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DRAFT TECHNICAL MEMORANDUM #3

Lake County Transportation System Plan Update

Existing Conditions Analysis

Date: July 6, 2015 Project #: 18054

To: Devin Hearing, ODOT Region 4
Rick DuMilieu, Lake County

From: Matt Kittelson, PE & Matt Hughart, AICP

cc: Project Advisory Committee

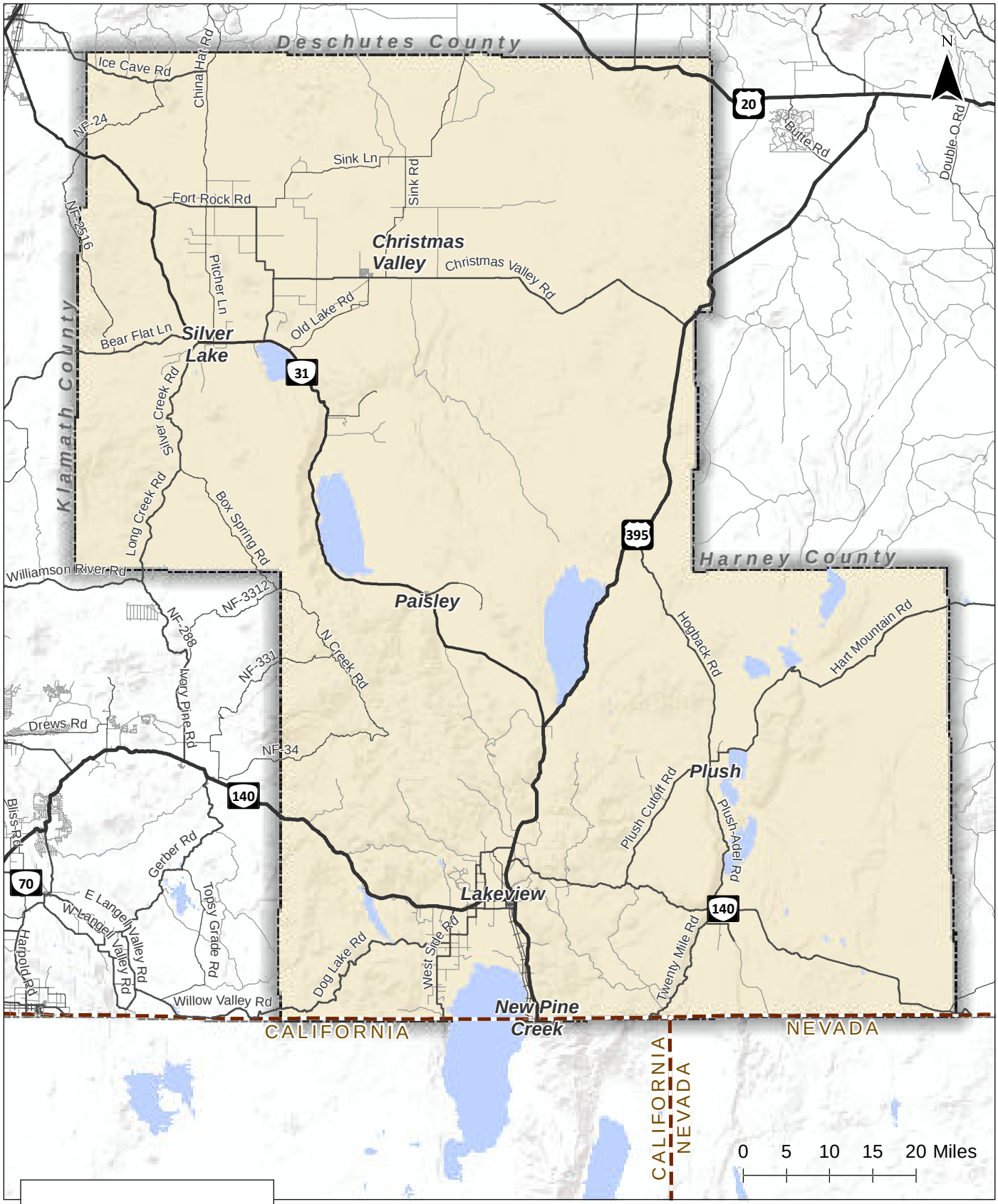
This memorandum inventories and evaluates the existing Lake County and City of Paisley land use/transportation system. The majority of the inventory and analysis results are presented in figures and tables, with supplemental text provided to explain the illustrated information. The information is organized into the following sections:

STUDY AREA

The Lake County Transportation System Plan (TSP) focuses on the entire county, including the City of Paisley, and unincorporated communities within the County as shown in Figure 3-1. The study area does not include the City of Lakeview. Two intersections and two roadway segments will be evaluated operationally during the study. These study intersections and segments are summarized in Table 3-1.

