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October 4, 1995

Mr. Steve Gordon
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Dear Mr. Gordon:

Enclosed is the text of the Traffic Study, with suggested revisions, both on paper and disk. You will note that I included a vicinity map on the cover, and a map of the interview stations inside the report.

I met with Katy Walton and Dennis Manning of Caltrans to review this report. Together we have several recommendations:

1. The discussion, as well as the tables and graphs should reflect the information from the Origin & Destination surveys, the single 24 hour classification, and the loop count data provided by Caltrans. Our intention was to use the combination of these three data sources to allow extrapolation of the total system-wide traffic flows. The O. & D. data gives you detailed information on traffic for the eight hour period at each station. The twenty-four hour classification data allows you to spread that eight hours of data over twenty-four. The loop counts allow you to look at the entire system, for a full seven days.
2. The tables and graphs need to show the two interview periods separately, then totaled. One of the reasons we chose those particular dates was to capture the assumed peak travel in March, and a "normal" volume in April. Showing the data only as a total obscures this information.
3. We would like more detail on the foreign residence information. First, we would like to have that broken out by country (at least for the most frequent). Perhaps an additional graph could

show residence by country. Also, I would be interested in the number of foreign visitors who used the translated forms. If foreign visitors are unable to respond to relatively simple questions, they are likely to become a special problem in an emergency. This might be mentioned in the text.

4. Please look at both the "Other California" and the "Other U.S." resident information to see if there are any trends in the data that should be discussed. How many are from Southern California, for instance? Are specific states or regions significant contributors to the "Other U.S." category? Discuss your findings in the text.
5. In addition to including the survey form as an attachment, Caltrans would like to have the actual tabular survey data included as an appendix, as well as the 10 or so loop count summary sheets Caltrans sent you.
6. Somewhere you should identify the peak hour by station. Caltrans uses peak hour in many of their calculations.
7. Please include the twenty-four hour classification count data as a table (either in the report or in the appendices).

Please contact me at your convenience to discuss these recommendations.

Sincerely,

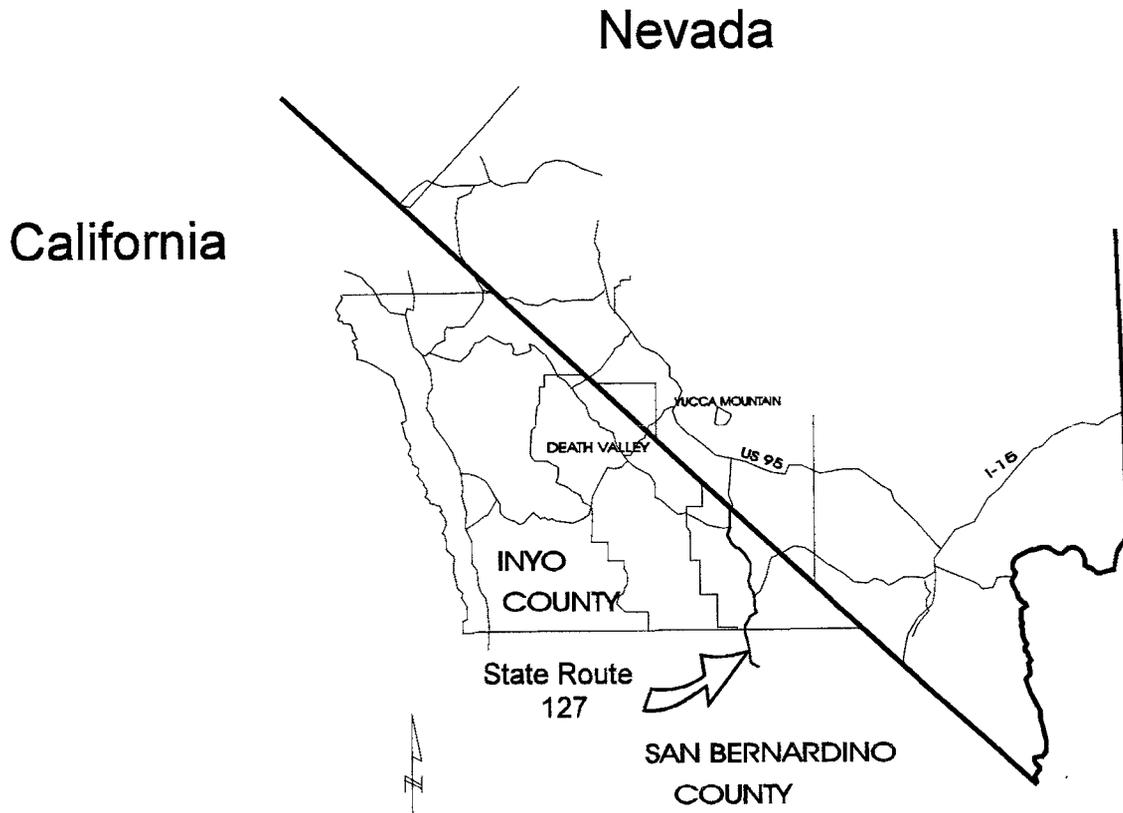


Brad Mettam

cc: K. Walton, Caltrans

1994 Inyo County Highway Traffic Study

State Route 127



Prepared by:

**Environmental Science Associates
San Francisco, California**

1994 INYO COUNTY HIGHWAY TRAVEL STUDY

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I. INTRODUCTION AND PURPOSE OF STUDY

INTRODUCTION

The proposed high-level radioactive waste repository at Yucca Mountain, Nevada has the potential to create transportation-related impacts, both through the eventual transportation of waste, and through shipments of materials during repository construction and operation. In fact, site characterization activities could affect traffic on State Route (SR) 127. Such impacts will occur both in the communities that are served by the highway, and in potential changes in tourism traffic to neighboring destinations. It is the responsibility of the Inyo County Yucca Mountain Repository Assessment Office to perform studies, develop monitoring systems, and ultimately prepare an impact assessment and a request for ~~imp~~act-assistance based on the potential impacts that have been identified.

The California Department of Transportation (Caltrans) is responsible for current infrastructure maintenance and future infrastructure improvements on the state transportation system. It is also the responsibility of Caltrans to conduct long-range multi-modal infrastructure planning for the California transportation system. Through a Memorandum of Understanding dated May 25, 1993, the County of Inyo and Caltrans agreed to the need for, and benefit of, cooperative efforts in developing a baseline of information about existing transportation system conditions in the areas likely to be affected by transportation to a repository at Yucca Mountain. This traffic survey report is the result of a joint effort between the County and Caltrans to develop needed baseline information on the traffic volumes, flow patterns, vehicular mix, and the hazardous materials component of current highway traffic on SR 127 in Inyo County. This State highway has been identified by the U.S. Department of Energy (DOE) as a potential link in the **repository transportation route network being proposed as preferred alternative routes under federal law and regulations (HM-164)**. The designated California agency for routing of hazardous materials, the California Highway Patrol, **has reviewed the state highway system for current shipments under the provisions of federal law and regulations (HM-64) that allow individual states to designate preferred alternate routes** ~~is currently in the process of developing proposed alternative routes~~. The approach developed by the California Highway Patrol calls for annual review of routes and proposed shipments, and subsequent designation of routes as necessary. Following this

approach, SR 127 could be designated as an alternate preferred route for shipments to a repository at Yucca Mountain.

PURPOSE OF STUDY

Before potential transportation system impacts to the communities served by SR 127 can be addressed, it is essential to have an understanding of current baseline traffic conditions. This study has been designed to examine the traffic volumes, flow patterns, vehicular mix, and the hazardous materials component of current highway traffic. As other agencies and organizations have an interest in the data collected, advice and assistance has been requested from such groups as the Death Valley Chamber of Commerce and the Death Valley National Park.

II. METHODOLOGY

This study effort will be modeled upon the *1989 Inyo and Mono County Recreation and Travel Study*, with adjustments made for the program's specific data and reporting needs. The 1989 study involved personal interviews with vehicle occupants at the major points of entry to Inyo and Mono Counties along the U.S. Highway 395 corridor. Its summer survey component was conducted on a neutral August mid-week day and the following Friday and Saturday. Its winter survey component was conducted on a neutral February mid-week day and the following Friday and Saturday of the President's Holiday weekend. The hours of the survey (8:00 a.m. to 5:00 p.m.) represented about 50 percent of the total 24-hour traffic at each location. The following questions were asked:

1. Number of people in vehicle?
2. Type of vehicle - classification?
3. Location of residence?
4. Purpose of trip?
5. Will you be staying in Inyo or Mono County?
6. If yes, at what type of facility?

Trucks and buses were also included in the survey and these questions were posed to the drivers. The total number of vehicles surveyed in 1989 was 16,761.

As with the 1989 survey effort, the survey methodology used for the 1994 study included personal interviews with vehicle occupants at designated locations. As the current survey focuses not on recreation, but primarily on traffic volumes and mix, there have been adjustments made to the interviewer log sheet used in the 1989 study. Questions asked for the 1994 Survey sought to obtain data on:

71. City origin / destination of trip on survey day
82. Site destination of trip, by trucks?
93. Material hauled, by trucks
104. Laden weight, for trucks
115. Hazardous material placard information

The survey form developed for this task is included as "Attachment A" to this report. Some questions from the 1989 survey, not specifically germane to the current survey (e.g., whether a

stay in Inyo County is part of the trip), have been included to facilitate comparison to prior data collection efforts.

