is, the date of the count and the weather conditions.

Weather can be clear, partly cloudy, cloudy, rain and temperature cool, warm, hot.

Depending upon the amount of traffic in a four hour period, there are a couple of ways to record when a vehicle passes the station in either direction. Use **TLL** or **∴∴** or the numeral for the time period. Use the same format for the entire counting period.

Vehicles are classified as follows:

<u>Vehicle Class</u>	<u>Characteristics</u>	<u>Record</u>
1	Street Legal** 2WD or 4WD** Motorcycles**	Passenger Car SUV Pickup Motorcycle
2 OHV Non-street Legal <50" wide	2 wheels/tires 3 or more wheels/tires 2WD or 4WD (Dirt bikes, quads or ATVs)	Dirt Bike Quad
3 OHV Non-street Legal >50" wide	4 or more wheels/tires 2WD or 4WD ("Jeeps" or dune buggies)	
4 OHV Non-street Legal	Snowmobile	

** State licensed with metal plates for use on "highways".

For example, a state licensed highway motorcycle is to be coded in the Class 1 block.

Record vehicle Class 1 traffic as either passenger car, sport utility vehicle, pickup or motorcycle. See Traffic Flow Data Form.

Record any unusual things you happen to see about traffic and traffic flow.

Totals may be done by the recorder or team leader.

Roadway Characteristics

The study team leader will work with the recorder(s) to ensure consistency in the collection of data.

Mileposts will be by vehicle odometer and logged to the nearest tenth of a mile (528 feet). If a specific point, such as a hazard, needs a closer measurement estimate, 264 feet or one hundredth of a mile, i.e., 3.25.

- Start the mile post log at the beginning of the segment and record it as MP 0.0. Use your trip odometer if you have one, set to 0.0.

Coding

- Surface type
 - Native material N
 - Processed aggregate A
- Travel-way width
 - Average usable width Feet
 - Minimum width Feet
 - Driveable shoulder width, clear space Feet
- Adjacent hillside slope—downhill
 - Using clinometer or abney determine average slope for sections <40% or >40%
- Average Travel Speed
 - While driving the road to gather roadway characteristics, record your average travel speed for the section. MPH
- Sight Distance* (measure $\frac{\Delta}{2}$ feet above roadway)
 - Horizontal Curve Feet by Milepost
 - Vertical Curve Feet by Milepost

*Measured and recorded if less than the following stopping sight distances:

MPH	USFS Sign Placement Guide, pg. 32 (feet)	USFS Sign Placement Guide, pg 44 (feet)	Calif. DMV	FSH 7709.56 -4.25 SL (feet)	MEAN (feet)
20	90	—	150	210	150
30	130	193	215	360	225
40	180	309	290	540	330
50	220	444	360	—	341

The feet listed as the mean or average of the various sighted sources will be used.

A procedure needs to be developed.

- Specific Hazards

As you travel the road note the milepost and type of unusual hazard along the travel way, i.e., rock outcrop, short culvert, tight/narrow turn, tree or stump, that encroaches on the travel way.

Milepost and hazard identity

- Signing

Again, as you travel the road, note the milepost and type of warning sign (MUTCD) that you believe is really needed.

Milepost and MUTCD sign number

Traffic Study Results

The study team leader will compile the data to complete this form.

- Functional Classification
 - Arterial A
 - Collector C
 - Local L
- Traffic Service Level
 - Free flowing, mixed traffic A
 - Congested during heavy traffic B
 - *Interrupted traffic flow* C
 - Traffic flow is slow D
- Objective and Existing Maintenance Level
 - Closed more than 1 year 1
 - High-clearance vehicles 2
 - Passenger vehicles, surface not smooth 3

- Passenger vehicles, surface smooth 4
- Passenger vehicle—dust free, possibly paved 5

- Accident History last 5 years Year by Milepost
Review accident report and list mileposts
- Based upon local knowledge, record the probable inclusive months that use will occur.
- Calculate the annual or seasonal ADT using the FHWA definition.
- If the calculated ADT exceeds the following, then install mechanical traffic counters to record traffic flow over a minimum of two weeks at a time, twice per season.

Maintenance Level 3	30 ADT
Maintenance Level 4	90 ADT
Maintenance Level 5	120 ADT

• Estimated Accident Ratings, Potential and Severity

Reference: FSH 7709.59, Chap. 50, Section 52.2"

It needs to be said that accidents—even single vehicle ones—happen! Risk can not be totally eliminated!

The following are proposed to help evaluate the potential and severity of an accident.

Additional Guidance to Consider from May 2004 Issue Paper

Maintenance Level	Ave Basic* Speed (MPH)	Average Daily ** Traffic (ADT)	Surface Type
3	30	15	Native/Agg
4	40	45	Aggregate
5	50	60	Paved

*Estimated basic speed as defined VC 38305.

**Estimated average annual daily traffic.

Probability of Accidents

	<u>High</u>	<u>Medium</u>	<u>Low</u>
Mix Vehicle Classes	50% Class 1 and 50% Class 2		
Speed exceeds basic by:	150%	75%	50%
ADT exceeds daily by:	300%	200%	100%

Consequences of Accidents

High – Results in potentially disabling injury or death (FSH 7709.59-51.3)

Medium – Property damage exceeding \$4000 or bodily injury requiring professional medical assistance.

Low – An accident that is not a Reportable OHV Accident (VC 16000.1)

OR from R6 Supplement 7709.59-92-1 (5/6/92)

Low Probability exists where there is a combination of factors such as:

- no known accidents
- lower ADT (30 or less)
- users are well acquainted with the situation
- lower speeds of ²15 mph or less generally associated with maintenance level 2 roads
- abrupt changes in roadway cross section are not present
- little or no impairment of visibility
- changes in roadway curvature are smooth and do not require rapid deceleration

High Probability exists where there is a combination of factors such as:

- history of several accidents
- ADT in excess of 150
- users are present who may not be familiar with this type of road or driving
- speeds in excess of 40 mph generally found on maintenance level 4 and 5 roads

- changes in road width, shoulder or surface type occur
- some abruptness of either vertical or horizontal curvature are present and changes in speed and maneuvering are required

Low Severity – A combination of factors such as:

- slower speeds (²15 mph or less)
- adequate clearance from hazards, limited obstacles, and shallow streams or other bodies of water.
- lesser slope steepness
- fair alignment and visibility
- single or family passenger vehicles
- travelway is relatively clear of fog, snow, or ice

High Severity – A combination of factors such as:

- higher speeds (40 mph or more)
- little clearance for roadside hazards, intrusions in roadway, deep, or fast water
- steep grades (over 12%)
- steep side slopes or drop-offs
- radical change in user speed or alignment
- buses or other similar multiple passenger vehicle
- fog, snow, or ice are common during use

Estimate the probability and severity ranking for the road and show the coding on the Traffic Study form.

Probability H, M, or L

Severity H, M, or L

After completion of the ranking for probability and severity, determine the most cost-effective method of managing the accident risk. Reduction of

risk needs to be balanced against the investment required to reduce the risk. At some locations the cost to eliminate most or all accidents may not be cost effective. A less costly treatment which allows a medium accident frequency may be the most cost-effective solution if the accident severity can be reduced to a lower accident risk for the average driver.

This is the part of the study that must rely on common sense and sound judgement.

Allow OHV shared use when both ratings are medium or low or combination of medium and low. Evaluate economically feasible mitigation measures to reduce one high rating to medium or low. If both ratings are high and mitigation not feasible, then do not allow shared use, thus, code the Traffic Study form.

Y or N

If feasible mitigation measures can be accomplished, then list what and where and include on Traffic Study form.

Traffic Flow Data

Count Station # _____

_____ Traffic Study

Study Segment # _____ GPS Coord.: Lat _____ Lon _____ Field Data Collected by _____

Location Narrative _____ Date and Weather _____

Forest _____ Road No _____ Normal Season Use Period _____ to _____

Milepost	Vehicle Classification							Total Traffic Numeric
	1 Street-legal			2 OHV		3 OHV		
	Std Passenger Car	SUV	Pickup	Motorcycle	Dirt Bike	Quad		
7AM - 11 AM								
11 AM - 3 PM								
3 PM - 7 PM								
Total Count for Day								
% Traffic by Class								

People per Vehicle (any class)					
1	2	3	4	5	6 or more

Site Photo

Traffic Study Methodology

Given: Traffic as used in this study is any motorized vehicle used for the purpose of travel. Traffic, or vehicle classification, are defined variously by Executive Order 116-44, 36CFRS, FSM and FSH. There is no clear, simple definition that would be easily understood by the public at large.

FSM and FSH do not specify any specific average daily traffic (ADT) linked to road standards or maintenance levels. FSH 7709.56 - 4.2 does discuss vehicles per hour (VPH) and mixed use to relate traffic service levels, turnout spacing and operational constraints, and states:

“Traffic Service level

- A Mixed use up to 25 VPH ≈ 600 ADT
- B Mixed use up to 25 VPH
- C Some Mixed use up to 20 VPH ≈ 480 ADT
- D Not intended for mixed use 0-10 VPH.” ≈ 240 ADT

According to the Roads Analysis, Report FS-643, 1999:

Road Classifications in Current Use

Functional Class	Traffic Service Level	Maintenance Level
<p>Arterial: Provides service to large land areas. Connects with other arterials or public highways.</p> <p>Collector: Serves smaller land areas than arterials. Connects arterials to local roads or terminal facilities.</p> <p>Local: Single purpose road. Connects terminal facilities with collectors or arterials.</p>	<p>A: Free flowing, mixed traffic; stable, smooth surface; provides safe service to all traffic.</p>	<p>Level 1 Closed more than 1 year.</p>
	<p>B: Congested during heavy traffic, slower speeds and periodic dust; accommodates any legal-size load or vehicle.</p>	<p>Level 2 High-clearance vehicles.</p>
	<p>C: Interrupted traffic flow, limited passing facilities, may not accommodate some vehicles. Low design speeds. Unstable surface under certain traffic or weather.</p>	<p>Level 3 Passenger vehicles—surface not smooth.</p>
	<p>D: Traffic flow is slow and may be blocked by management activities. Two-way traffic is difficult, backing may be required. Rough and irregular surface. Accommodates high clearance vehicles. Single purpose facility.</p>	<p>Level 4 Passenger vehicles—smooth surface</p> <p>Level 5 Passenger vehicles—dust free; possibly paved.</p>

FSM and FSH are not consistent or clear as to which class of vehicle may use which road. The common understanding is "OHV" can use maintenance Level 2 roads unrestricted and can not use paved roads (normally maintenance Level 5). Use of Maintenance Level 3 and 4 roads by OHV is not absolutely clear. FSH 7709.59-52.2 limits use but also considers the probabilities and consequences of accidents associated with shared (mixed/combined) use. A traffic study is called for but there is no guidance for such a study.