Table 3-1. Study Intersections and Segments

ID Number	East-West Name	North-South Name	Notes
Intersections			
1	OR 31	US 395	Unconventional configuration
2	OR 140 (east leg)	US 395	Side-street stop
Roadway Segments			
1	OR 140	US 395	Three approach legs
2	OR 31	US 395	Four approach legs
3	Fort Rock Road	OR 31	Single count
4	Bear Flat Road	OR 31	Single count
5	OR 140	Plush-Adel Road	Single count
6	Plush Cutoff Road	Plush-Adel Road	Count of both roads
7	US 20	US 395	Three approach legs



Study Area
Lake County, Oregon

Figure
3-1

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Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl
Data Source: Oregon Department of Transportation,Sources: Esri, USGS, NOAA

LAND USE AND POPULATION

The land use and population inventory identifies existing, planned, and potential land uses. The land use and population inventory will inform existing and future conditions analyses, particularly as the project team works with the community to develop future alternative scenarios that address existing deficiencies and capture the County and City's vision for an enhanced circulation network. Lake County does not have up-to-date zoning information, so discussion of land use will be from a high level.

Key activity centers and destinations within the County include:

- Area schools (Paisley School, Silver Lake Elementary School, Fort Rock Elementary School, etc.)
- Abert Rim
- Christmas Valley Sand Dunes
- Crack-in-the-ground
- Devil's Garden
- Fort Rock
- Fort Rock Valley Homestead Village Museum
- Fossil Lake
- Four Craters Lava Flow
- Fremont-Winema National Forest
- Governor's Ridge Monument
- Hart Mountain National Antelope Refuge
- Hole-in-the-Ground
- Lake County Museum
- Lost Forest
- Mitchell Monument
- Schminck Memorial Museum
- Silver Lake
- Summer Lake Wildlife Area
- Sunstone Collection Area

In addition to these key activity centers, OR 31 within Lake County is designated as an Oregon State scenic byway (Oregon Outback), attracting visitors from other regions of the state. The City of Lakeview as the largest population center is also a common destination for residents and visitors of the county.

City of Paisley

The City of Paisley is located along OR 31 near the center of Lake County. It is one of two incorporated cities within the County, the other being the City of Lakeview. The city is approximately 45 miles northwest of Lakeview and 100 miles southeast of La Pine.

As of the 2010 census, the city had a population of 243. The 2014 estimated population is 237. As reported in the 2010 census, there are 156 total housing units in the city, 125 of which are occupied (80.1 percent). The average household size was 1.94.

The City of Paisley has limited planning documents. No current zoning or land use policies were identified as part of this review. The City serves as the local service center for the surrounding area, making the functional population slightly higher.

The City consists of a local school, retail services largely fronting OR 31, and residential homes.

Priority Development Areas

Based on these inventories, areas prioritized to support existing and future economic development within the County and City of Paisley include:

- Add based on advisory committee input

Population Inventory

By Oregon Revised Statute 195.034, all counties are directed to formulate and adopt coordinated population projections between the county and its incorporated cities. The Oregon Office of Economic Analysis published county population projections for the state in 2013. State Statute requires counties to use the projections prepared by the Office of Economic Analysis. Table 3-2 below summarizes the projected population in the count based on the 2013 data. These projections show Lake County's population to be largely the same through 2035.

Table 3-2. Lake County Population Projections, based on 2013 Statewide Projections

Year	Lake County Total
2010	7,890
2015	7,919
2020	7,936
2025	7,948
2030	7,931
2035	7,893

Note: 2010 population totals are based on estimates. 2015-2035 populations are projections.
Source: Oregon Office of Economic Analysis (http://www.oregon.gov/DAS/OEA/Pages/demographic.aspx)

STREET SYSTEM AND TRAFFIC ANALYSIS

Four state highways and a network of paved and gravel county roads serve Lake County. Primary roadway facilities, their characteristics, and existing operational performance are summarized below.

Street System Overview

All major roadways within Lake County fall under the jurisdiction of the state (ODOT) or the County. The following sections describe the characteristics of these roadways.

State Roadways

The state facilities within Lake County provide district, statewide, and regional connectivity. These facilities include US Highway 20 (OR 7), US Highway 395 (OR 49), Oregon Highway 140 (OR 20 and OR 431), and Oregon Highway 31 (OR 19). OR 31 provides access to Paisley, Christmas Valley, Summer Lake and Silver Lake, US 395 provides access to Valley Falls and Lakeview, and US 140 provides a connection to US 395 and a link between Klamath Falls and Lakeview. Additionally, a 15 mile segment of US 20 is located in the northeast corner of Lake County and connects to US 395.

County Roadways

The County has jurisdiction over approximately 723 miles of roads. Approximately 364 miles are paved, 349 miles are gravel, and 10 miles are dirt roads. County roads are typically two lanes wide. Paved roads typically have two 24-feet travel lanes and gravel shoulders. Gravel roads are typically 26 feet wide with 2-foot shoulders. The existing right-of-way along County roads is a total of 60 feet with 30 feet on each side of centerline[1].