Interview sites designated in Figure 1 were selected to capture all inbound traffic to the area highway network. These sites are described below.

Station One East of the junction of SR 127 and SR 178 eastbound, on the north side of SR 178 captured all westbound traffic from SR 178.

Station Two South of the junction of SR 127 and SR 178, on the east side of SR 127 captured all northbound traffic on SR 127.

Station Three West of the junction of SR 127 and SR 190, on the south side of SR 190 captured eastbound traffic on SR 190.

Station Four North of the junction of SR 127 and SR 190, on the west side of SR 127 captured southbound traffic on SR 127.

Station Five East of SR 127, on the north side of the Pahrump "Stateline" road captured westbound traffic on the "Stateline" road.

The data collected would be of greater utility if all five interview locations were operated continuously throughout the five days. Realistically, the same essential data can be collected by mechanical counts of vehicles in conjunction with interview data collected for one day at each interview station (each on a different day). To capture full twenty-four hour counts, Caltrans used automatic traffic counters at seven locations - the five interview stations, plus SR 127 North (post mile 16.83) and SR 178 West (post mile 42.86). These counters operated for a full seven-day period, including the interview days. Caltrans collected and tabulated these count data. To verify the extrapolation of vehicle classification from a nine-hour period to a 24-hour period, classification information was collected at Station Two from the closing of the interview station until the next morning. Caltrans provided a manual classification count board for this purpose.

Interviews were conducted at each station for one day each over a period of five consecutive days. Table II.1 provides a breakdown of the number of vehicles surveyed at each station. This allowed one crew to cover all five stations, with the traffic counters providing data for additional analysis. Traffic control equipment, including a message board, hard hats, orange vests and traffic control equipment (cones, etc.) were provided by Caltrans. Caltrans also provided the flag personnel, and one oversight staff person. Supervisory staff and interviewers were provided by the Inyo County Yucca Mountain Repository Assessment Office (RAO).

One supervisor, flag personnel and three interviewers provided sufficient personnel to allow for breaks, lunch, etc.

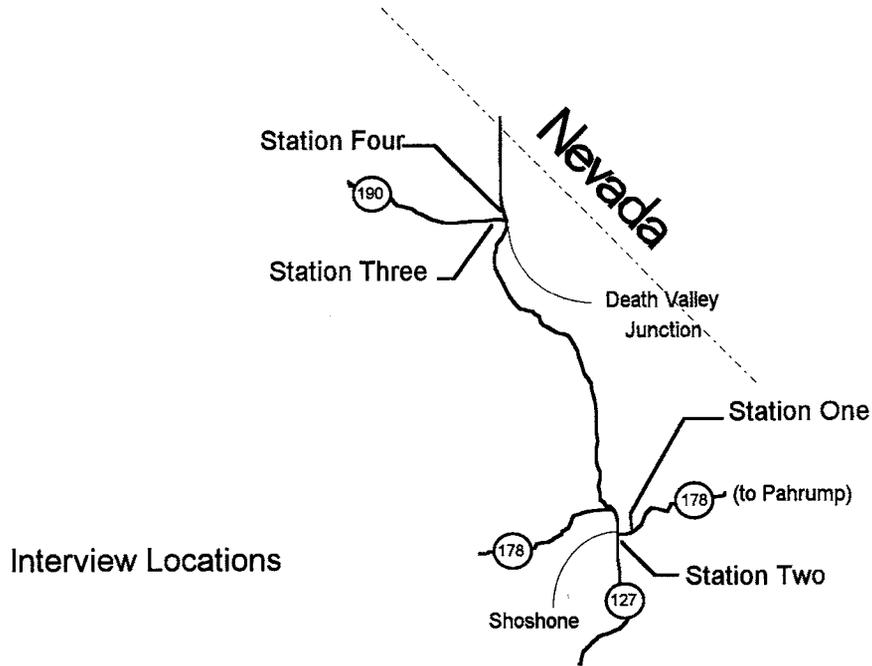


Figure 1

TABLE II.1: NUMBER OF SURVEYS CONDUCTED, BY SURVEY STATION AND DATE

Station Number	Survey Date	Number of Vehicles
1	March 26, 1994	330
2	March 28, 1994	415
	May 16, 1994	239
3	March 27, 1994	353
4	March 29, 1994	284
	May 17, 1994	236
5	March 25, 1994	74
TOTAL		1,931

The RAO supplied a recreational vehicle to be stationed at the interview location, to provide restroom facilities, coldwater, a rest area, etc. In addition, the California Highway Patrol were asked to provide a law enforcement presence at the interview location. The Inyo County Sheriff's Department, and the Death Valley National Monument were advised of the survey operations. Caltrans records indicated that a nine-hour count period during daylight hours (8:00 a.m. to 5:00 p.m.) would capture the majority of the traffic flow through this system.

