Transportation Concept Report

State Route 89
District 09
January 2016

Disclaimer: The information and data contained in this document are for planning purposes only and should not be relied upon for final design of any project. Any information in this Transportation Concept Report (TCR) is subject to modification as conditions change and new information is obtained. Although planning information is dynamic and continually changing, the District 9 System Planning Division makes every effort to ensure the accuracy and timeliness of the information contained in the TCR. The information in the TCR does not constitute a standard, specification, or regulation, nor is it intended to address design policies and procedures.

California Department of Transportation

Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.

Approvals:

01/13/2016	01-16-16
RYAN A. DERMODY	BRENT L. GREEN
Date	Date
District 9 Deputy Director	District 9 Director
Planning, Modal Programs, and Local Assistance	

State Route 89
Transportation Concept Report

Prepared
by
Caltrans District 9
Office of System Planning

For additional information regarding the Transportation Concept Report for State Route 89, please contact:

California Department of Transportation
Office of System Planning
500 South Main Street
Bishop, California 93514
www.dot.ca.gov/dist9/planning/
(760) 872-0601

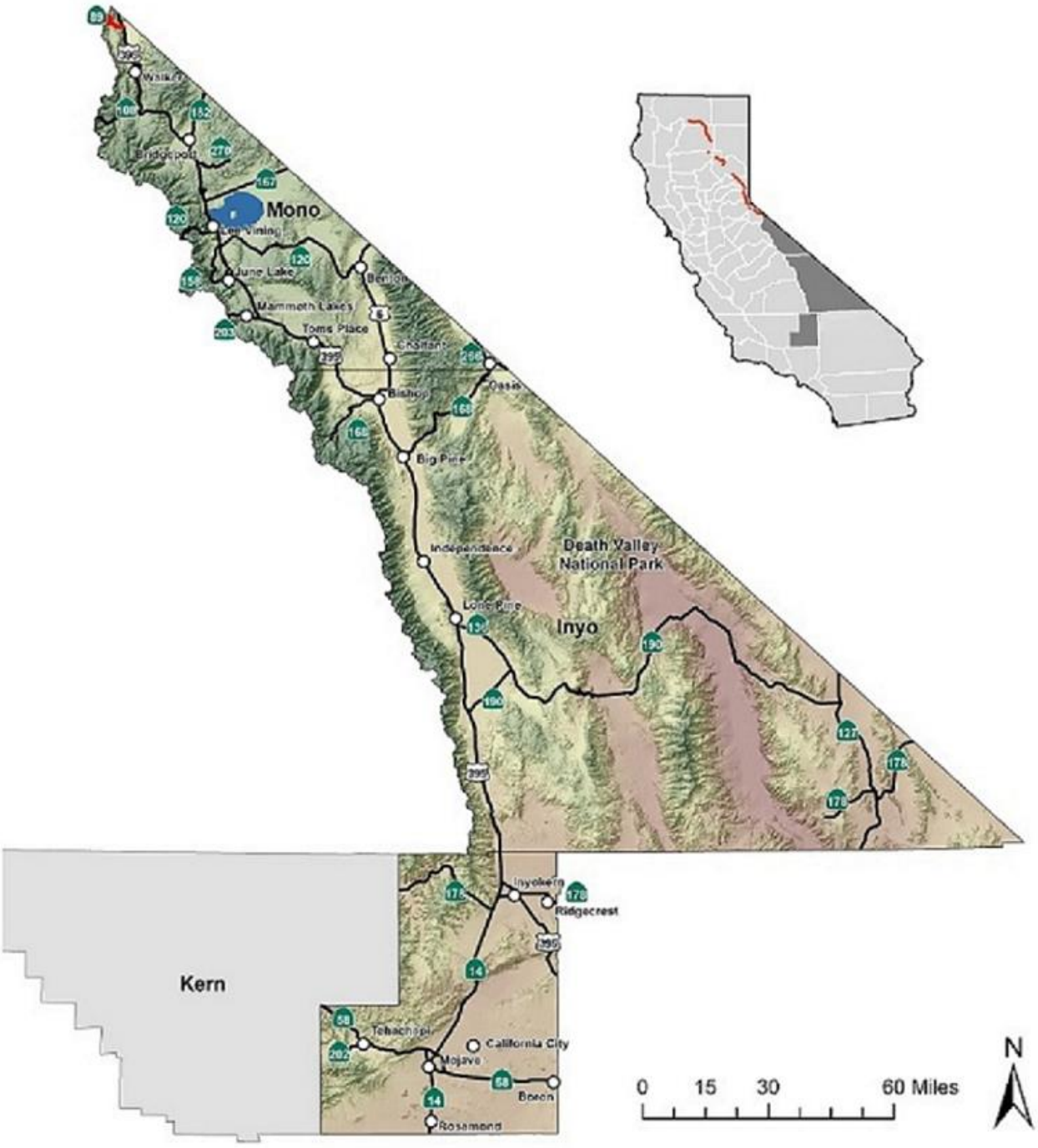
For individuals who need this information in a different format, it is available in various languages, Braille, large print, on audio-cassette, or computer disk. To obtain a copy in one of these alternate formats, please contact the Equal Employment Opportunity Officer at the above address or phone number

TABLE OF CONTENTS

SR 89 Location Map 2
About the Transportation Concept Report 3
Stakeholder Participation 3
EXECUTIVE SUMMARY 4
Concept Summary 4
Concept Rationale 4
Proposed Projects and Strategies 4
CORRIDOR OVERVIEW 4
Route Segmentation 4
Route Description 6
Community Characteristics 7
Land Use 8
System Characteristics 8
Bicycle Facility 9
Pedestrian Facility 9
Transit Facility 9
Freight 9
Environmental Considerations 9
CORRIDOR PERFORMANCE 11
KEY CORRIDOR ISSUES 12
CORRIDOR CONCEPT 13
Concept Rationale 13
Planned and Programmed Projects 13
Projects and Strategies to Achieve Concept 13
Appendix 14
Appendix A 14
GLOSSARY OF TERMS AND ACRONYMS 14
Appendix B 19
FACTSHEETS 19
Appendix C 21
RESOURCES 21

State Route 89 Location Map

Caltrans District 9



ABOUT THE TRANSPORTATION CONCEPT REPORT

System Planning is the long-range transportation planning process for the California Department of Transportation (Caltrans). The System Planning process fulfills Caltrans' statutory responsibility as owner/operator of the State Highway System (SHS) (Gov. Code §65086) by evaluating conditions and proposing enhancements to the SHS. Through System Planning, Caltrans focuses on developing an integrated multimodal transportation system that meets Caltrans' goals of safety and health; stewardship and efficiency; sustainability, livability and economy; system performance; and organizational excellence.