[1] *Lake County TSP*, 2002

Street System Characteristics

The following set of figures and tables illustrate and summarize the current street characteristics within the County including roadway classifications, roadway standards, and intersection characteristics.

Functional classification levels for roadways are used to establish a hierarchy of roadways based on their primary function (moving people across regions or providing access to local destinations). These classification levels are identified by ODOT for state facilities, the County for County facilities, and local agencies for their own classification levels within their community. The classification levels also determine the recommended roadway cross-section for different facilities. The functional classification of roadways that local agencies typically establish is based on the following hierarchy:

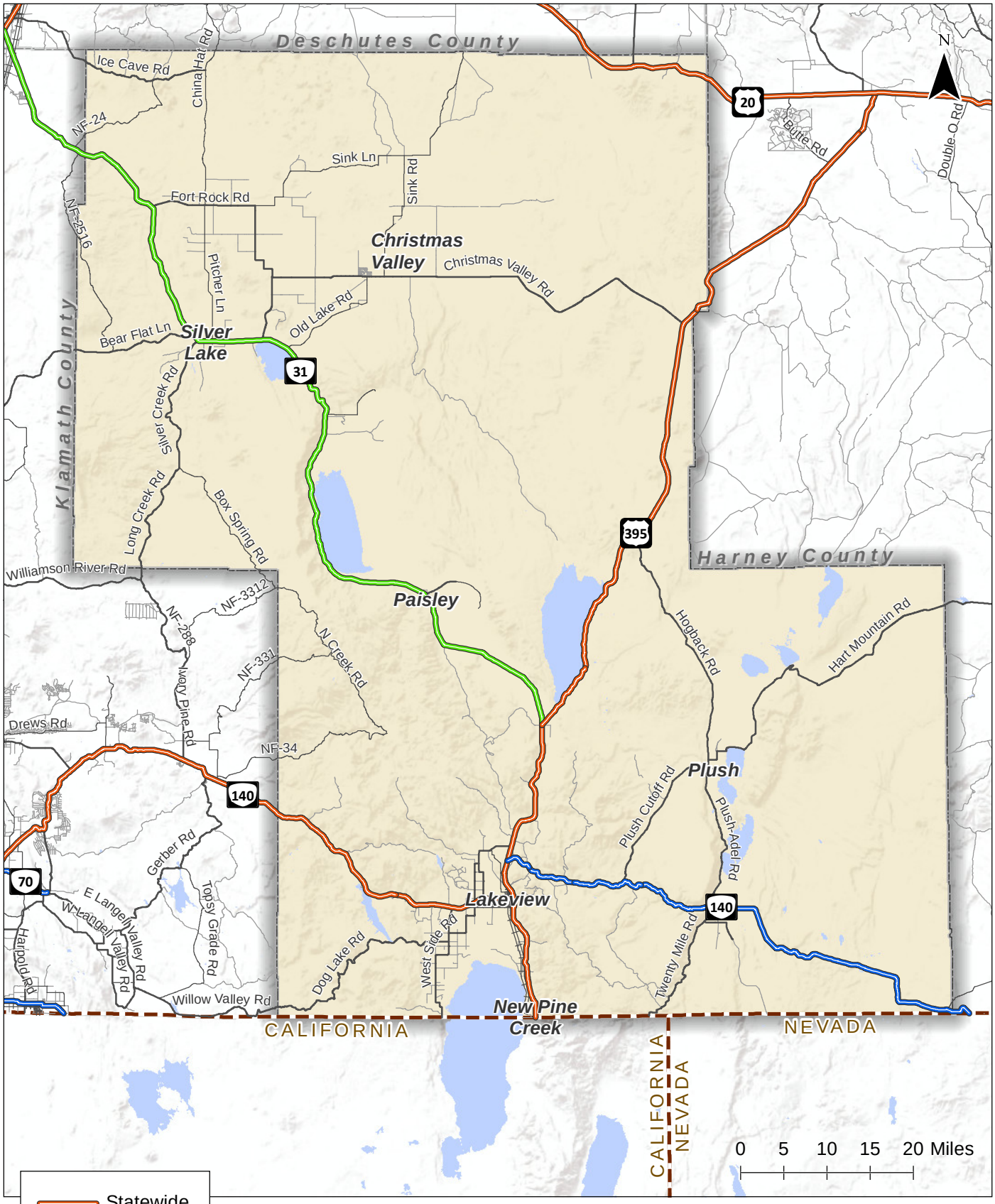
- **Arterials** represent the highest class of roadway (other than Interstates). These roadways are intended to provide mobility by serving high volumes of traffic, particularly through traffic, at higher speeds. They also serve truck movements and should emphasize traffic movement over local land access. In some cases, arterial streets are further designated as "major/principal" or "minor."
- **Collectors** represent the intermediate roadway class. As their name suggests, these roadways collect traffic from the local street system and distribute it to the arterial street system. These roadways provide a balance between traffic movement and land access and should provide extended continuous stretches of roadway to facilitate traffic circulation through the county.
- **Local** roads and streets are the lowest roadway class. Their primary purpose is to provide local land access and to carry locally generated traffic at relatively low speeds to the collector street system. Local streets should provide connectivity through neighborhoods but should be designed to discourage cut-through vehicular traffic.