FSH 7709.55 - 31 Area Transportation Analysis, states several things that are pertinent to this study:

31.22 Collect Data

1. Identify Only the Data Needed for the Study.
2. Use Existing Data to the Fullest Extent Possible.

31.23 Interpret Data

- 2.b,(2)(b). A loop road can be designated for OHV and ATV traffic between periods of commercial use.

OHV/ROADS ISSUE

On April 7, 2004, the Motorized Recreation Program Leader for R5 (Pacific Southwest Region of USFS) asked for help to research the issue. A 68 page issue paper was published in May 2004 and shared with the Region and edited portions sent to Washington in response to Federal Register call for response to first draft policy on OHV use on forests. This research involved detailed study of the California Vehicle Code, Executive Orders, Code of Federal Regulations and the Forest Service Manual and Handbooks, as available on the internet.

Based upon the recommendations made during the preparation of the 5/04 Issue Paper, the following vehicle classes and daily traffic numbers were developed and will be used in this study:

47. For the purposes of Traffic Management (36CFR 212.5 and FSM

7700) the following vehicle classes are recommended for adoption and use:

<u>Vehicle Class</u>	<u>Characteristics</u>
1	Street Legal 2WD or 4WD
2 OHV	Non-street Legal <50" wide 2 wheels/tires 3 or more wheels/tires 2WD or 4WD
3 OHV	Non-street Legal >50" wide 4 or more wheels/tires 2WD or 4WD
4 OHV	Non-street Legal Snowmobile

48. The following estimates are offered and linked to the Maintenance Level System:

<u>Maint. Level</u>	<u>Speed Range (MPH)</u>	<u>Use Speed (MPH)</u>	<u>Daily Traffic Range</u>	<u>Use ADT</u>	<u>Surface Type</u>
2	2-38	20	0-10	5	Native
3	15-45	30	10-30	15-25	Native/Agg
4	25-55	40	30-60	45	Aggregate
5	45+	50	60+	60	Paved

Traffic Engineering:

Four documents have been reviewed and applicable statements extracted here for clarification, leading to the study plan. Copies of sections from these documents can be made available.

1. **Fundamentals of Traffic Engineering**, Institute of Transportation and Traffic Engineering, University of California, Berkeley, CA, 1966

a) ADT in vehicles per day used to measure present traffic flow and demand for service.

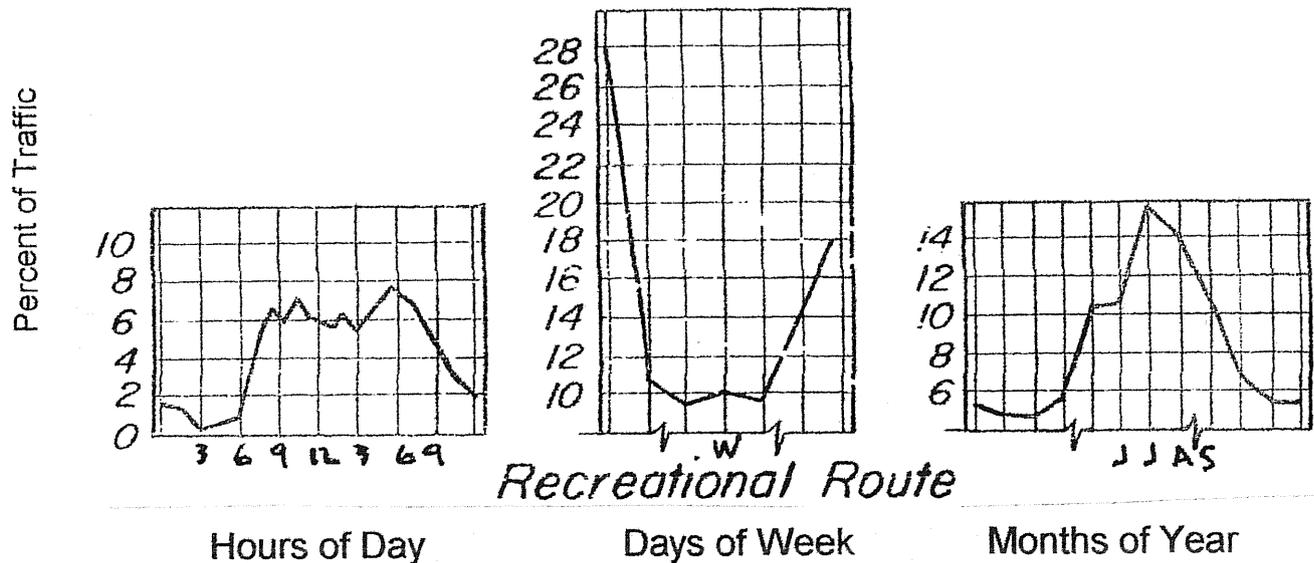
b) Classification counts used in establishing structural and geometric design criteria.

c) Manual counts for light volumes.

d) Counting Periods commonly used—12 hours—7AM to 7PM.

e) Rural Counting Programs vary considerably depending upon type and size of area. Coverage Stations are counted for a 24 or 48 hour weekday period annually or biennially.

f) Rural Characteristics are shown for California roads:



2. **Guide for Traffic Volume Counting Manual**, Bureau of Public Roads (Now Federal Highway Administration FHWA), 1965 Guidance for State DOTs.

a) Defines annual average daily traffic (ADT)

ADT - (Annual average daily traffic) Annual average number of vehicles during 24 consecutive hours that pass a particular point on the road over the period of 365 days.

Annual average daily traffic is calculated by averaging the average daily traffic for each of the 12 months. The average daily traffic for the month is calculated using the equation:

$$\text{Average day of month} = \frac{5 \text{ Av. Weekday} + \text{Av. Saturday} + \text{Av. Sunday}}{7}$$

Where Av. weekday = average daily volume for all weekdays of month
Av. Saturday = average daily volume for all Saturdays of month
Av. Sunday = average daily volume for all Sundays of month

This procedure is considered the simplest feasible method for providing comparable values when counts for certain days are unusable.

b) Defines coverage count stations.

c) Defines statistical analysis and experience in application of statistically controlled procedures in 30 states.

d) Defines that any count of less than one-year duration must be regarded as a sample.

e) Observations indicate that there are substantial differences in the urban and rural variations of traffic volumes, in terms of time periods.

f) Procedures for highways with ADT volumes between 25 and 500. Percent of ADT error when counting on state wide programs greatly increases under an ADT of 250.

Coverage count stations procedures also apply to low volume (25-500) roads. An exception to this policy is that coverage count stations are not usually located on roads carrying an ADT of 25 or less. Locate coverage count stations at alternate intersections. However, it may not be necessary to locate a

coverage count station at alternate intersections providing the traffic volumes do not vary by more than 25 percent between road sections under consideration.

g) Roads with ADT volumes less than 25. Other sources of information should be used for the estimation of traffic volumes on the extremely low-volume roads.

h) The greater the familiarity with local conditions the better judgement can be exercised in the final decision in estimating traffic volumes.

3. **Traffic Surveillance, FSH 7709.41, PSW (R5), 1969**

a) Each Forest can identify roads or road segments for which information on the traffic is needed now. Therefore, we begin by selecting sites on the basis of urgency for information about a road segment.

b) The reading schedule or observation period will depend only on the accuracy required.

c) Select road segments about which information is necessary

now.

d) Keep orderly and systematic records of all data gathered for now and the future.

e) Whatever sample size or reading schedule is chose, it must be periodic, e.g., with respect to the hour of the day, day of the week, and the of the same duration.

f) Manual counts will be done, therefore machine counter malfunctions or errors do not need to be considered.

4. **1988 Traffic Volumes on the California State Highway System**, State of California Division of Traffic Engineering in cooperation with the Federal Highway Administration.

a) Traffic trends are defined. 1988 numbers will be displayed at appropriate places for this study. This document indicates a 5.8% statewide annual average rate increase between 1983 and 1988.

b) Annual ADT, Peak Month ADT and Peak Hour are defined.

Study Methodology:

The problem or question is, what is the level of shared use between street legal vs non-street legal OHV at which the perceived risk of an accident is too great to allow the sharing?

The term shared is used in lieu of mixed or combined primarily because the Manual of Uniform Traffic Control Devices (MUTCD) already has a typical sign that says "Share the Road", #W16-1.

Factors that have a bearing on this question are:

1. How much traffic is moving, ADT
2. What type of traffic is moving, classification
3. Basic speed of traffic, MPH
4. Stopping sight distance
5. Specific roadside hazards

Items 1, 2 and 3, however, are variable and at the whim of the driver. Some risk of an accident is to be expected.

Items 4 and 5 above can be physically mitigated to an acceptable level if they are judged to be a problem. Site specific reconstruction and/or additions of warning signs can be done.

FSH 7709.59 - 52.2 contains some guidance for estimating the potential and severity of an accident. USFS Region 6 also has an R6 Supplement that provides some more insight in how to make a

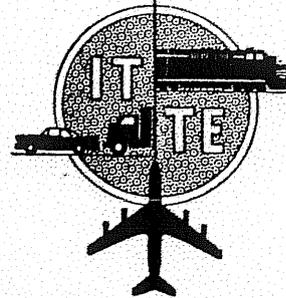
decision. Further, the May 2004 Issue Paper includes yet another set of criteria.