The System Planning process is primarily composed of four parts: the District System Management Plan (DSMP), the Transportation Concept Report (TCR), the Corridor System Management Plan (CSMP), and the DSMP Project List. The district-wide **DSMP** is strategic policy and planning document that focuses on maintaining, operating, managing, and developing the transportation system. The **TCR** is a planning document that identifies the existing and future route conditions as well as future needs for each route on the SHS. The **CSMP** is a complex, multi-jurisdictional planning document that identifies future needs within corridors experiencing or expected to experience high levels of congestion. The CSMP serves as a TCR for segments covered by the CSMP. The **DSMP Project List** is a list of planned and partially programmed transportation projects used to recommend projects for funding. These System Planning products are also intended as resources for stakeholders, the public, and partner, regional, and local agencies.

TCR Purpose

California's State Highway System needs long range planning documents to guide the logical development of transportation systems as required by CA Gov. Code §65086 and as necessitated by the public, stakeholders, and system users. The purpose of the TCR is to evaluate current and projected conditions along the route and communicate the vision for the development of each route in each Caltrans District during a 20-25 year planning horizon. The TCR is developed with the goals of increasing safety, improving mobility, providing excellent stewardship, and meeting community and environmental needs along the corridor through integrated management of the transportation network, including the highway, transit, pedestrian, bicycle, freight, operational improvements and travel demand management components of the corridor.

STAKEHOLDER PARTICIPATION

Internal and external stakeholder participation was sought throughout the development of the State Route (SR) 89 TCR. As information for the TCR was gathered, some stakeholders were contacted for input related to their particular specializations, and to verify data sources used and data accuracy. Prior to document finalization, primary stakeholders were asked to review the document for consistency with existing plans, policies, and procedures. The process of including and working closely with stakeholders adds value to the TCR, allows for external input and ideas to be reflected in the document, increases credibility, and helps strengthen public support and trust.

Stakeholders in the SR 89 planning area are community member and agencies, including, but not limited to:

- Antelope Valley Regional Planning Advisory Committee
- Bureau of Land Management (BLM), Bishop Field Office
- California Department of Fish and Wildlife (CDFW)
- Caltrans District 10
- Mono County
- Mono County Local Transportation Commission (LTC)
- Native American Tribes
- United States Forest Service (USFS), Humboldt-Toiyabe National Forest

EXECUTIVE SUMMARY

SR 89 begins near the communities of Topaz and Coleville in northern Mono County at United States Route 395 (US 395). The highway runs in a north-westerly direction, beginning in Caltrans District 9, traversing the Sierra Nevada mountain range and passing through Caltrans Districts 10 (Alpine County), 3 (El Dorado, Placer, Nevada and Sierra counties), and 2 (Plumas, Tehama, Shasta and Siskiyou counties). The route terminates at Interstate 5 in Siskiyou County, totaling a distance of 245 miles. SR 89 also provides connections to the western parts of the Sierra Nevada, Lake Tahoe and eventually the Central Valley via SR 4, SR 88 and US 50. Recent traffic data was analyzed throughout this document using 2013 as a base year (BY) and 2033 as a horizon year (HY) for projecting operational conditions. In District 9, SR 89 is a two-lane conventional highway that currently operates at a high level of service and is projected to meet forecasted demand through the horizon year. For the purpose of this TCR, only the 7.59 miles of SR 89 in District 9 is addressed.

Concept Summary

Segment	Segment Description	Existing Facility	20-25 Year Facility Concept	Post-25 Year Concept
1	US 395 to Mono/Alpine County line	2C	2C	2C

TABLE 1: CONCEPT SUMMARY

Concept Rationale

No significant growth or development is anticipated in the rural communities served by SR 89. Recreational and interregional traffic are the major sources of traffic on the route. Recreational traffic may increase as the economy improves, but the overall numbers will continue to be among the lowest of any route in District 9. The concept for SR 89 is a two-lane conventional highway and it is projected that this will continue to meet the forecasted demand.

Proposed Projects and Strategies

Currently, there are no planned or programmed projects for SR 89. Maintaining the current facility is the long range strategy for this route. In addition, a Roadway Weather Information System (RWIS) and possibly closed circuit televisions (CCTV) at various locations are included as strategies for future improvements on SR 89. Also, shoulder widening, an uphill climbing bicycle lane, curve realignments, centerline rumble strip and paved turnouts are included as route recommendations.