State Facilities

0 shows the ODOT functional classification for state facilities in the County. Table 3-3 summarizes the roadway characteristics of each of these facilities, including posted speed limit, number of lanes, and current pavement condition. Because the local cities are bisected by state highways that are classified as minor arterials, the highways must balance carrying through traffic and accommodating access to local destinations.

Table 3-3. State Functional Classification

Route Name	Facility Extents	ODOT Facility Designation	ODOT Functional Classification	Posted Speed Limit (mph)	Number of Lanes	Pavement Condition
US 20	15-mile segment in County Limits	Statewide Highway	Other Rural Principal Arterial	55	2	Good to Very Good
US 395	Outside City Limits	Statewide Highway	Other Rural Principal Arterial	55	2	Very Poor to Good
	Lakeview	Statewide Highway		25/35/45/55		Good to Very Good
	New Pine Creek	Statewide Highway		35/45/55		Good
OR 31	Outside of Paisley City Limits, North of Paisley	Regional Highway	Rural Minor Arterial	55	2	Poor to Very Good
	Within Paisley City Limits			40/55		Good
	Outside of Paisley City Limits, South of Paisley			55		Poor to Good
OR 140	Outside of Lakeview City Limits, East of Lakeview	Statewide Highway	Other Rural Principal Arterial	55	2/3	Good
	Within Lakeview City Limits			25/35/45/55	2	Good to Very Good
	Outside of Lakeview City Limits, West of Lakeview	District Highway	Rural Major Collector	55		Poor to Good



OHP Classification
Lake County, Oregon

Figure
3-2

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Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl
Data Source: Oregon Department of Transportation,Sources: Esri, USGS, NOAA

County Facilities

Lake County divides county roads into three levels: state facilities, paved county roads, and gravel county roads. The existing functional classification system is summarized in Table 3-4 and Exhibit 3-1. Changes to this functional classification will be considered as part of the TSP Update.

Table 3-4. Lake County Rural Roadway Design Standards

Classification	Right-of-Way Width (ft)	Roadway		Shoulder	
		Width (ft)	Surface	Width (ft)	Surface
Arterial (State Highways)	80-120[1]	24	Paved	4-8	Paved
Paved County Road (Collector or Local)	60	24	Paved	3	Paved
Gravel County Road (Collector or Local)	60	26	Gravel	0	Gravel

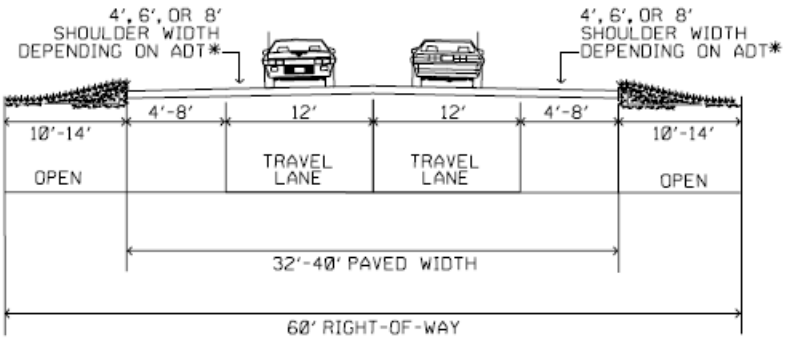
Note: [1]Based on typical ODOT design standards

City of Paisley Facilities

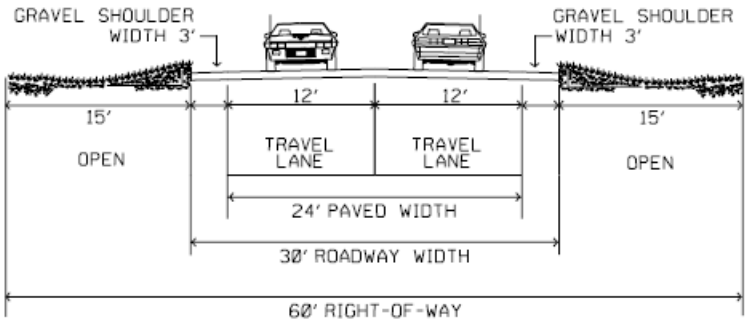
Paisley does not have a separate functional classification system. The majority of the roads within Paisley, other than the OR 31 and the east/west county highway, generally have the characteristics of local streets.