TATMAN

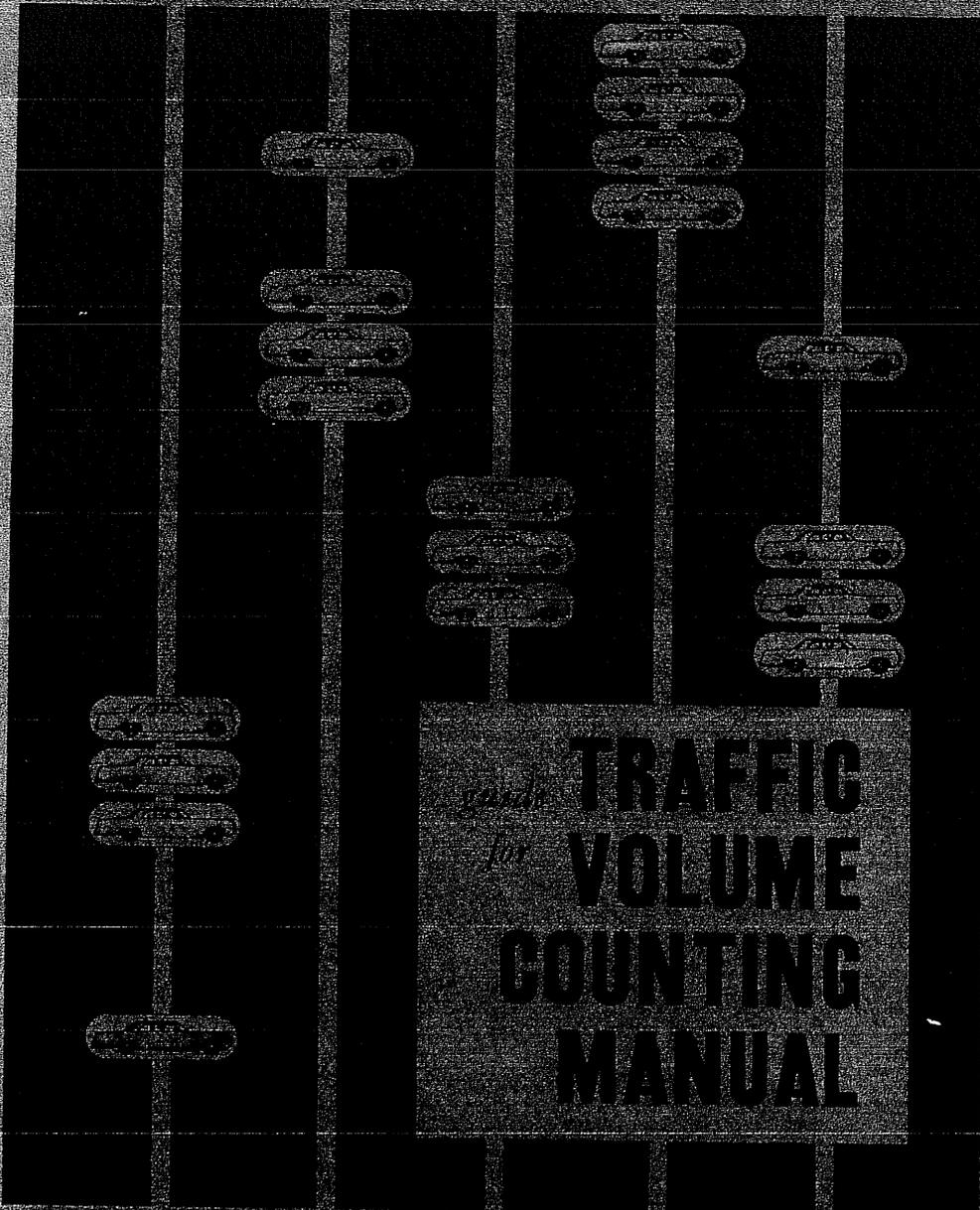
SYLLABUS

Fundamentals of Traffic Engineering - 6th Edition

Norman Kennedy, James H. Kell, Wolfgang S. Homburger



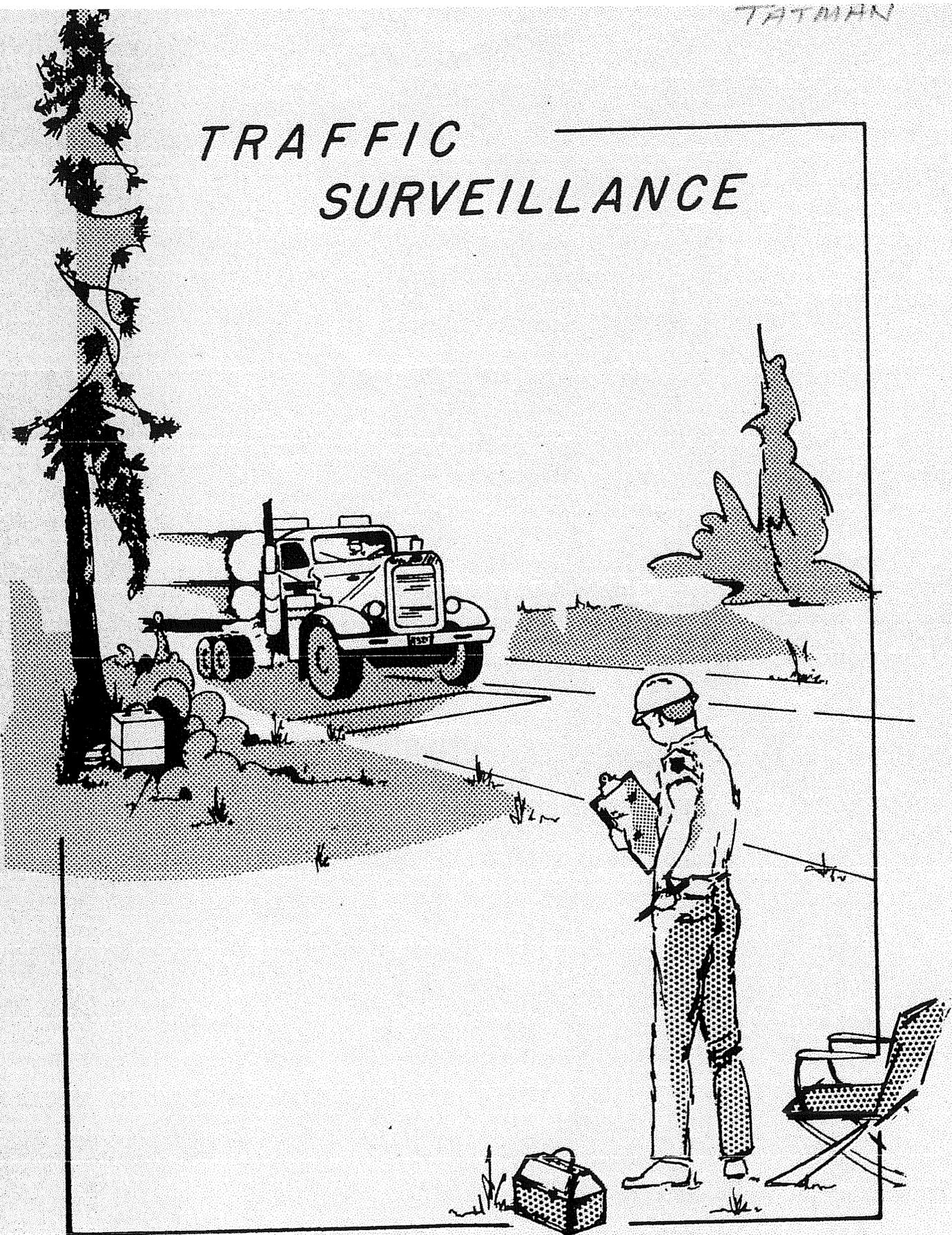
THE INSTITUTE OF TRANSPORTATION
AND TRAFFIC ENGINEERING
UNIVERSITY OF CALIFORNIA