CORRIDOR OVERVIEW

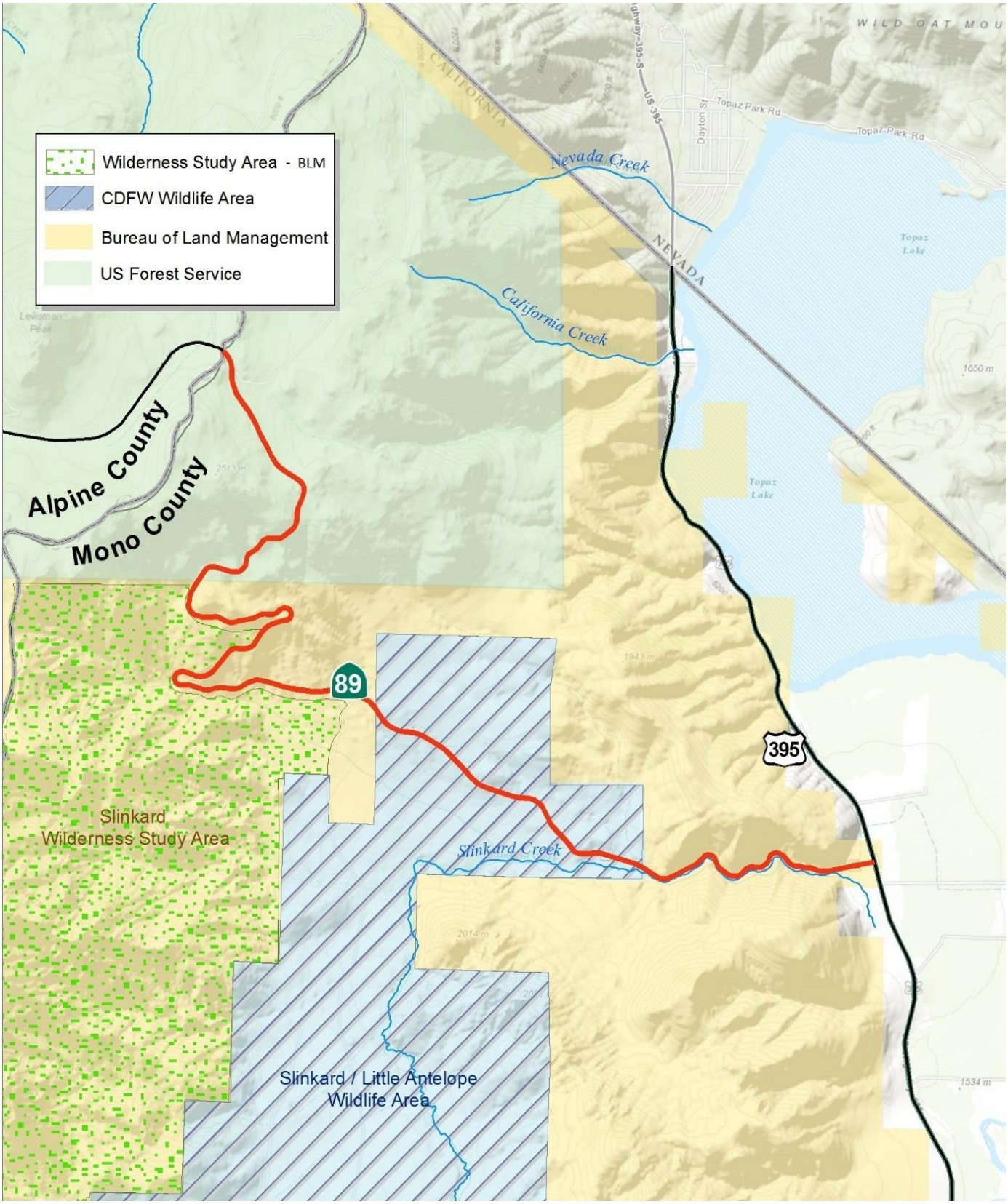
ROUTE SEGMENTATION

This TCR addresses 7.59 miles of the route located within Caltrans District 9, Mono County.

Segment #	Location Description	County_Route_ Beg. PM	County_Route_ End PM
1	US 395 to Mono/Alpine County line	MNO_89_0.00	MNO_89_7.59

TABLE 2: ROUTE SEGMENTATION

SEGMENT MAP


Wilderness Study Area - BLM
CDFW Wildlife Area
Bureau of Land Management
US Forest Service
Alpine County
Mono County
Nevada Creek
California Creek
Slinkard Creek
Slinkard
Wilderness Study Area
Slinkard / Little Antelope
Wildlife Area
89
395
CALIFORNIA
NEVADA
Topaz Park Rd
Dayton St
Topaz Lake
WILD OAT MOU

ROUTE DESCRIPTION

Route Location:
SR 89 runs in a north-westerly direction from near the communities of Topaz and Coleville in northern Mono County at US 395 and terminates at Interstate 5 in Siskiyou County, totaling a distance of 245 miles. The segment in District 9 is 7.59 miles long winding through mountainous terrain to the Alpine County line.

Route Purpose:
SR 89 serves northern Sierra Nevada mountain communities and provides access for recreational travelers and interregional traffic that connects US 395 via SR 89 to SR 88, SR 4, and US 50. During the summer, SR 89 is used for bicycle and motorcycle touring as well as access to many recreational facilities in the Tahoe, El Dorado, and Humbolt-Toiyabe National Forests. This route provides access to the Woodfords Community as well as land governed by the Washoe Tribe of Nevada and California, located near Markleeville. Pedestrians and bicyclists are allowed on all of SR 89 as it is a shared roadway.

Major Route Features:
SR 89 is functionally classified as a Minor Arterial and is part of the Interregional Road System. It is a two-lane conventional highway that is part of the State Freeway & Expressway system, as defined by the California Streets and Highways Code. The route begins in the Antelope Valley at an elevation of 5,095 feet and climbs through mountainous terrain to 7,914 feet at the end of the segment (Mono County). The 7.59 miles long segment in District 9 runs to the Alpine County line. This route is a CA Legal Advisory Route from US 395 to SR 4, with a kingpin-to-rear-axle (KPRA) advisory of 36 feet. Motorcoaches and motorhomes up to 45 feet in length are permitted on the route. During winter, SR 89 is generally closed in District 9 and 10 from US 395 to the junction with SR 4. Apart from the winter closure, the route is closed for one day in July each year to accommodate an elite bicycle event, "Death Ride-Tour of the California Alps" in Markleeville, with an average of 3,500 bicyclists riding 129 miles and climbing 15,000 feet in elevation. The highway is officially designated as a California Scenic Highway for 4.34 miles in District 9 (MNO PM 3.25-7.59). The designation continues for approximately 51 miles through Districts 10 and 3 to the Placer County Line. There is one Transportation Management Systems (TMS) element, a full-time count station, at PM 0.093. There is no electric vehicle charging station identified on the route.

OVERLOOKING AT SLINKARD CREEK (NB) AT PM 1.80

Route Designations and Characteristics:

Segment #		1
Freeway & Expressway System – **California Streets & Highways Code Section 250-257**		Yes
National Highway System		No
Strategic Highway Network		No
Scenic Highway		Eligible(PM 0.00/3.24) Designated (PM 3.25/7.59)
Interregional Road System		Yes
Priority Interregional Facility		No
Federal Functional Classification		Minor Arterial
Goods Movement Route		No
Truck Designation		California Legal Advisory
Rural/Urban/Urbanized		Rural
Regional Transportation Planning Agency		Mono County LTC
Local Agency		Mono County
Tribes	**Federally Recognized**	Bridgeport Paiute Indian Colony Tuolumne Band of Me-Wuk Indians Washoe Tribe of Nevada and California
	Non-Federally Recognized	Mono Lake Kutzadikaa
Air District		Great Basin Unified Air Pollution Control District
Terrain		Mountainous

TABLE 3: ROUTE DESIGNATION

COMMUNITY CHARACTERISTICS

There are no communities or housing along SR 89 within District 9. The route begins near the community of Topaz (pop. 50) and Coleville (pop 495) in the Antelope Valley and provides connections to Markleeville (pop. 210), 12 miles further along SR 89. The route passes through the towns of Meyers, South Lake Tahoe City, Truckee, Sierraville, Graegle, Quincy, and Chester until the end of the route where it reaches Mount Shasta (pop. 3394), a city in Siskiyou County.