Local Roadways

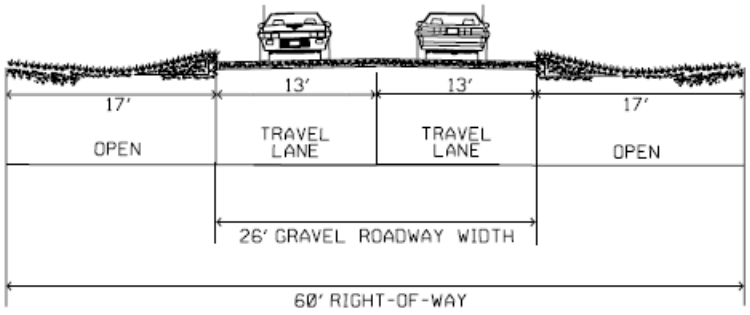
Specific design standards for local roadways are not included in the existing Lake County TSP. Rather, the general function of local roads is described, which is to provide access to property and emphasize low speeds. Local roads can be either paved or gravel.



Arterials (State Highways)



Paved County Roads (Collector or Local)



Gravel County Roads (Collector or Local)

Exhibit 3-1. Rural Street Standards for Local Streets, Collectors, and Arterials from the 2002 TSP

Access Spacing and Access Management

Providing adequate access to other public roadways, land uses, and destinations is a critical part of an effective transportation system. However, it is necessary to balance access with the need for mobility and safety on the system. Providing access via other public streets and driveways to land uses creates friction from a traffic operations and safety perspective thereby reducing mobility and introducing conflict points that increase the potential for crashes.

Access management strategies and implementation require careful consideration to balance access and mobility in a safe and efficient manner. In general, access management is generally more stringent on higher classified roads where mobility is the highest priority.

State Facilities

ODOT specifies access management spacing standards for the state facilities in the Oregon Highway Plan (OHP, Reference 1). The corresponding access management spacing standards for state facilities within Lake County are summarized in Table 3-5. These standards are based on the 2012 AADT (Annual Average Daily Traffic volume), posted speed limit, proximity to urban areas, and functional classification. Interchange spacing for statewide, regional and district highways is 3 miles and is not based on posted speed limit, proximity to urban areas, and functional classification[2].

[2] *Oregon Highway Plan, Appendix C Revisions to Address Senate Bill 264 (2011) Table 12*

Table 3-5. Access Management Spacing Standards for Highway Segments

Route Name	Facility Extents	Facility Designation	2012 ADT	Posted Speed Limit (mph)	Access Spacing Standard (feet)
US 20	15-mile segment in County Limits	Statewide Highway	<5,000	55	1,320
US 395	Outside City Limits	Statewide Highway	<5,000	55	1,320
	Lakeview		<5,000	25/35/45/55	550/770/ 990/1,100/1,320
	New Pine Creek		<5,000	35/45/55	770/1,100/1,320
OR 31	Outside of Paisley City Limits, North of Paisley	Regional Highway	<5,000	55	650
	Within Paisley City Limits		<5,000	40/55	360/650
	Outside of Paisley City Limits, South of Paisley		<5,000	55	650
OR 140	Outside of Lakeview City Limits, East of Lakeview	Statewide Highway	<5,000	55	1,320
	Within Lakeview City Limits	District Highway	<5,000	25/35/45/55	150/250/360/ 425/650
	Outside of Lakeview City Limits, West of Lakeview		<5,000	55	650

AADT = Average Annual Daily Traffic
MPH = miles per hour

Source: Oregon Highway Plan, Appendix C Revisions to Address Senate Bill 264 (2011) Table 13

County Facilities

Lake County currently has not established access management spacing standards, though the following general guidance is provided:

- County roads – 500 feet between public roads, 200 feet between private driveways
- Local roads – 50 feet between private driveways

City of Paisley Facilities

The City of Paisley has not established access management spacing standards.

Street System Traffic Analysis

The focus of this section is to report the existing traffic operations for study intersections and roadway segments identified for the TSP update. The sub-sections below present information on the traffic count data used in the evaluation, the analysis methodology applied, the operational standards used to assess the results, and the traffic operations results for the study intersections.

Analysis Methodology and Performance Standards

All operations analysis described in this report were performed in accordance with the procedures in the *2010 Highway Capacity Manual* (Reference 2).

Per the Methodology Memorandum (see *Appendix B*) and the ODOT *Analysis Procedures Manual* (APM) (Reference 3), intersection operational evaluations were conducted based on the peak 15-minute flow rate observed during the weekday peak hour. Using the peak 15-minute flow rate ensures this analysis is based on a reasonable worst-case scenario. For this reason, the analysis reflects conditions that are likely to occur for 15 minutes out of each average weekday peak hour. The transportation system will likely operate under conditions better than those described in this report during other typical time periods.

The operational results for study intersections and segments were compared with their corresponding mobility targets, summarized in Table 3-6 and Table 3-7, to assess performance and identify potential areas for improvement. Lake County does not have operational standards for roadway facilities. ODOT operational targets are identified in the Oregon Highway Plan (OHP, Reference 1) and are summarized below for the state highways within the County.