Manual
for
**TRAFFIC
VOLUME
COUNTING
MANUAL**

U.S. DEPARTMENT OF COMMERCE • Bureau of Public Roads

TRAFFIC SURVEILLANCE



CALIFORNIA REGION
DIVISION OF ENGINEERING

7709.41

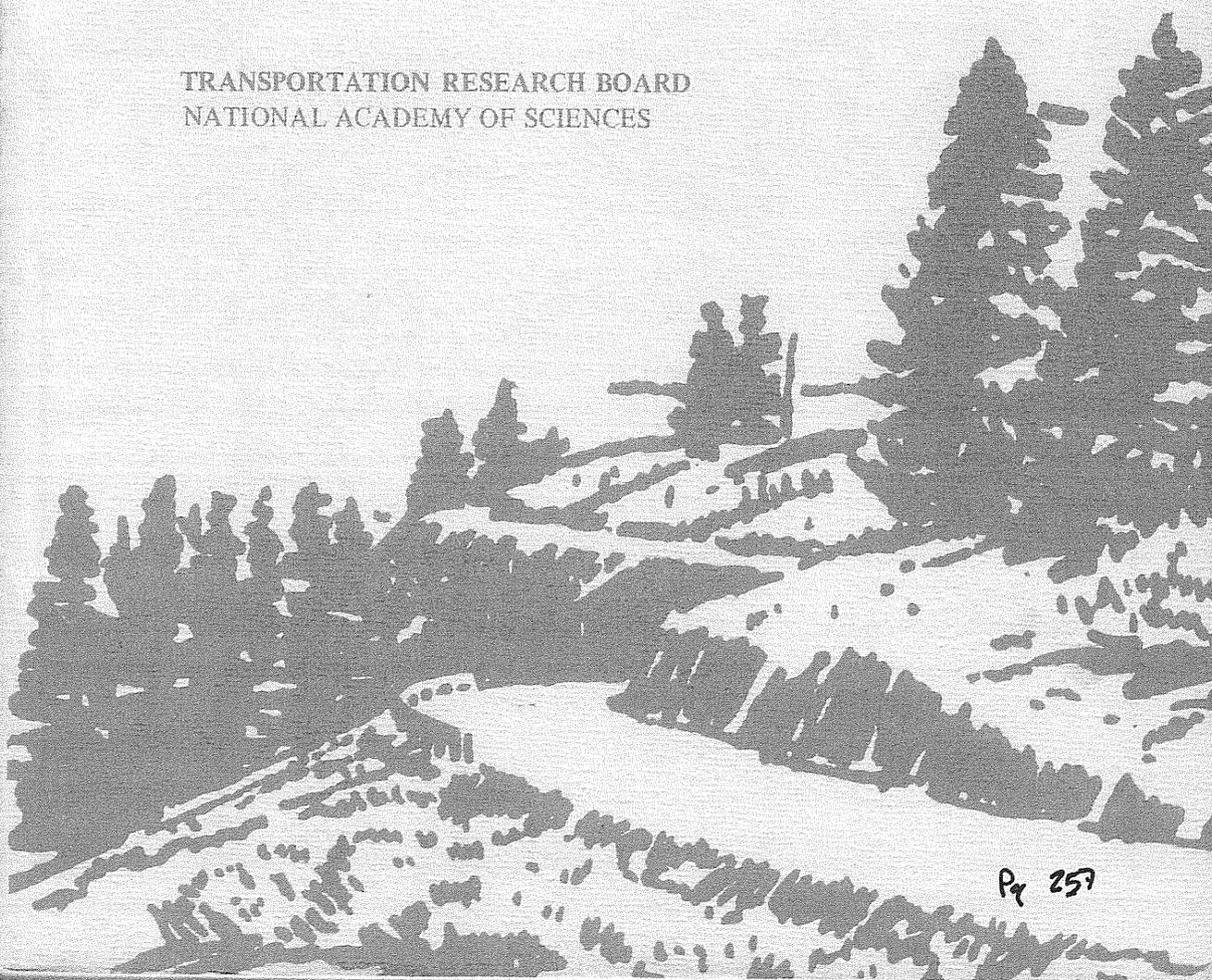
Tatman

H. R. TATMAN, JR.

LOW-VOLUME ROADS

SPECIAL REPORT 160

TRANSPORTATION RESEARCH BOARD
NATIONAL ACADEMY OF SCIENCES



Pg 257

Barbara Tatman

From: Elizabeth Norton [enorton@fs.fed.us]
Sent: Wednesday, May 11, 2005 4:11 PM
To: Barbara Tatman
Subject: Fw: Traffic Study Paper

Traffic Study
4-20-05.doc (295...

Hi Dick and Bobby - here is Sue's response below. I also like the idea of recording people per vehicle if we can add that to the form. Hopefully, no one is driving that fast so we can get a head count. What do you think of that? ✓

I've also asked Terrie Veliotes for all Caltrans traffic counts in our LNF area since 1988, so I hope to have that soon.

I recommend we reduce the # of sites and focus on just: 1) areas with known Greenstickler use along the Share the Dream route (I'll send you a map). We might want to move #8 down to Potato Buttes area; and 2) priority stations that are along ML 3 roads where we're trying to decide if we can safely have combined use.

I'll print another map for you that shows the route by ML level, count stations, and OHV use areas.

Sue's also right that we'll need a JHA. Hopefully the count station we decide on all have a safe pull off area nearby to park and to set up chairs. Also shade!!!

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----- Forwarded by Elizabeth Norton/R5/USDAFS on 05/11/2005 04:55 PM -----

Susan M
Kocis/WO/USDAFS

05/10/2005 01:27
PM

To
Elizabeth Norton/R5/USDAFS@FSNOTES
cc

Subject
Re: Fw: Traffic Study Paper
(Document link: Elizabeth Norton)

Hi Elizabeth,

Finally reviewed the traffic study you sent me several weeks ago. Overall it looks fine to me. The purpose and methods are clear. I have only a few comments- 1. Make sure safety of observers is addressed in a JHA 2. Might be useful to collect in/out rate as well as ADT. In NVUM we have based all our traffic counts on EXITING ratio so we know we are counting that visitor only once. Many road systems have

Ref #2 - we are only interested in the flow of what kinds of vehicles - we do not care about O&D or number of trips.

particular patterns where traffic flows through or comes from another area so same person going in doesn't come out same way later. Also patterns of in/out change throughout the day. At some point the forest might find this useful (collision potential etc).
3. Observer might want to record people per vehicle (PPV) to link to recreation use information and or compare to NVUM data collected on the forest.

✓ Good luck, and please send me a copy of the report when its completed. 
Thanks.

Sue Kocis
USDA Forest Service - Visitor Use Monitoring
1407 S. Harrison Road Suite 220
East Lansing, MI 48823
517. 355-7740 xt. 119
fax: 355-5121

Elizabeth
Norton/R5/USDAFS

04/21/2005 12:30
PM

Susan M Kocis/WO/USDAFS@FSNOTES

To

cc

Subject

Fw: Traffic Study Paper

Hi Sue - here the traffic study protocol we'd like to conduct June-August 2005. Purpose is to determine traffice type and volume on our ML 3 and 4 roads to determine if we can safety allow combined use by ATVs and street licensed vehicles. It will be conducted by volunteers. If you have time to review, we'd appreciate your comments on the methodology, which is based on the 4 documents referenced in this protocol. We are also installing 12 traffic counters on other locations on ML 3 and 4 roads.
Thank you.

Elizabeth Norton
Lassen National Forest
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Susanville, CA 96130
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----- Forwarded by Elizabeth Norton/R5/USDAFS on 04/21/2005 09:20 AM -----

"Barbara Tatman"
<barbara@team-tnt.com>

04/20/2005 07:46
AM

<enorton@fs.fed.us>

To

cc

Subject

Traffic Study Paper

Share-the-Dream Trail
Traffic Flow Data
Team Instructions
6/4/05

Why

The Share-the-Dream Trail is being dedicated in September of 2005 for use by street legal vehicles. The Recreation Outdoor Coalition (ROC) wants the trail to also be available to non-street legal vehicles.

The US Forest Service has criteria that must be followed in making a decision to allow sharing the road or mixing street legal with non-street legal vehicles. The Lassen National Forest has indicated that if a formal engineering study indicates acceptable risks of mixing the use on certain roads, then they may allow that use, following adequate signing.

ROC has embarked on performing the study for the Lassen.

Engineering Study

The study process being utilized involves four major steps”

1. Traffic Flow Data
2. Roadway Characteristics
3. Data evaluation and summarization
4. Accident Risk Analysis and Recommendations

The study assumes that all vehicles and operators are legally licensed and equipped to safely operate.

Step 1 involves observing all traffic passing a given point during a specific time frame to provide a statistical sample of what traffic is using the system.

Step 2 involves recording the surface type, travel way width, shoulder or clear area width for accident avoidance maneuvers, the average travel speed (basic speed) stopping sight distance at curves, roadside hazards and adjacent down hill slopes to assess physical conditions.

Step 3 involves calculating the average daily traffic, the percentage of traffic by vehicle class, the number of people per vehicle and a cataloging of physical conditions that fall below and acceptable minimum.

And step 4 takes the data obtained and using sound judgement, assigning a risk or potential for an accident and assessment of the severity of an accident, and recommendations.

Your Role-Step 1

As a team member, you will sit beside the road at an assigned location and time period to observe the traffic as it passes you.

Your responsibility is to determine the class or type of vehicle, the number of individual persons per vehicle, and the time period of the passing and record the data on the Traffic Flow Data form. Coding instructions follow.

If people stop to ask you what you are doing and why, you're free to share that you are a volunteer from ROC assisting the Lassen National Forest in gathering traffic flow data for the purpose of travel management for the Share-the-Dream Loop. You also may show them the recording form to clarify that no individual specific information is being gathered or recorded if that is a concern.

At the end of each count day send the data form to the team leader in the furnished envelopes.

Job Hazard Analysis (JHA)

The Forest Service has asked that a JHA be prepared for this activity. Their concern is for your personal safety while you perform a service for them. Therefore, consider the following:

1. While traveling from your home to the assigned count location and return in your personal vehicle—don't have an accident!
2. The count location is along an existing road that may have traffic traveling at various speeds.
3. The count location was selected with the following in mind:
 - a. A place to safely park your personal vehicle off the travel way (out of harms way).
 - b. A safe place to sit, in the shade, to be available to record all traffic that passes. (Or in the sun if you desire.)
4. You have been notified to bring sweaters, coats, hats, sunscreen, water, lunch, and lawn chairs and to carry a first aid kit, shovel and toilet paper in your vehicle.
5. Two people are to be available at each location for the following reasons:
 - a. Company to pass the time.
 - b. At least one person awake.
 - c. Afford time for one person to attend to the "call of nature".
 - d. Personal safety in numbers.
6. If you have children or pets along, be extra alert to where they are when you hear traffic coming. None of us want to have a child or pet hurt while playing.

Timekeeping

The Forest maintains and reports on the number of volunteer hours contributed during the year. After your last day on this project, please provide, in writing, your hours and personal vehicle mileage for each of the days you helped, along with the final form. If you are a couple and cover a station from 7AM to 7PM, then show 24 hours.

8/29/05

Jack W. —

Liz N. —

Traffic Study

Liz returned comments 9/2/05
incorporated 9/2

Here is the current draft of the report.

I still have to add 9/4 data to the record - BOT - the analysis is based only on June, July & August observations. And I will be adding some photographs to the final printing.