Even though SR 89 does not run through any tribal land in District 9, it leads to Woodfords Community, land governed by the federally recognized Washoe Tribe of Nevada and California, located near Markleeville (District 10). SR 89 and the surrounding area is considered as ancestor homeland of the Washoe Tribe of Nevada and California. Other federally recognized tribes Caltrans will consult with when there are projects on SR 89 are the Bridgeport Paiute Indian Colony and Tuolumne Bank of Me-Wuk Indian tribe. In addition, Caltrans will consult with the Mono Lake Kutzadikaa tribe, a non-federally recognized tribe.

LAND USE

The majority of the land in the Eastern Sierra is publicly owned (94% in Mono County) and as a result there will be little private development. Other than privately owned land in Antelope Valley, the land in Mono County that SR 89 passes through is designated as Resource Management in the Mono County General Plan. These lands are owned and managed by, the Bureau of Land Management (BLM), the California Department of Fish and Wildlife (CDFW), and the US Forest Service (USFS). The CDFW land (PM 1.45–3.20) is part of the Slinkard/Little Antelope Wildlife Area, which was designated to protect important winter ranges for migratory deer herds. The Slinkard Wilderness Study Area is also located approximately 100 feet to the south and west of the highway on BLM land (PM 3.40–5.95). The last portion of the segment (PM 5.95-7.59) of SR 89 in District 9 runs through the Humboldt-Toiyabe National Forest, owned by US Forest Service.

No changes in land use patterns or major designations are foreseen within the planning timeframe of this document.

SYSTEM CHARACTERISTICS

SR 89 is an undivided, two-lane conventional highway within District 9. Passing lanes do not exist and there are minimal passing opportunities. This route is a CA Legal Advisory Route from US 395 to SR 4, with a kingpin-to-rear-axle (KPRA) advisory of 36 feet. Motorcoaches and motorhomes up to 45 feet in length are permitted along this segment of the route in District 9. The highway has a maximum grade of 8%, a posted speed limit of 50 mph, and curves with speed advisories from 25-35 mph. The average shoulder width is 0 to 2 feet; the average lane width is 12 feet; and the median width is 0 feet.

	Existing Facility									Concept Facility				TMS Elements	
Segment #	**Facility Type**	**General Purpose Lanes**	**Lane Miles**	**Centerline Miles**	**Median Width**	**Median Characteristics**	**Passing Lanes**	**Distressed Pavement**	**Current ROW**	**Facility Type**	**General Purpose Lanes**	**Lane Miles**	**Centerline Miles**	**TMS Elements (BY)**	**TMS Elements (HY)**
1	C	2	15.18	7.59	0	undivided – striped	0%	0%	100-400 ft	C	2	15.18	7.59	1	3

TABLE 4: SYSTEM CHARACTERISTICS

TMS Elements

There is one Transportation Management Systems (TMS) element on SR 89, a full-time count station at PM 0.093. A Roadway Weather Information System (RWIS) and a possible closed circuit television (CCTV) should be considered near the Mono/Alpine county line. This would help provide real-time information so that informed decisions could be made regarding the pass closure and road conditions without expending maintenance resources.

BICYCLE FACILITY

Bicyclists are allowed on all of SR 89 as it is a shared roadway. Providing wider shoulders and an uphill climbing bicycle lane are challenges due to prioritization of funding, environmental concerns, unbalanced cost to benefit ratios, and physical constraints. SR 89 has a fair amount of recreational bicycle traffic during summer and the route is closed for one day in July to accommodate an elite bicycle event in Markleeville.

Post Mile	0.00-7.59
Bicycle Access Prohibited	No
Facility Type	None
Outside Paved Shoulder Width	0-2 ft
Posted Speed Limit	50 mph

TABLE 5: BICYCLE FACILITY

PEDESTRIAN FACILITY

Pedestrian traffic is allowed, but is minimal on SR 89. Specific pedestrian facilities or sidewalks do not exist. Pedestrians may utilize the paved and unpaved shoulder.

Post Mile	0.00-7.59
Pedestrian Access Prohibited	No
Sidewalk Present	No

TABLE 6: PEDESTRIAN FACILITY

TRANSIT FACILITY

There are no transit operators that serve SR 89 in District 9.

FREIGHT

SR 89 has very little goods movement due to the mountainous terrain and only providing access to small communities. District 9's portion of SR 89 is a CA Legal Advisory Route from US 395 to SR 4, with a kingpin-to-rear-axle (KPRA) advisory of 36 ft. Truck traffic is 6% of the Average Annual Daily Traffic (AADT) with most trucks classified as 2 axle. The majority of the route in District 3, in District 2 and from Markleeville (PM 14.80) in District 10 is a Terminal Access route allowing interstate Surface Transportation Assistance Act (STAA) trucks to travel.

ENVIRONMENTAL CONSIDERATIONS

The purpose of this environmental scan is to identify environmental factors that may need future analysis in the project development process. This information does not represent all possible environmental considerations that may exist within the area surrounding the route. Any SR 89 project being considered for programming would require environmental clearance in compliance with all federal, state, and local environmental laws and regulations. The environmental factors identified in the environmental scan have been scaled (high, medium, or low) by district staff based on the probability of encountering such environmental issues.

The following environmental factors were included in the scan:

- **Cultural Resources**: An appropriate level of archaeological and historical studies, including Native American consultation, will be required for any project along this route, as well as the assessment and possible mitigation for all cultural resource impacts. SR 89 leads to the Federally Recognized Native American tribal lands of Washoe Tribe of Nevada and California (Woodfords Community) and the surrounding area of the route is considered as ancestor homeland of this tribe. Other federally recognized tribes in the area are the Bridgeport Paiute Indian Colony and Tuolumne Bank of Me-Wuk Indian. In addition, the Mono Lake Kutzadikaa is a non-federally recognized tribe in the area.