The need to capture peak and off-peak traffic flows required two winter counts. The first of these efforts occurred from March 25 to March 29, 1994, to capture the peak flows during Easter. Caltrans collected traffic counts for this survey from March 23 through March 30, 1994. A second interview period, designed to capture off-peak traffic volumes, was held on May 16 and May 17, 1994. Caltrans conducted traffic counts at the seven stations (see above) on May 11 and May 18, 1994.

A complete breakdown of the answers to the survey questions is contained in Chapter III of this report. Percentage graphs complement the statistical data.

III. SURVEY FINDINGS AND CONCLUSIONS

This section describes the key, salient results and findings from the survey effort. The discussion addresses the following trip and vehicle characteristics: Trip Purpose; Location of Residence; Trip Origin and Destination; Trip Accommodations within Inyo County; Duration of Stay in Inyo County; Vehicle Classification; Truck Destination, Materiel and Weight.

A. TRIP PURPOSE

Table X and Figure X show that two-thirds (66%) of all trips within the SR 127 Corridor were for recreational purposes. The next largest component was for work-related trips (20%). The remaining 14% were split among personal business, shopping, and medical trips.

B. LOCATION OF RESIDENCE

It follows from the preponderance of recreational travel within the corridor, that most survey respondents reside outside of the area. Table X and Figure Y show that only 6% of respondents live within the corridor, and 8% within Inyo County itself. About one-third (32%) of all respondents live in other California Counties, while about one-quarter (24%) live in Nevada. A very substantial component (36%) live in other states or in foreign countries.

C. TRIP ORIGIN AND DESTINATION

Due to the large number of recreational users/respondants, the surveyed trip origin-destination patterns shown in Table X and Figure Y do not show a strong statistical correspondance with residential origins. The most frequent point of origin were points east/northeast in Nevada (44% of all trips). In a sense, this is not surprising since Las Vegas is the closest large metropolitan area. A comparable percentage (43%) were destined for Death Valley and points along US 395. This indicates a significant level of traffic between metropolitan Las Vegas, and Death Valley and the recreational areas of the California-Sierra Nevada region - a likely recreational travel route. Local trips (i.e. those beginning and ending within the SR 127 corridor) make up 13% to 14% of all trips. A relatively small percentage (19%) of all trips originate from points southwest/southeast; most of these are probably from southern California. Only 10% of all trips are destined for that area.

D. TRIP ACCOMMODATIONS WITHIN INYO COUNTY

Table X and Figure Y show that the most frequent type of accommodation among respondents is to either camp-out or use a motor-home (40%). The next largest number of respondents (36%) stay in hotels or motels. Only 21% intend to spend the night in their own home. A small number spend the night at the residence of a friend or acquaintance.

E. DURATION OF STAY IN INYO COUNTY

Data presented in Table X and Figure Y indicate that about half of all respondents are spending only one day in Inyo County, i.e. driving directly through without staying overnight. Approximately one-third (33%) are staying at least one night but less than one week within the County. Approximately 10% of all respondents are spending from one to three weeks within the County, and about 8% are spending one month or more there.

F. VEHICLE CLASSIFICATION

Just over one-half of all vehicles driven by survey respondents were automobiles (57%). The average vehicle occupancy for those cars was 2.3 persons per vehicle. However, 85% of all vehicles driven by respondents were private vehicles including cars, vans, motorcycles, and trailers. An additional 8% consisted of cars with trailers or recreational vehicles (RVs). About 6% of all vehicles were truck rigs of various configuration (see Section G below), and the remainder consisted primarily of buses.

G. TRUCK DESTINATION, MATERIEL AND WEIGHT

Table X displays truck destination and materiel hauled by laden weight. The data shows that about 43% of all trucks surveyed were small to medium sized vehicles, i.e. 20 tons or less with cargo. Larger truck rigs (over 20 tons) accounted for about 57% of all trucks surveyed. Approximately one-fourth (24%) of all truck trips (or 1.5% of all trips) haul some form of hazardous material.

CONCLUSIONS

The SR 127 Corridor is currently dominated by recreational travel. Most trips either begin or end in the state of Nevada or in Inyo County. A reasonable deduction would be that a substantial number and percentage of trips within the corridor travel between metropolitan Las

Vegas, and Death Valley and the Sierra Nevada in California. Most survey respondents reside in California excluding Inyo County, and southern California is the largest population concentration within a day's drive of the study area. However, a relatively small percentage of trips through the study area begin or end there.

Truck trips account for a relatively small proportion of all surveyed vehicles (6%). However, about one-fourth of all truck trips currently carry hazardous materiel.