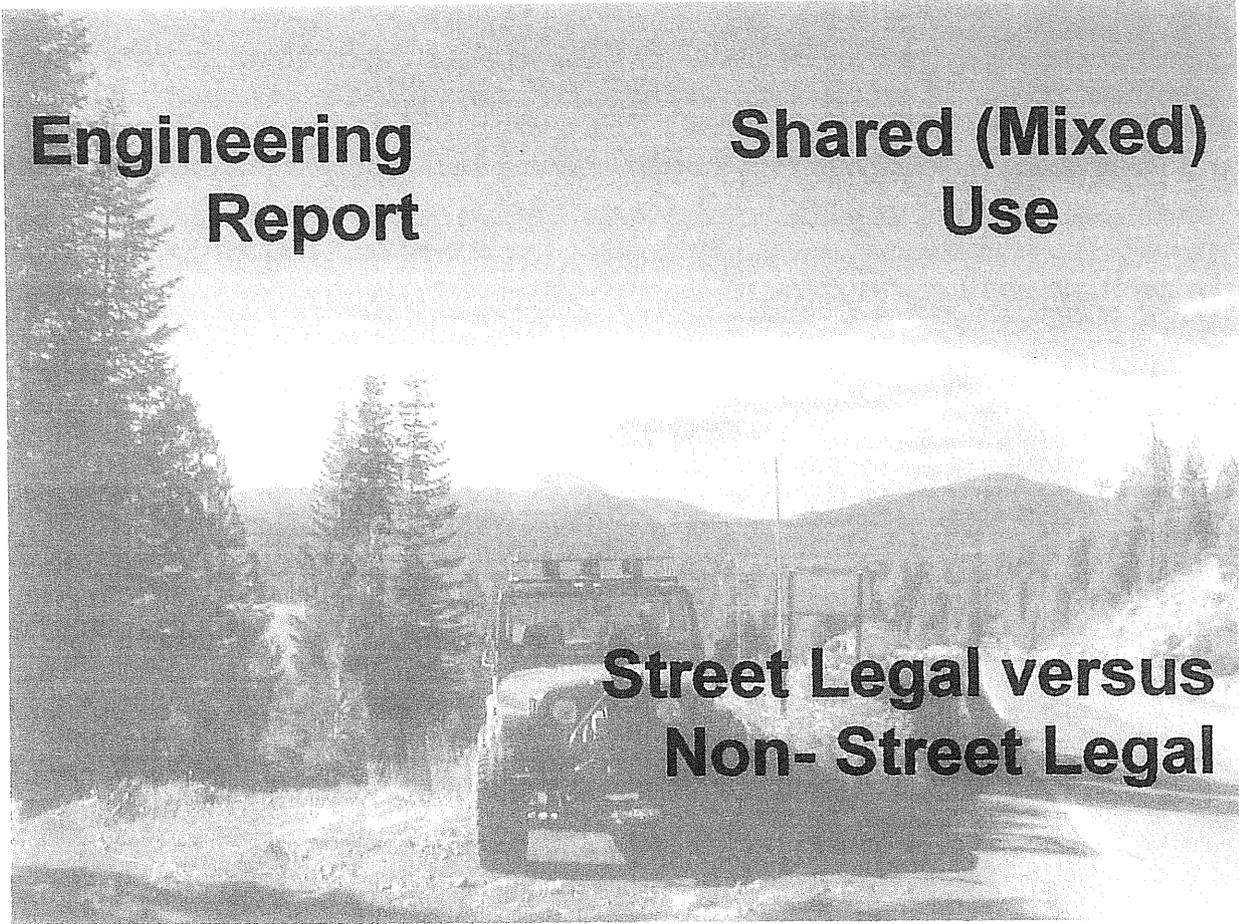
Please review and provide any changes you feel are needed for my consideration by 9/9. My goal is to distribute the final H- 9/14.

Write your comments in the report if you wish & return to me. Give me a call @ 253-3054 & I will be happy to come pick them up - Save snail mail time.

Thanks

Orl T

P.S. Detailed notes, assessment & mitigation included for early 32N09. Some of the other maps not ready.



**Engineering
Report**

**Shared (Mixed)
Use**

**Street Legal versus
Non- Street Legal**



Lassen Backcountry Discovery Trails

Alternate 3B Share-the-Dream Loop

ROC
Recreation Outdoors Coalition

Recreation Outdoors Coalition



U.S. Department of Agriculture
Forest Service



Backcountry 4x4s

Forest Supervisor
Lassen National Forest
2550 Riverside Drive
Susanville CA 96130

September 14, 2005

Dear Ms Tippin,

Enclosed is the 2005, Back Country Discovery Trail Alternate Route 3B, Share-the-Dream Loop Motorized Shared (mixed) Use engineering analysis for your consideration.

The analysis was performed essentially as presented to you on April 26, 2005. As data gathering began, some recording procedures were modified to best reflect conditions. Contacts were maintained with the development of the national "Guidelines for Analysis of Mixed Use on NFS Roads". This analysis adheres very closely to the WO's August 23, 2005 draft.

To date, no accidents have been reported on the roads evaluated in the study.

Based upon the analysis and my professional judgement, I believe the risk for accidents will be low if you allow continued use of non-street legal vehicles on these unpaved roads of the Share-the-Dream Loop.

For the 72 miles, the average daily traffic for all count stations was 12 vehicles, with a high of 27 and a low of 5. Of the 895 vehicles counted, 83% were street legal and 17% were non-street legal. And they carried, on average, 1.6 people per vehicle. Of the 83% that were street legal, only 10% were passenger cars, suggesting that maintenance levels could be lowered. Also, there were 26% SUVs, 47% pickups, 3% dirt bikes and 14% quads.

Finally--this project involved 60 members representing nine OHV Clubs and the Recreation Outdoor Coalition from Northern California. These people contributed 2,140 hours of labor and provided 16,714 miles of personal vehicle use. We all sincerely hope this analysis gives you the information you need for making the decision to continue "shared use" on these roads.

We look forward to your decision.

Sincerely,

H. R. Tatman, Jr., PE, Team Leader
707-620 Wingfield Rd
Janesville CA 96114
530-253-3054

cc: Sylvia Milligan, Chairperson ROC
E. Vaughn Stokes, Director of Engineering, WO

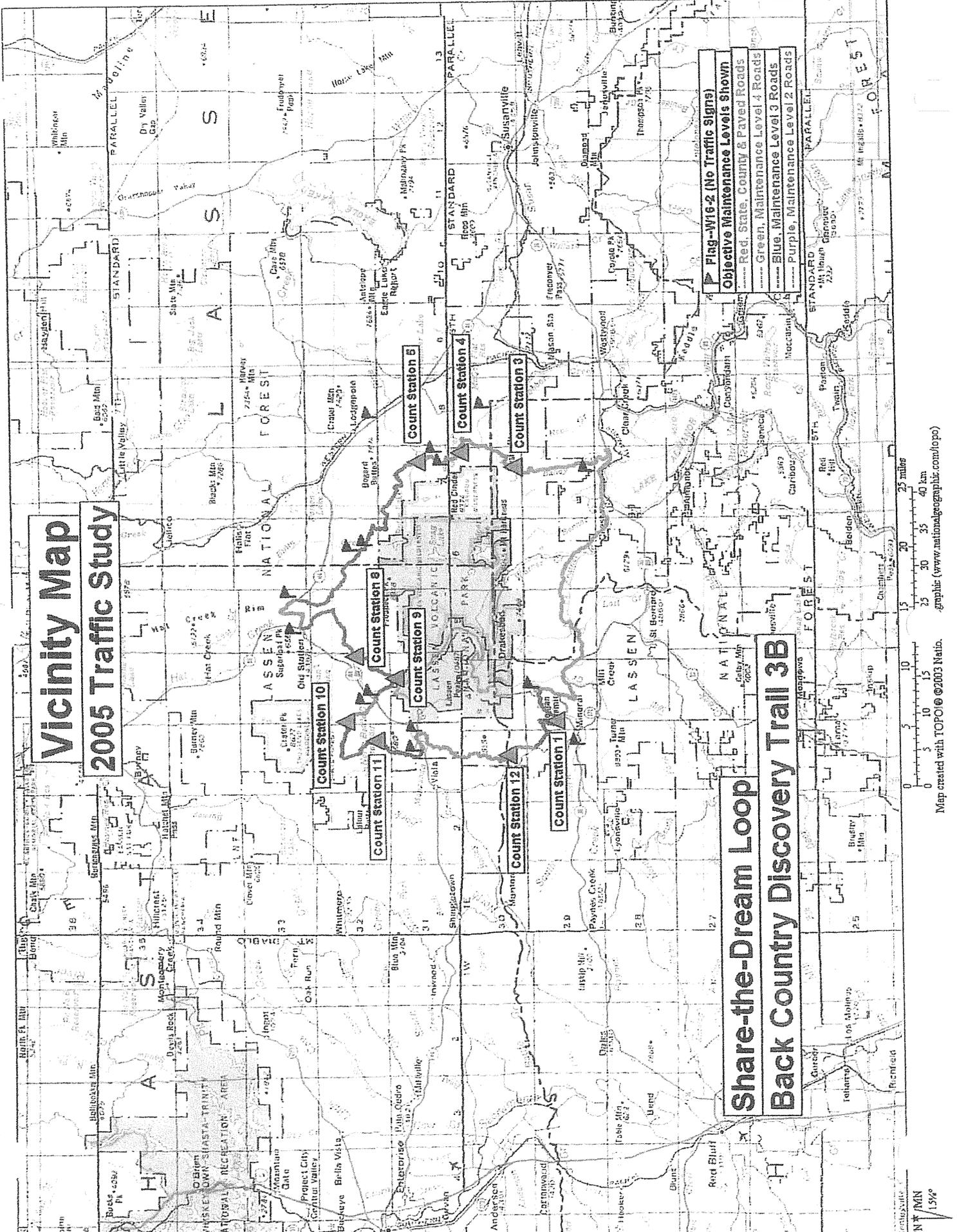
Vicinity Map

2005 Traffic Study

Share-the-Dream Loop

Back Country Discovery Trail 3B

- ▲ Flag-W16-2 (No Traffic Signs)
- Objective Maintenance Levels Shown
- Red, State, County & Paved Roads
- Green, Maintenance Level 4 Roads
- Blue, Maintenance Level 3 Roads
- Purple, Maintenance Level 2 Roads



Map created with TOPO!® ©2003 Natio. graphic (www.national Geographic.com/topo)

TN RMN 15%

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Engineering Report
Lassen National Forest
Back Country Discovery Trail–Alternate 3B
Analysis of Share-the-Dream Loop (BCDT–3B)
for Motorized Mixed Use Designations

Summer 2005

Introduction

Some people own and enjoy riding their OHVs, primarily dirt bikes and quads in the summer. Some operators go to developed OHV parks, use private lands and/or use public lands.