- **Geology/Soils/Seismic**: SR 89 crosses over two minor faults, the Antelope Valley Fault (PM 0.1) and the Slinkard Valley Fault (PM 3.8).

- **Visual Aesthetics**: The first 3.25 miles of SR 89 are eligible to be designated as a State Scenic Highway. From PM 3.25 to the end of the route in District 9 and continuing through all of Alpine County, the highway is designated as a State Scenic Highway.

- **Floodplain**: The Special Flood Hazard Areas (SFHA) maps as designated by the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program were evaluated. All areas of SR 89 within District 9 fall outside any flood designation.

- **Air Quality**: Mono County is a part of the Great Basin Valleys Air Basin under the stewardship of the Great Basin Unified Air Pollution Control District. SR 89 is either Unclassified or Attainment for all air quality measures.

- **Waters and Wetlands**: One perennial waterway, Slinkard Creek, flows alongside SR 89 from PM 0.2 to 1.8. Some freshwater emergent wetlands fall within 100 feet of the centerline of the highway between PM 1.45 and 1.65.

- **Special Status Species**: There is one special status species, Cut-leaf Checkerbloom (*Sidalcea multifida*), is documented within a 2000 feet wide corridor centered along SR 89 listed in the California Natural Diversity Database (CNDDB), roughly between PM 6.80/7.50. Potential Lahontan Cutthroat Trout along Slinkard Creek between postmiles 0.0 and 2.0.

Seg	Cultural Resources	Visual Aesthetics	Geology/Soils/ Seismic	Floodplain	Air Quality				Waters and Wetlands	Special Status Species
						PM				
					Ozone	2.5	10	CO		
1	Med	Med	Low	Low	Unclassifiable/ Attainment	Attainment/ Unclassified	Unclassifiable/ Attainment	Unclassifiable/ Attainment	Med	Low

TABLE 7: ENVIRONMENTAL CONSIDERATIONS

.

CORRIDOR PERFORMANCE

The Corridor Performance table displays volume data for the Base Year (BY) 2013 and the Horizon Year (HY) 2033. Level of Service (LOS) was calculated using the Highway Capacity Manual (HCM) 2010.

Segment #	1
Basic System Operations	
AADT (BY)	415
AADT (HY)	460
AADT: Growth Rate/Year	0.5%
LOS Method	HCM
LOS (BY)	A
LOS (HY)	A
LOS Concept	C
VMT (BY)	3150
VMT (HY)	3490
Truck Traffic	
Total Average Annual Daily Truck Traffic (AADTT) (BY)	25
Total Average Annual Daily Truck Traffic (AADTT) (HY)	28
Total Trucks (% of AADT) (BY)	6%
5+ Axle Average Annual Daily Truck Traffic (AADTT)(BY)	6
5+ Axle Trucks (as % of AADT)(BY)	0.9%
Peak Hour Traffic Data	
Peak Period Length	1
Peak Hour Direction	NB
Peak Period Time of Day	AM
Peak Hour Directional Split (BY)	55/45
Peak Hour (BY)	88
Peak Hour (HY)	97
Peak Hour VMT (BY)	668

TABLE 8: CORRIDOR PERFORMANCE

NEAR SLINKARD WILDERNESS STUDY AREA AT PM 4.7

KEY CORRIDOR ISSUES

SR 89 provides a consistent, high level of service for rural communities and for interregional movement of people and recreational travel connecting the eastern slope of the Sierra Nevada Mountains to other areas of California. The route is closed during the winter due to snow. Travelers must continue along US 395 into Nevada and connect via Nevada SR 88 or US 50 to reach destinations on the west side of the Sierra. Timely road opening following winter closures is noted in the Mono County Regional Transportation Plan. Routine pavement preservation projects, such as chip seals and thin blankets, will be placed once every 5-8 years and spot digouts to repair failed areas will be completed on as needed basis.

Depending on the availability of power (solar) and communication signals, a Roadway Weather Information System (RWIS) and a closed circuit television (CCTV) should be considered near the Mono/Alpine county line or near Monitor Pass in Alpine county. This would help provide real-time information so that informed decisions could be made regarding the pass closure and road conditions, in addition to the existing CMS sign on US 395.

CORRIDOR CONCEPT

CONCEPT RATIONALE

No significant growth or development is anticipated in the rural communities served by SR 89. Recreational and interregional traffic are the major sources of traffic on the route. Recreational traffic may increase as the economy improves, but the overall numbers will continue to be among the lowest of any route in District 9. The concept for SR 89 for is a two-lane conventional highway and it is projected that this will continue to meet the forecasted demand.

PLANNED AND PROGRAMMED PROJECTS

Currently, there are no planned or programmed projects for SR 89.

PROJECTS AND STRATEGIES TO ACHIEVE CONCEPT

Seg.	Description	Location	Source	Purpose	Implementation Phase
1	Widen shoulders (5 ft)	MNO 0.00/7.59	Caltrans Recommendation	Operational Improvement	Long Term
1	Uphill climbing bicycle lane	MNO 0.00/7.59	Caltrans Recommendation	Complete Streets	Long Term
1	Curve realignments	MNO 0.00/7.59	Caltrans Recommendation	Operational Improvement	Long Term
1	Shoulder and centerline rumble strip	MNO 0.00/7.59	Caltrans Recommendation	Operational Improvement	Short Term
1	Paved turnouts	Various	Caltrans Recommendation	Operational Improvement	Long Term
1	RWIS, CCTV	Various	Caltrans Recommendation	Operational Improvement or System Management	Short or Long Term