Table 3-6. Volume to Capacity Ratio Targets for Peak Hour Operation Conditions

Route Name	Facility Extents	Facility Designation	Inside UGB			Outside UGB	
			Non-STAs where posted speed <= 35 mph	Non-STAs where speed > 35 mph but <45 mph	Where speed limit >= 45 mph	Unincorporated Communities	Rural Lands
US 20	Entire Section within County Limits	Statewide Highway (Freight Route)	0.85	0.80	0.80	0.70	0.70
US 395	Outside City Limits	Statewide Highway (Freight Route)	0.85	0.80	0.80	0.70	0.70
	Paisley	Statewide Highway (Freight Route)	0.85	0.80	0.80	0.70	0.70
OR 31	Entire Section within County Limits	Regional Highway	0.90	0.85	0.85	0.75	0.70
OR 140	West of Lakeview	Statewide Highway (Freight Route)	0.85	0.80	0.80	0.70	0.70
	East of Lakeview	District Highway	0.95	0.90	0.90	0.80	0.75

Source: OHP, Table 6, modified for relevance

Table 3-7. Intersection Performance Standards

ID	Intersection Name	Jurisdiction	Type of Intersection Control*	Performance Target (v/c ratio)**
1	OR 31/US 395	ODOT	TWSC	0.70
2	OR 140 (E)/US 395	ODOT	TWSC	0.70

*TWSC = Two-way stop-controlled intersection

** v/c = volume-to-capacity ratio

Traffic Volumes

The following sub-sections discuss the weekday peak hour traffic volume development and the seasonal adjustment factor used to adjust the 2014 traffic counts.

Roadway Segment Hourly Traffic Profiles

Seven study segment areas were identified throughout the County. Traffic volumes were collected for 48 hours in the fall of 2014. These traffic volumes were used to conduct capacity analysis to determine how the facility operates under peak hour conditions. No vehicle classification information was collected during these counts. Based on these counts, the hour with the highest traffic volume was identified as the peak hour for that facility. Two-lane highway capacity analysis was conducted for each roadway segment based on the peak hour traffic volumes. Table 3-8 summarizes the peak hour, traffic volumes, and volume-to-capacity ratio for each study segment. Although the County does not have operational targets for County facilities, the peak hour analysis reveals that all of the roadways currently operate below the roadway's capacity.

Table 3-8. Roadway Segment Operations Analysis

Roadway	ADT from 2014 Traffic Counts	Peak Hour Time Period	Seasonally-Adjusted Peak Hour Count	Two-Way Demand Flow	Critical Flow Rate	Calculated V/C Ratio
US 395/OR 140	1672	12:00-1:00 pm	167	244	3,200	0.076
US 395/OR 140	2168	12:00-1:00 pm	200	292	3,200	0.091
US 395/OR 140	279	1:00-2:00 pm	29	42	3,200	0.013
US 395/OR 31	308	3:00-4:00 pm	33	48	3,200	0.015
US 395/OR 31	900	12:00-1:00 pm	168	246	3,200	0.077
US 395/OR 31	13	4:00-5:00 pm	2	3	3,200	0.001
US 395/OR 31	583	10:00-11:00 am	53	77	3,200	0.024
OR31/Fort Rock Road	462	9:00-10:00 am	50	73	3,200	0.023
OR31/Bear Flat Lane	310	11:00-12:00 pm	47	69	3,200	0.022
OR140/Plush-Adel Rd	382	11:00-12:00 pm	46	67	3,200	0.021
Plush-Adel Rd& Plush Cutoff Rd	82	11:00-12:00 pm	11	16	3,200	0.005
Plush-Adel Rd& Plush Cutoff Rd	283	1:00-2:00 pm	28	41	3,200	0.013
US 395/US 20	463	10:00-11:00 am	60	88	3,200	0.027
US 395/US 20	1983	12:00-1:00 pm	158	231	3,200	0.072
US 395/US 20	1838	2:00-3:00 pm	166	243	3,200	0.076

Note: Peak Hour Factor assumed to be 0.72 which is consistent with observed study intersection characteristics.

Weekday Peak Hour Development for Intersections

Traffic counts at the two study intersections were completed on Thursday, May 21, 2015 between the hours of 4:00 and 6:00 p.m. Traffic volumes at both locations were observed to peak between 4:00 and 5:00 p.m. Based on these counts, the peak 15-minute period within each peak hour were identified for each intersection.

As summarized in the Methodology Memo (see *Appendix B*), traffic volumes were adjusted to reflect seasonal fluctuation in traffic patterns. Figure 3-3 summarizes the existing peak hour traffic volumes after seasonal adjustments were applied and the peak hour time period for each intersection.

Figure 3-3 Existing Traffic Volumes and Peak Hours

Intersection Traffic Operations Analysis Results

Level-of-service (LOS), volume-to-capacity (v/c) ratios, average delay, and 95th percentile queue lengths were calculated for each of the study intersections identified for the Lake County TSP update. The analysis was conducted using 2010 HCM methods with Vistro software. Table 3-9 summarizes the results of this analysis as well as whether the corresponding operational targets for the study intersections are met. As shown in the table, both study intersections currently operate acceptably. The 95th percentile queue lengths reflect the reasonable worst case queue length expected during the peak 15 minutes. The 95th percentile queue lengths are not expected to exceed one vehicle in length at either study intersections.