The expanding availability of OHVs and the growing population has dramatically increased the demand for riding opportunities and unfortunately increased the conflicts.

The Forest Service is in the process of adopting procedures to restrict OHV travel to designated roads, trails and a few small open areas. Some staff in the Pacific Southwest Region oppose OHV use on ML 3, 4, or 5 NFS roads.

Forest Service directives and handbooks, prepared before the large increase in demand for OHV riding, has resulted in varying agency interpretations of what roads can be used by non-street legal OHVs. Maintenance Level (ML) 2 roads are generally considered open, ML3, 4 and 5 are open sometimes. ML2 roads typically are short dead end roads.

This analysis addresses the risks for accidents if street-legal and non-street legal vehicles share the existing 72 miles of ML3 and 4 roads on the Share-the-Dream Loop, BCDT-3B.

Issue Statement

Which unpaved road segments, under US Forest Service jurisdiction, of the Share-the-Dream Loop (BCDT-3B) may relatively safely have shared (mixed or combined) use between street legal and non-street legal vehicles?

Constraints

All vehicles and operators using the roads now and in the future are assumed to be licensed and outfitted (personal protection gear) to fully meet State of California, Department of Motor Vehicle Code (CVC) requirements, current editions. See Glossary for CVC codes.

Roadway Characteristics: The following information was obtained in June 2005, on about 72 miles of ML 3 and 4 NFS roads by the engineer:

- Surface Type
- Average Travel Speed
- Cross Section Changes
- Surface Type Changes
- Curvature Irregularities
- Road Widths
- Clearance from Roadside Hazards
- Alignment and Stopping Sight Distance
- Radical Speed Change
- Typical Season of Use

Traffic Flow Data: The following information was observed periodically during the summer and recorded by a team of technicians:

Number and type of vehicle and people per vehicle.

Traffic observation sites and counting days and hours for recreation were selected by the engineer following guidance from "Fundamentals of Traffic Engineering", Institute of Transportation and Traffic Engineering, University of California, Berkeley, 6th edition and other literature.

Following a training session, observations were made by the technicians from 7:00 AM until 7:00 PM on the first Sunday and third Wednesday of June, July and August, 2005. Observations were also made, by Forest request, on September 4 but those results are not included in the analysis. Two people occupied each count site for each 12 hour count period.

Observations classified the vehicles as to type of vehicle and the number of occupants per vehicle.

Vehicles were not stopped and drivers not interviewed to assess the User Knowledge or if they were operating legally. By observation, the drivers appeared to know where they were going, appeared to be legal, and were driving reasonably.

Average daily traffic (ADT) was calculated by the engineer using the formula from the Bureau of Public Roads (now Federal Highway Administration) "Guide for Traffic Volume Counting Manual", 2nd edition.

Summary of Findings and Recommendations

Road #	Length Miles	Summer 2005 <u>OBSERVATIONS</u>							Accident Assessment Rating			Recommendation Shared Use Yes/No
		Count Sta. # **	ADT	Ave. Speed MPH ***	% Street Legal	% Non-Street Legal	People per Vehicle	Probability of Accident	Severity of Accident			
30N16	6.56	1	5	15	42	58	1.6	Low	Low	Yes		
29N22*	2.96	1	5	15	42	58	1.6	Low	Low	Yes		
32N1010	14.30	3,4,5 *****	16	20	88	12	1.7	Low	Low	Yes		
32N09	7.73	5	11	20	87	13	1.5	Low	Low	Yes		
32N21	0.36	Est. ****	±30	20	±95	±5	±2.0	Low	Low	Yes		
32N12	0.24	8,9	16	10	83	17	1.5	Low	Low	Yes		
32N13*	7.49	8,9	16	20	83	17	1.5	Low	Low	Yes		
32N16	3.40	10	14	24	76	24	1.5	Low	Low	Yes		
32N24	7.90	11	14	18	77	23	1.5	Low	Low	Yes		
32N13	0.30	11	14	25	77	23	1.5	Low	Low	Yes		
32N17	5.21	11	14	20	77	23	1.5	Low	Low	Yes		
31N17	15.30	12	8	27	85	15	1.6	Low	Low	Yes		

* 29N22 and 32N13 are signed on the ground as ML 2

**ADT for road is average of indicated count stations

***Based on speed by prudent driver

****Butte Lake Road access to LVNP is estimated only, not counted. A Public Lands Highway Project is proposed with adjacent OHV trail.

Maintenance and/or Mitigation Needs and Photographs

General—This study had it's on the ground beginning in May 2005. There was still a lot of snow on the roads, so numerous trips were made to find out if we could get to the nine count sites in time to start the count on the first Sunday in June. In other words, team members were some of the first to travel the roads. We did a lot of tree and rock removal as we went. As of the end of the counting on the first Sunday in September, no USFS road maintenance of any kind appeared to have been done. These are all ML 3 or 4 roads.

At a recent public meeting, the Forest announced that in 2004 16% of LNF roads were maintained and only 13% met road management objectives. It may be even worse in the next few years.

Consideration needs to be given to reducing operational ML of these ML 3 and 4 roads to ML 2 and concentrate your dollars on drainage. Observed conditions, summer 2005, are best described as meeting Level 2 (ML2) as shown in Exhibit 01, Section 12.6 FSH 7709.58 effective 9/4/92. It will cost a lot more to bring these roads back if they wash out.

Grading—It appears from the debris in the ditches, ruts, pot holes and washouts, that the drainage has not been touched for a number of years. Traffic has created numerous large washboards that can cause any vehicle to loose control.

The ditches need to be cleaned to keep run-off in the ditch. When pulling the ditches with a grader, keep the break point between the road surface and ditch slope flat enough to safely allow a vehicle to drive into the ditch to avoid an accident.

And remove the berms that have accumulated since 1991. This will enhance the dispersal of water and can provide from one to six feet of additional accident avoidance space.

The drainage work is needed to protect the road investment as well as the adjacent resources.

Vegetation Removal—Given the amount of vegetation growth that has encroached on the travel way, it's been at least 5 years since any major vegetation removal effort was made.

Minimum removal work has been listed on a map for each road in Appendix F. It is also listed by milepost and GPS coordinates under notes for each road in Appendix E. A Garmin GPS76CS with a 15 meter accuracy was used. Coding use is as follows:

Consider Alternative A; Page 5C-6 of MUTCD states:

“Section 5C.12 NO TRAFFIC SIGNS Sign (W16-2)

Option:

A warning sign (W16-2) with the legend NO TRAFFIC SIGNS may be used only on unpaved, low volume roads to advise users that no signs are installed along the distance of the road. If used, the sign may be installed at the point where road users would enter the low-volume road or where, based on engineering judgment, the road use may need this information.

A supplemental plaque (W7-3a) with the legend AHEAD, XX METERS (XX FEET) or NEXT XX KM (NEXT XX MILES) may be installed below the W16-2 sign when appropriate.”

Install one of the W16-2 signs at each State or County road intersection. By doing this the agency is advising the traveling public that no further warning signs are posted along the road. This should, in my opinion, protect the agency in the event of a tort claim resulting from an accident where the claimant says they were not warned about a curve, for example.

Or, consider Alternative B;

After traveling along these roads several times, a few specific signs to warn drivers about uncommon conditions along the way may be in order to help reduce the risk of an accident. The recommended MUTCD signs are listed in Appendix E and F by mile post, GPS coordinates and catalog number and on maps. The MUTCD provides location criteria for different travel speeds.

Recommendation—After much thought about the A and B Alternatives, I have concluded the best approach, given today’s conditions, is Alternative A—No Traffic Signs. This will be the least costly way, the easiest to monitor for longevity of sign life and should minimize tort claims. Needed W16-2 signs are shown on the vicinity map at the beginning.

The Forest and Region, as a whole, may wish to adopt this system for all NFS roads where they intersect with State and County Roads. OGC could be consulted.

Share The Road—If the decision is made to allow non-street legal OHV on the ML 3 and 4 roads, then Share The Road (W16-1) signs need to be installed. See Chapter 3A, EM-7100-15 Signs and Poster Guidelines OHV Chapter and/or use MUTCD W16-1 signs with the appropriate white on brown vehicle symbols.

September 26, 2005

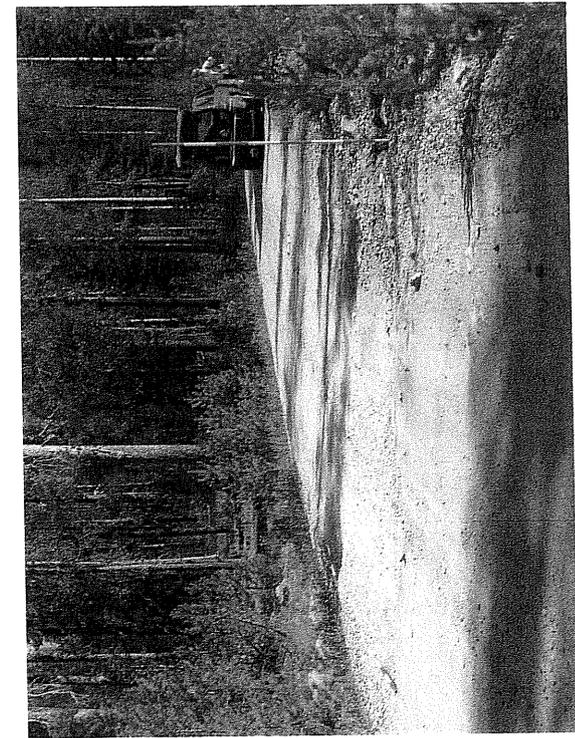
Below is the log of the photographs in the 2005 Traffic Study on the Share-the-Dream Loop, LNF BCDT 3B.

All photographs were taken by H. R. Tatman, Jr.

Some of the photographs were edited to lighten the shadows. Where these are used, both versions of the photographs are included on the CD.