TABLE 9: PROJECTS AND STRATEGIES

APPENDIX

APPENDIX A
GLOSSARY OF TERMS AND ACRONYMS

Acronyms

2C – Two-Lane Conventional Highway
AADT – Annual Average Daily Traffic
AADTT – Annual Average Daily Truck Traffic
APL– Approved Project List
BLM – Bureau of Land Management
BY – Base Year
Caltrans – California Department of Transportation
CAPM – Capital Preventative Maintenance
CBD – Central Business District
CDFW – California Department of Fish and Wildlife
CDP – Census-Designated Place
CESA – California Endangered Species Act
CMS – Changeable Message Sign
CNPS – California Native Plant Society
CNDDB – California Natural Diversity Database
DFW – Department of Fish and Wildlife
DSMP – District System Management Plan
ESA – Endangered Species Act
ESTA – Eastern Sierra Transit Authority
FEMA – Federal Emergency Management Agency
FHWA – Federal Highway Administration
HCM – Highway Capacity Manual
HY – Horizon Year
IRRS – Interregional Road System Route
IUCN – International Union of Conservation of Nature
KPRA – Kingpin-to-rear-axle distance
LOS – Level of Service
MMTP – Multi-Modal Transportation Plan
MNO – Mono County
MPH – Miles per Hour
N/A – Not Applicable
NB – Northbound
PM – Post Mile or Particulate Matter
R – (prefix to Post Mile) Realigned
R/W or **ROW**– Right-of-Way
RMP – Resource Management Plan
RTP – Regional Transportation Plan
SB – Southbound
SDC – Seismic Design Category
SFHA – Special Flood Hazard Area
SR – State Route
SSC – Species of Special Concern
TCR – Transportation Concept Report
USFS – United States Forest Service
VMT – Vehicle Miles Traveled
YARTS – Yosemite Area Regional Transportation System

Definitions

AADT – Annual Average Daily Traffic is the total volume for the year divided by 365 days. The traffic count year is from October 1st through September 30th. Traffic counting is generally performed by electronic counting instruments moved from location throughout the state in a program of continuous traffic count sampling. The resulting counts are adjusted to an estimate of annual average daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present. Annual ADT is necessary for presenting a statewide picture of traffic flow, evaluating traffic trends, computing accident rates, planning and designing highways and other purposes.

Base Year (BY) – The year that the most current data is available to the districts.

Bikeway Class I (Bike Path) – Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with cross flow by motorists minimized.

Bikeway Class II (Bike Lane) – Provides a striped lane for one-way bike travel on a street or highway.

Bikeway Class III (Bike Route) – Provides for shared use with pedestrian or motor vehicle traffic.

Bottlenecks – A bottleneck is a location where traffic demand exceeds the effective carrying capacity of the roadway. In most cases, the cause of a bottleneck relates to a sudden reduction in capacity, such as a lane drop, merging and weaving, driver distractions, a surge in demand, or a combination of factors.

Capacity – The maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.

Capital Facility Concept – The 20-25 year vision of future development on the route to the capital facility. The capital facility can include capacity increasing, state highway, bicycle/pedestrian/transit facility, grade separation, and new managed lanes.

Concept LOS – The minimum acceptable LOS over the next 20-25 years.

Conceptual Project – A conceptual improvement or action is a project that is needed to maintain mobility or serve multimodal users, but is not currently included in a financially constrained plan and is not currently programmed. It could be included in a general plan or in the unconstrained section of a long-term plan.

Corridor – A broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways, bicycle, pedestrian, and transit route alignments. Off system facilities are included as informational purposes and not analyzed in the TCR.

Facility Concept – Describes the facility and strategies that may be needed within 20-25 years. This can include capacity increasing, state highway, bicycle/pedestrian/transit facility, non-capacity increasing operational improvements, new managed lanes, conversion of existing managed lanes to another managed lane type or characteristic, TMS field elements, and transportation demand/incident management.

Facility Type – The facility type describes the state highway facility type. The facility could be freeway, expressway, conventional, or one-way city street.

Freight Generator – Any facility, business, manufacturing plant, distribution center, industrial development, or other location (convergence of commodity and transportation system) that produces significant commodity flow, measured in tonnage, weight, carload, or truck volume.

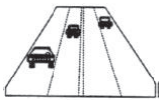
Headway – The time between two successive vehicles as they pass a point on the roadway, measured from the same common feature of both vehicles.

Horizon Year (HY) – The year that the future (20-25 years) data is based on.

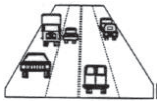
Intermodal Freight Facility – Intermodal transport requires more than one mode of transportation. An intermodal freight facility is a location where different transportation modes and networks connect and freight is transferred (or "transloaded") from one mode, such as rail, to another, such as truck.

ITS – Intelligent Transportation System improves transportation safety and mobility and enhances productivity through the integration of advanced communications technologies into the transportation infrastructure and in vehicles. Intelligent transportation systems encompass a broad range of wireless and wire line communications-based information and electronics technologies to collect information, process it, and take appropriate actions.

Level of Service (LOS) – Level of Service is a qualitative measure describing operational conditions within a traffic stream and their perception by motorists. A LOS definition generally describes these conditions in terms of speed, travel time, freedom to maneuver, traffic interruption, comfort, and convenience. Six levels of LOS can generally be categorized as follows:



LOS A describes free-flowing conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles, and operations are constrained only by the geometric features of the highway.



LOS B is also indicative of free-flow conditions. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.

LOS C represents a range in which the influence of traffic density on operations becomes marked. The ability to maneuver with the traffic stream is now clearly affected by the presence of other vehicles.

LOS D demonstrates a range in which the ability to maneuver is severely restricted because of the traffic congestion. Travel speed begins to be reduced as traffic volume increases.

LOS E reflects operations at or near capacity and is quite unstable. Because the limits of the level of service are approached, service disruptions cannot be damped or readily dissipated.

LOS F a stop and go, low speed conditions with little or poor maneuverability. Speed and traffic flow may drop to zero and considerable delays occur. For intersections, LOS F describes operations with delay in excess of 60 seconds per vehicle. This level, considered by most drivers unacceptable often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection.

Multimodal – The availability of transportation options using different modes within a system or corridor, such as automobile, bus, bicycle, or equestrian.

Peak Hour – The hour of the day in which the maximum volume occurs across a point on the highway.

Peak Hour Volume – The hourly volume during the highest hour traffic volume of the day traversing a point on a highway segment. It is generally between 6 percent and 10 percent of the Annual Daily Traffic (ADT). The lower values are generally found on roadways with low volumes.

Peak Period – Is a part of the day during which traffic congestion on the road is at its highest. Normally, this happens twice a day, once in the morning and once in the evening; the time periods when the most people commute. Peak Period is defined for individual routes, not a District or statewide standard.

Planned Project – A planned improvement or action is a project in a financially constrained section of a long term plan, such as an approved Regional Transportation Plan (RTP), Capital Improvement Plan, or bond measure program.