Photograph Log, 9/6/2005 Continued

Road Number	WP	MP	Lat/Lon	Comments, Hazard, Mitigation, Etc.
32N61	24	2.13	N40°36.013, W121°17.759	Photo 05-0704
32N17	26	0.32	N40°35.163, W121°36.457	Photo 05-0706
32N17	27	1.01	N40°34.736, W121°36.969	Photo 05-0707
32N17	28	3.96	N40°32.683, W121°38.027	Photos 05-0708, 05-0709
32N17	29	4.96	N40°32.092, W121°37.478	Photos 05-0710, 05-0711
32N17	30	5.15	N40°30.015, W121°37.268	Photos 05-0712



05-0672 Plugged culvert



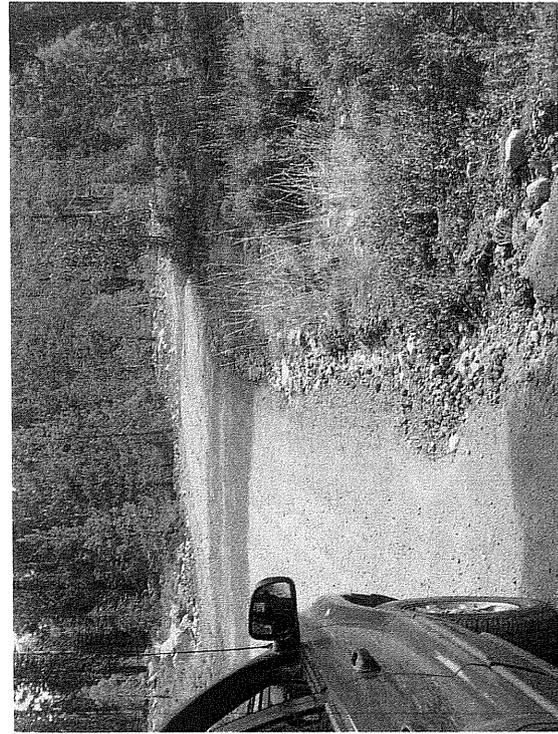
05-0673 Shoulder washed 1.5 Feet



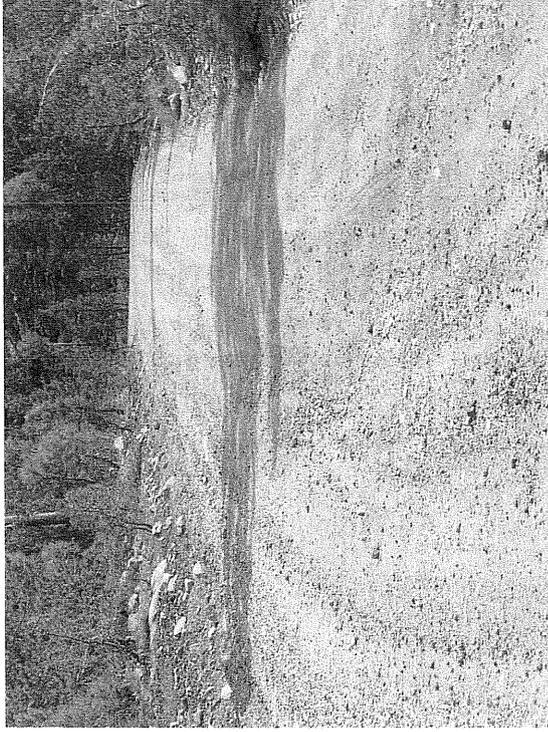
culvert



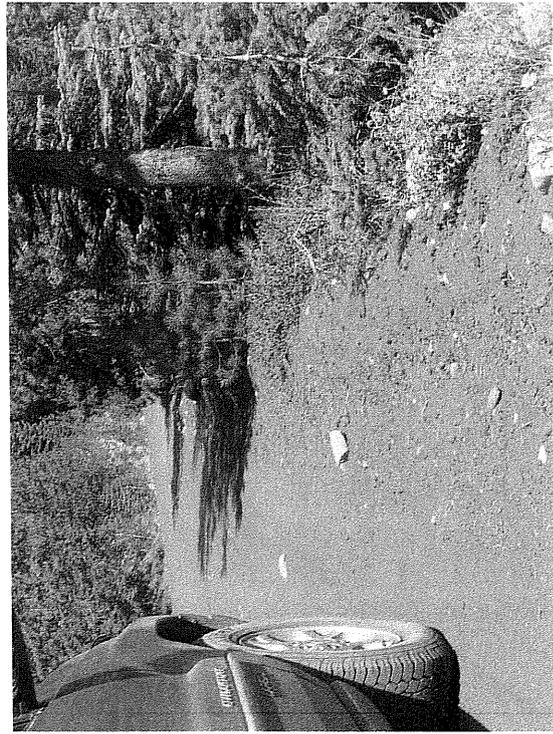
05-0674 Culprit
05-0676 Each color is 12" long on range pole



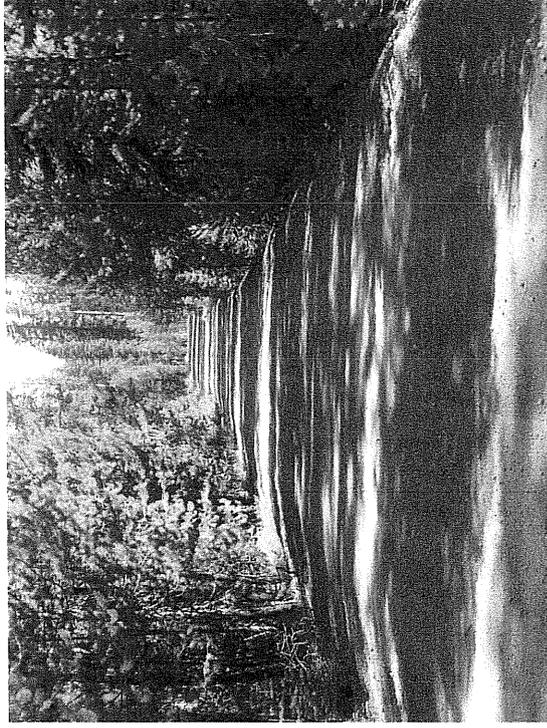
05-0677 Results of plugged ditch



05-0678 Plugged ditch

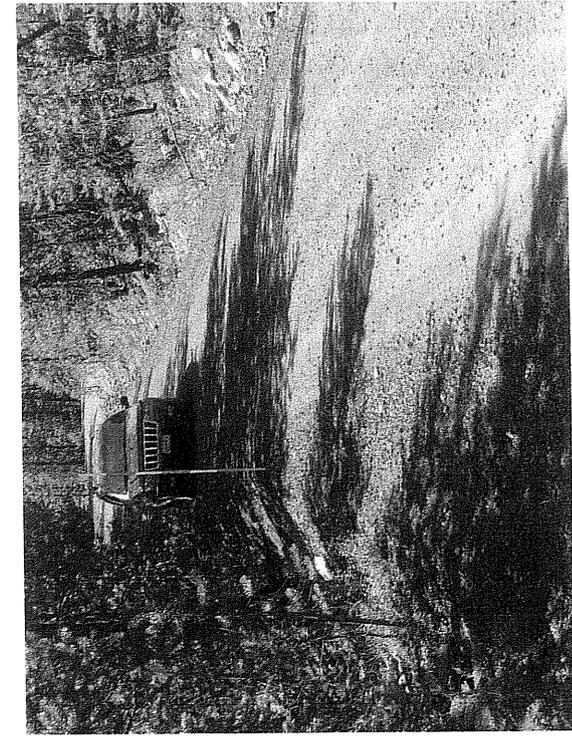


Accumulated berm and vegetation



05-0682 OK Obj. ML4 road-except for berm in fill area

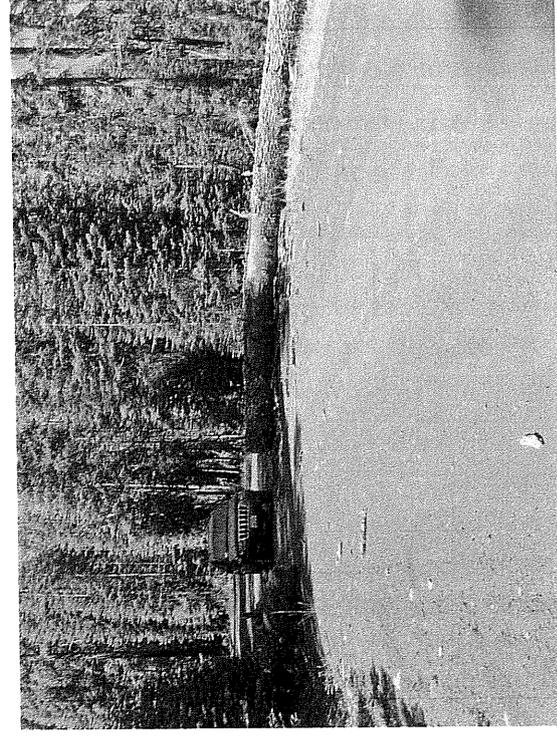
05-0679



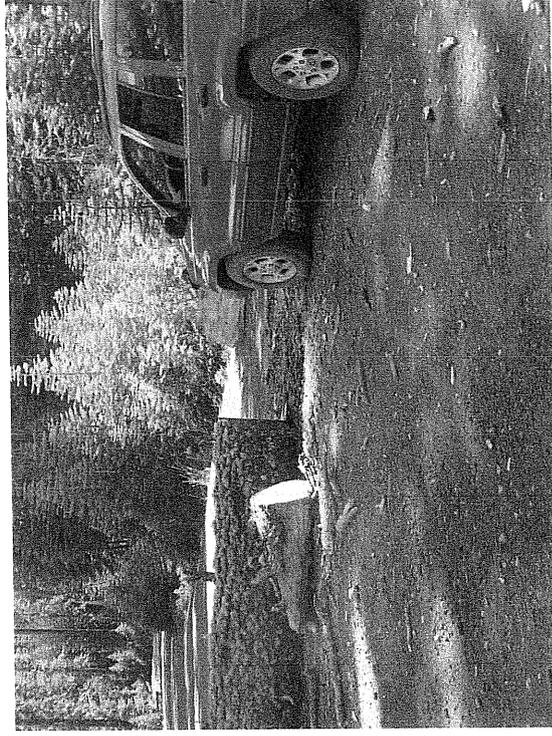
05-0680 Short CMP (SCMP)