Post-25 Year Concept – This dataset may be defined and re-titled at the District's discretion. In general, the Post-25 Year concept could provide the maximum reasonable and foreseeable roadway needed beyond a 20-25 year horizon. The post-25 year concept can be used to identify potential widening, realignments, future facilities, and rights-of-way required to complete the development of each corridor.

Post Mile – A post mile is an identified point on the State Highway System. Post mile values increase from the beginning of a route within a county to the next county line and start over again at each county line. Post mile values usually increase from south to north or west to east depending upon the general direction the route follows within the state. The post mile at a given location will remain the same year after year. When a section of road is relocated, new post miles (usually noted by an alphabetical prefix such as "R" or "M") are established. If relocation results in a length change, "post mile equations" are introduced at the end of each relocated portion so that post miles on the remainder of the route within the county remain unchanged. Post miles are measured in miles.

Programmed Project – A programmed improvement or action is a project in a near term programming document identifying funding amounts by year, such as the State Transportation Improvement Program or the State Highway Operations and Protection Program.

Railroad Class I – The Surface Transportation Board (STB) defines a Class I railroad in the U.S. as a carrier having annual operating revenues of $250 million or more. This class includes the nation's major railroads. In California, Class I railroads include Union Pacific Railroad (UP) and Burlington Northern Santa Fe Railway (BNSF).

Railroad Class II – STB defines a Class II railroad in the U.S. as having annual carrier operating revenues of less than $250 million but more than $20 million. Class II railroads are considered mid-sized freight-hauling railroad in terms of operating revenues. They are considered "regional railroads" by the Association of American Railroads.

Railroad Class III – Railroads with annual carrier operating revenues of $20 million or less. The typical Class III is a short line railroad, which feeds traffic to or delivers traffic from a Class I or Class II railroad.

Route Designation – A route's designation is adopted through legislation and identifies what system the route is associated with on the State Highway System. A designation denotes what design standards should apply during project development and design. Typical designations include, but are not limited to, National Highway System (NHS), Interregional Route System (IRRS), and Scenic Highway System.

Rural – Fewer than 5,000 in population designates a rural area. Limits are based upon population density as determined by the U.S. Census Bureau.

Segment – A portion of a facility between two points.

System Operations and Management Concept – System Operations and Management Concept – Describe the system operations and management elements that may be needed within 20-25 years. This can include Non-capacity increasing operational improvements (Aux. lanes, channelization's, turnouts, etc.), conversion of existing managed lanes to another managed lane type or characteristic (e.g. HOV land to HOT lane), TMS Field Elements, Transportation Demand Management, and Incident Management.

TDM – Transportation Demand Management programs designed to reduce or shift demand for transportation through various means, such as the use of public transportation, carpooling, telework, and alternative work hours. Transportation Demand Management strategies can be used to manage congestion during peak periods and mitigate environmental impacts.

TMS – Transportation Management System is the business processes and associated tools, field elements and communications systems that help maximize the productivity of the transportation system. TMS includes, but is not limited to, advanced operational hardware, software, communications systems and infrastructure, for integrated Advanced Transportation Management Systems and Information Systems, and for Electronic Toll Collection System.

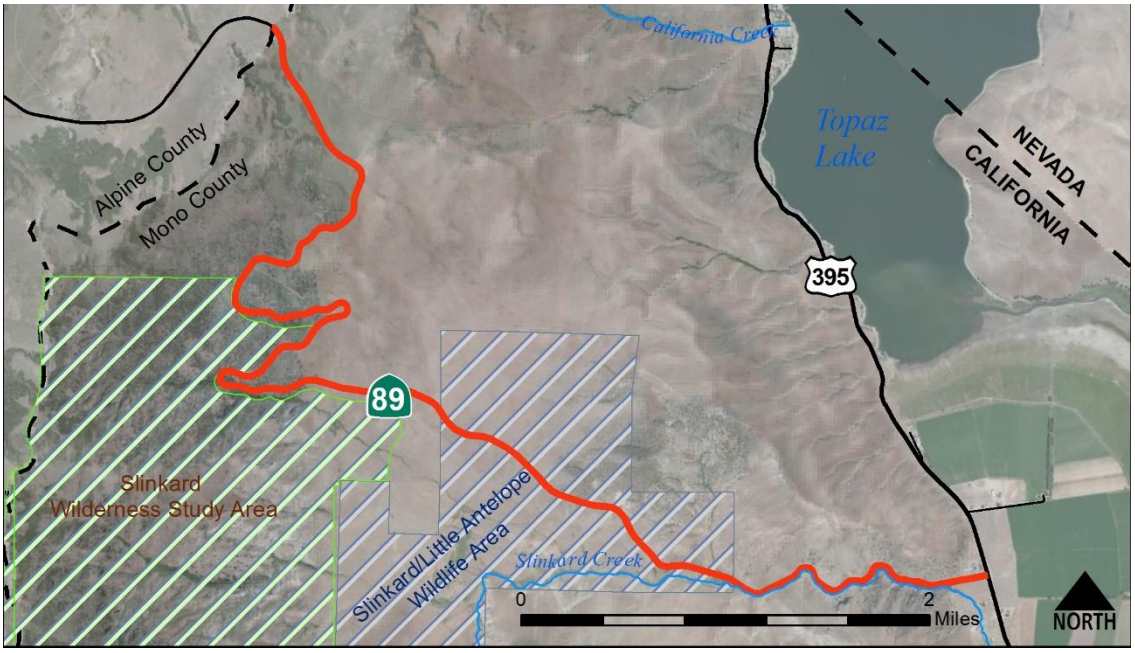
Urban – 5,000 to 49,999 in population designates an urban area. Limits are based upon population density as determined by the U.S. Census Bureau.

Urbanized – Over 50,000 in population designates an urbanized area. Limits are based upon population density as determined by the U.S. Census Bureau.

Vehicle Miles Traveled (VMT) – Is the total number of miles traveled by motor vehicles on a road or highway segments.

APPENDIX B
FACTSHEET

Segment 1: MNO PM 0.00 – PM 7.59



This segment of SR 89 begins at US 395 (MNO 395 PM 116.96), near the communities of Topaz and Coleville. It ascends the east side of the Sierra Nevada range, culminating at the Mono/Alpine County line. This is an undivided, two-lane conventional highway with a Minor Arterial classification. SR 89 is part of the Interregional Road System. There are no services (e.g. food and gasoline) along this segment.

PROJECTS AND STRATEGIES TO ACHIEVE CONCEPT

Seg.	Description	Location	Source	Purpose	Implementation Phase
1	Widen shoulders (5 ft)	MNO 0.00/7.59	Caltrans Recommendation	Operational Improvement	Long Term
1	Uphill climbing bicycle lane	MNO 0.00/7.59	Caltrans Recommendation	Complete Streets	Long Term
1	Curve realignments	MNO 0.00/7.59	Caltrans Recommendation	Operational Improvement	Long Term
1	Shoulder and centerline rumble strip	MNO 0.00/7.59	Caltrans Recommendation	Operational Improvement	Short Term
1	Paved turnouts	Various	Caltrans Recommendation	Operational Improvement	Long Term
1	RWIS, CCTV	Various	Caltrans Recommendation	Operational Improvement or System Management	Short or Long Term

Segment 1: MNO PM 0.00 – PM 7.59

Corridor Performance	Basic Systems Operations	AADT (BY)	415
		AADT: Growth Rate/Year	0.5%
		LOS Method	HCM
		LOS (BY)	A
		LOS Concept	D
		VMT (BY)	3150
	Truck Traffic	Total Average Annual Daily Truck Traffic (AADTT) (BY)	25
		Total Trucks (% AADT) (BY)	6
		5+ Axle Average Annual Daily Truck Traffic (AADTT)(BY)	0.9
	Peak Hour Traffic Data	Peak Period Length	1
		Peak Hour Direction	NB
		Peak Hour Time of Day	AM
		Peak Hour Directional Split (BY)	55/45
		Peak Hour VMT (BY)	668

Route Designations and Characteristics	Freeway & Expressway System – California Streets & Highways Code Section 250-257	Yes
	Strategic Highway Network	No
	Scenic Highway	Eligible(PM 0.00/3.24) Designated (PM 3.25/7.59)
	Interregional Road System	Yes
	Priority Interregional Facility	No
	Federal Functional Classification	Minor Arterial
	Goods Movement Route	No
	Truck Designation	CA Legal Advisory
	Rural/Urban/Urbanized	Rural
	Regional Transportation Planning Agency	Mono County LTC
	Local Agency	Mono County
	Tribes – Federally Recognized	Bridgeport Paiute Indian Colony Tuolumne Band of Me-Wuk Indians Washoe Tribe of Nevada and California
	Tribes – Non-Federally Recognized	Mono Lake Kutzadikaa
	Air District	Great Basin Unified Air Pollution Control District
	Terrain	Mountainous

System Characteristics	Facility Type	C
	General Purpose Lanes	2
	Lane Miles	15.18
	Centerline Miles	7.59
	Shoulder Width	0-2 ft
	Median Width	0 ft
	Lane Width	12ft
	Passing Lanes	0%
	Distressed Pavement	0%
	Current ROW	100-400 ft
	TMS Elements	1

Bicycle Facility	Post Mile	0.00-7.59
	Bicycle Access Prohibited	No
	Facility Type	None
	Outside Paved Shoulder Width	0-2 ft
	Posted Speed Limit	50 mph

Environmental Considerations	Cultural Resources	Med
	Visual Aesthetics	Med
	Geology/Soils/Seismic	Low
	Floodplain	Low
	Air Quality – Ozone	Unclassified/ Attainment
	Air Quality – PM 2.5	Unclassified/Attainment
	Air Quality – PM 10	Unclassified/Attainment
	Air Quality – CO	Unclassified/Attainment
	Waters and Wetlands	Med
	Special Status Species	Low

Pedestrian Facility	Post Mile	0.00-7.59
	Pedestrian Access Prohibited	No
	Sidewalk Present	No

APPENDIX C
RESOURCES

California Department of Fish and Wildlife, California Natural Diversity Database, <http://www.dfg.ca.gov/biogeodata/cnddb>, 2015

California Department of Fish and Wildlife, Wildlife Areas, < https://www.dfg.ca.gov/lands/wa/region6/slinkard.html>

California Environmental Protection Agency Air Resources Board, <http://www.arb.ca.gov>

California Environmental Protection Agency Lahontan Regional Water Quality Control Board, <http://www.waterboards.ca.gov>

California Environmental Protection Agency, Air Resources Board, Air Quality Data Branch, Planning and Technical Support Division, *National Ambient Air Quality Area Designations Maps for CO; Ozone, PM 2.5, PM 10*

Caltrans Traffic Data Branch, 2013 AADT, AADTT

Caltrans, Central Region On-line Project Information System (OPI)

Caltrans, District 9, GIS Data Library

Caltrans, Office of System, Freight & Planning, Interregional Transportation Strategic Plan, October 2013

Caltrans, District 9, Photolog, 2007

Caltrans, District 9, Post Mile Log, 2007

Caltrans, District 9, *SR 89 Transportation Concept Report,* June 2010

Caltrans, Division of Maintenance GIS, Pavement Condition Survey

Caltrans, Division of Operations, Office of Traffic Engineering, Speed Zone Surveys

Caltrans, Headquarters Project Delivery, Digital Highway Inventory Photography Program (DHIPP)

Caltrans, Traffic Accident Surveillance and Analysis System (TASAS)

Federal Highway Administration, <http://www.fhwa.dot.gov>

Highway Capacity Manual, 2010

Mono County, Mono County Community Development Department, *Mono County General Plan*, 2009

Mono County, Mono County Local Transportation Commission, *Mono County Regional Transportation Plan*, 2013

National Academy of Sciences, Transportation Research Board, *Highway Capacity Manual 2010*

U.S. Environmental Protection Agency, <http://water.epa.gov>

United States Census Bureau, <http://www.census.gov,> 2012

United States Department of Homeland Security, Federal Emergency Management Agency, National Flood Insurance Program

United States Department of the Interior, Bureau of Land Management, Bishop Field Office, <http://www.blm.gov>

United States Department of the Interior, Bureau of Land Management, *Bishop Resource Management Plan and Environmental Impact Statement,* August 1991

United States Geological Survey, Seismic Design Maps for International Residential Code (2006 & 2009), Coterminous US