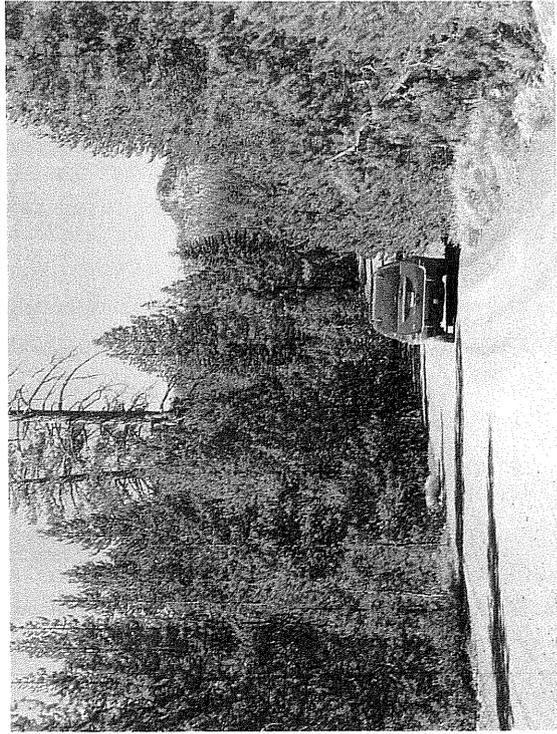
05-0681 Hole to fall into



between 8/17/05 and 9/4/05



05-0683 Fell
05-0684 Same tree



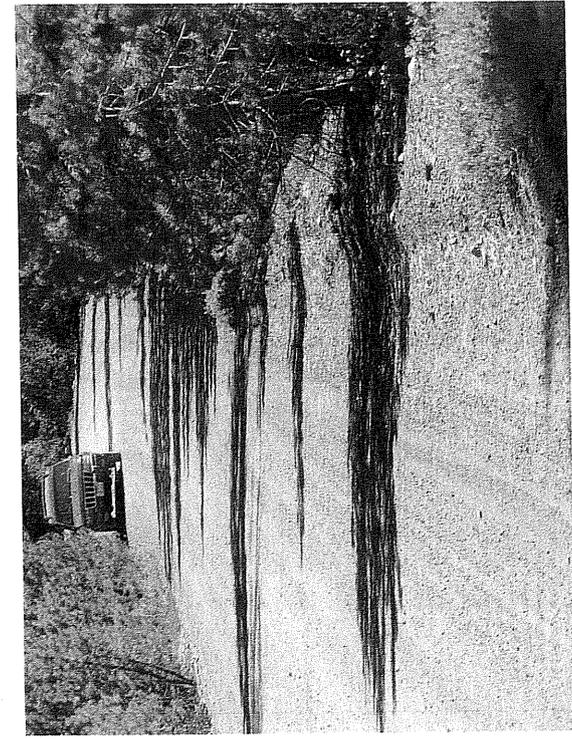
05-0686 Widow maker and veg. encroachment



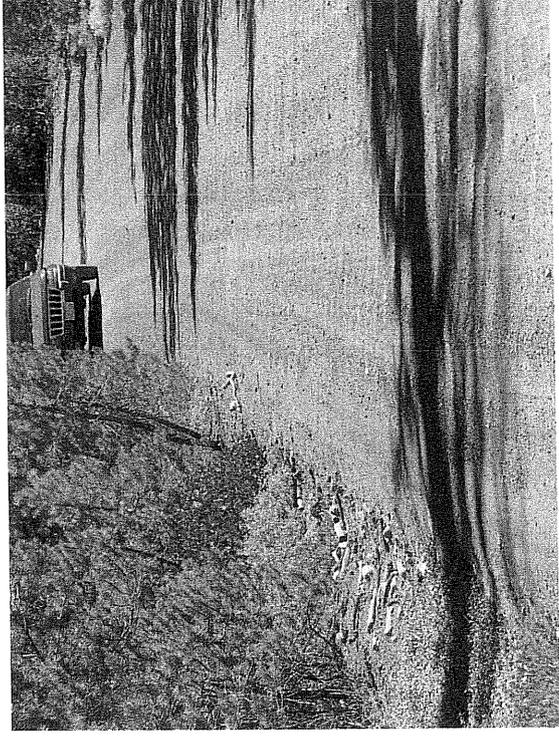
05-0687 Widow maker and berm on fill



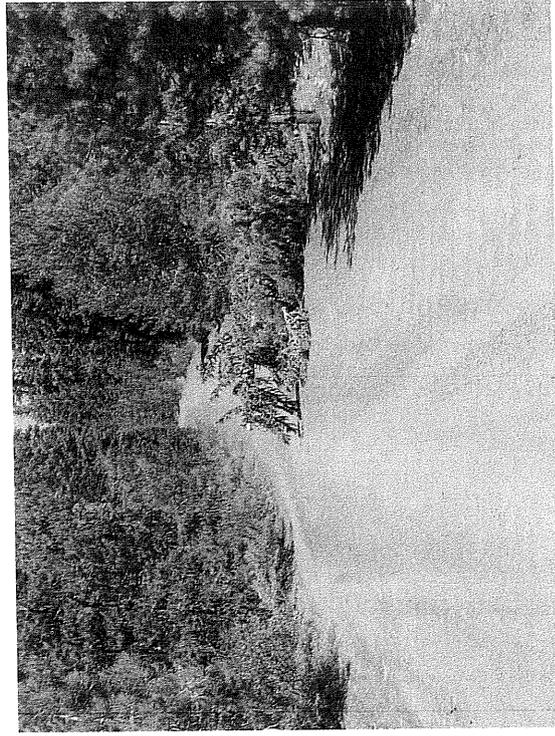
05-0685 Widow maker



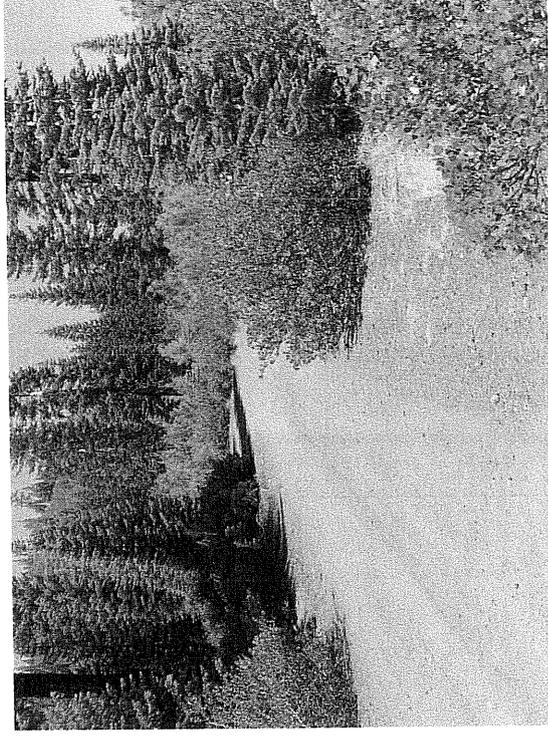
**05-0688 Imported surface material left in berm
Rock beginning to show in surface**



**05-0689 Pieces of dead limbs from widow maker
on roadside.**



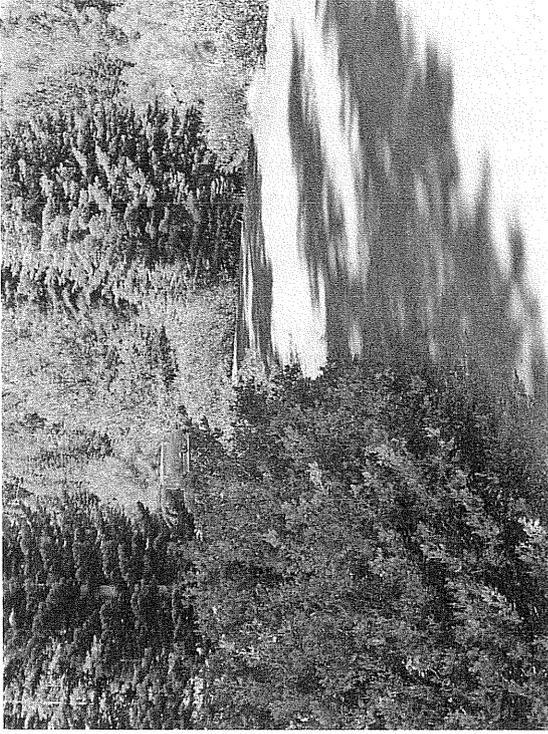
**05-0690 Fallen
05-0691 Vegetation encroachment**



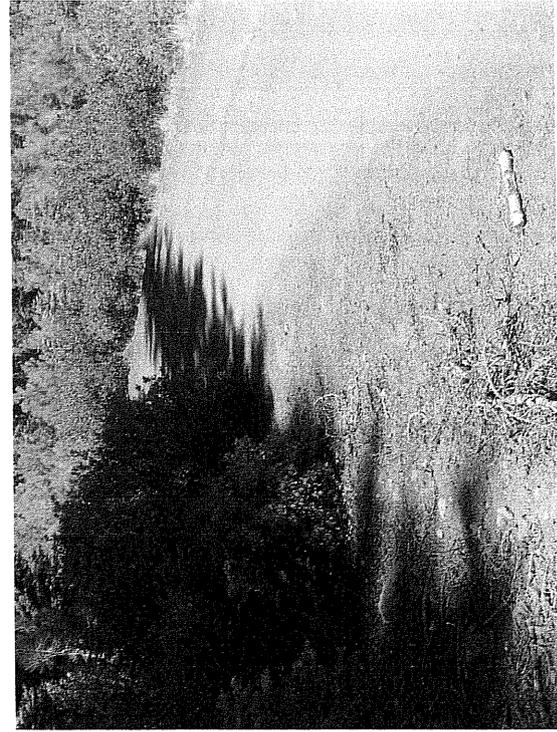
tree



05-0692 SDC



05-0693 SDC



05-0694 SDC
05-0695 SDC