Table 3-9. Existing Conditions Intersection Operational Analysis Results

ID	Name	Critical Movement	V/C Ratio	LOS	Delay (sec)	95th % Queue (# vehicles)	Performance Target Met
1	US 395/OR 31	EBL	0.01	A	9.4	1	Yes
2	US 395/OR 140	WBL	0.04	A	9.2	1	Yes

v/c = volume-to-capacity

Summary of Existing Traffic Conditions

Below is a summary of the major findings of the existing conditions operational analysis.

- The existing demand volume at all the study segments is below capacity.
- The two study intersections currently operate within their performance targets.
- 95th percentile queue lengths are not expected to exceed one vehicle at either of the study intersections during the peak hour.

HISTORIC CRASH ANALYSIS

Crash data from the latest five years (January 1, 2009 through December 31, 2013) was obtained from ODOT for all major roadways within Lake County. Figure 3-4 illustrates reported crash locations throughout the County. As shown in Figure 3-4, the majority of reported crashes are located along state highways. Crash data is provided in *Appendix D*.

County Crash Patterns

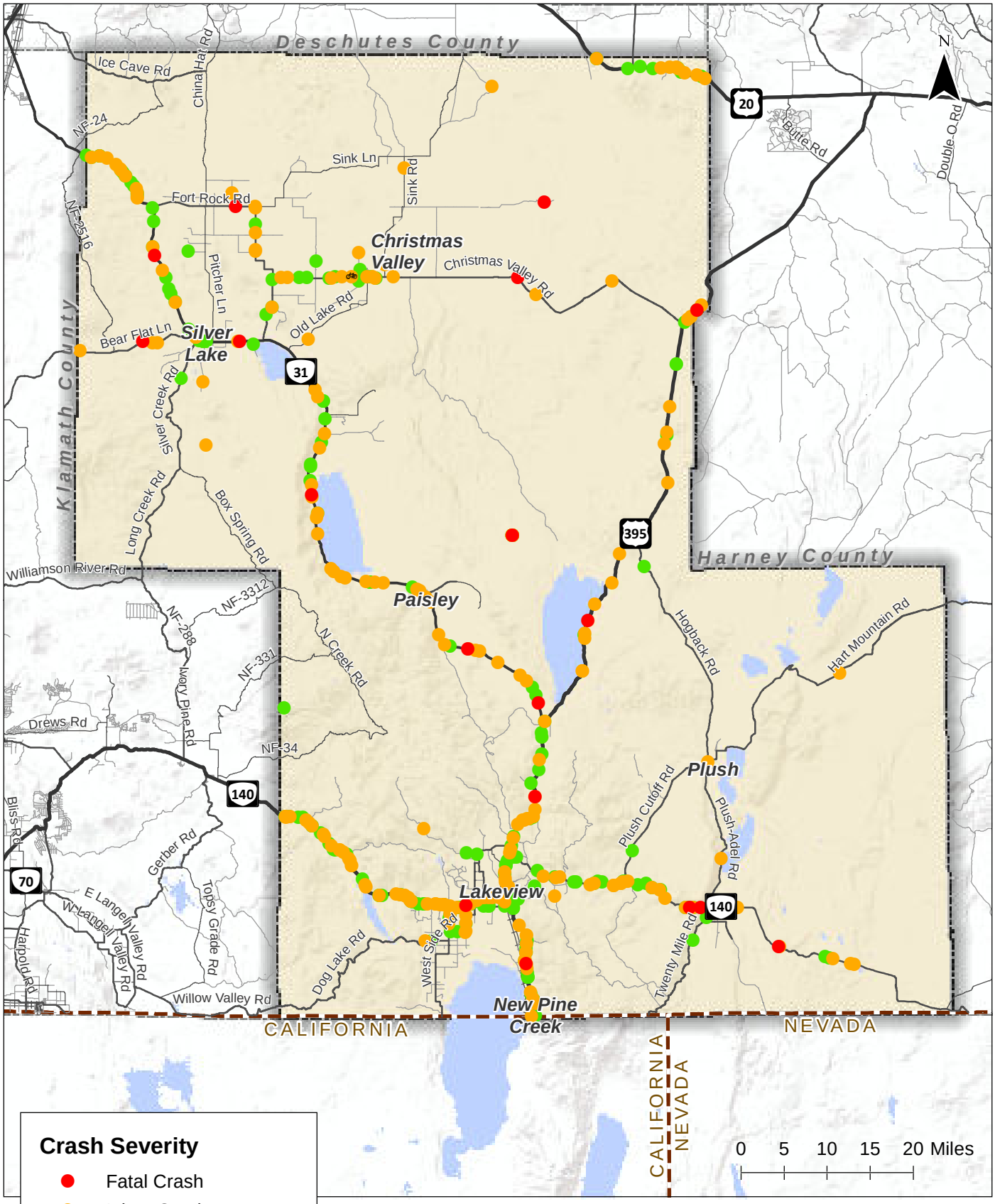
A total of 389 crashes were reported in Lake County between 2009 and 2013. Table 3-10 summarizes the reported crashes by severity. Over half of the reported crashes involved an injury, with 24 crashes resulting in an incapacitating injury and 18 crashes resulting in a fatality. Of the 18 reported fatal crashes, several trends were noted:

- The 18 fatal crashes were comprised of:
  - 13 fixed-object crashes
  - 2 non-collision crashes
  - 1 head-on crash
  - 1 angle crash
  - 1 sideswipe crash.
- The roadway conditions were recorded as dry for 17 of the 18 crashes.
- 5 of the 18 fatal crashes involved alcohol-impaired drivers.
- 15 of the 18 crashes occurred between the months of May and September
- 15 fatal crashes occurred during daylight or dusk light conditions, one occurred during the night with no street lights, and one was unknown.

Table 3-10. Reported Crashes by Severity in Lake County (2009 – 2013)

	Crash Severity					
	Fatal	**Injury A**	**Injury B**	**Injury C**	**PDO**	**Total**
Number of Reported Crashes	18	24	97	71	179	389
Percentage of Total Crashes	4.6%	6.2%	24.9%	18.3%	46.0%	100%

Crash locations throughout Lake County were variable throughout the county. The crash data figure can be seen in Figure 3-4. Lakeview has the largest population in the county and therefore it is expected to see a larger volume of crashes in Lakeview area. The fatal crashes, however, do not follow a trend. Thirteen of the 18 fatal crashes occurred on state highways, yet out of the four state highways, none of them had more than 5 fatalities individually. The remaining 5 fatalities occurred on collector or local roads.



Crash Severity

- Fatal Crash
- Injury Crash
- Bicycle Involved Injury
- Non-Injury Crash

Crashes by Severity from 2009 to 2013
Lake County, Oregon

Figure **3-4**

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Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl
Data Source: Oregon Department of Transportation,Sources: Esri, USGS, NOAA

Intersection Crash Analysis

Reported crashes at study intersections are summarized in Table 3-11. Intersection exposure was measured in terms of total entering vehicles (TEV), derived from the peak hour volumes used in the intersection operational analysis. The peak hour was assumed to be ten percent of the daily volume. ODOT identifies 90th percentile crash rates in the Analysis Procedures Manual, Exhibit 4-1 (Reference 3). These crash rates are presented in Table 3-11. The ODOT APM indicates that intersections that exceed the 90th percentile should be further analyzed; however neither of the study intersections exceeded this.

Table 3-11. Reported Crashes at Study Intersections

Intersection Name	TEV[1]	# Reported Crashes (2009-2013)	Crash Rate per MEV[3]	Statewide 90th Percentile Crash Rates	Crash Type		Crash Severity	
					Turning	Other	PDO[2]	Fatal/Injury
OR 31/ US 395	530	0	0	1.08	No Crashes Reported			
OR 140 E/ US 395	118	1	0.46	0.46	1	0	1	0

[1]TEV = Total entering vehicles
[2]PDO = Property damage only
[3]Crash Rate = Crashes per million entering vehicles

Statewide Priority Index System (SPIS)

ODOT developed the Safety Priority Index System (SPIS) to identify and prioritize sites where countermeasures could be implemented to potentially reduce the number of crashes. No segments or intersections within Lake County were identified in the top ten percent of the 2014, 2013, and 2012 SPIS lists (which use crash data from 2011 to 2013, 2010 to 2012, and 2009 to 2011, respectively).

PEDESTRIAN SYSTEM

The pedestrian system within Lake County and the City of Paisley is summarized in **Error! Reference source not found.**5. The inventory was completed based on data provided by the County and a review of Google Earth imagery. No pedestrian facilities are located within Lake County or the City of Paisley. Given the rural area, lack of pedestrian facilities on County roads is not uncommon but integrating pedestrian facilities into streets located within city centers would enhance the pedestrian environment.

BICYCLE SYSTEM

There are no dedicated bicycle facilities in Lake County within the study area. Shoulders are present on some roads but a continuous bicycle system is not in place. County roads between cities are generally high speed (posted speed limits of 55 miles per hour) and can be uncomfortable riding for bicyclists. Streets with lower speeds and lower volume within communities such as residential streets are typically marked or expected to be used as a shared facility.

Mountain biking is a popular form of recreation in Lake County with many trails for all levels of experience. Lakeview, Paisley, and Silver Lake Ranger Districts all have multiple areas for mountain biking.

PUBLIC TRANSPORTATION SYSTEM

Lake County does not have any fixed route public transit service. Limited demand-responsive shuttle service exists for seniors through the Lake County Senior Citizens Association in Lakeview.

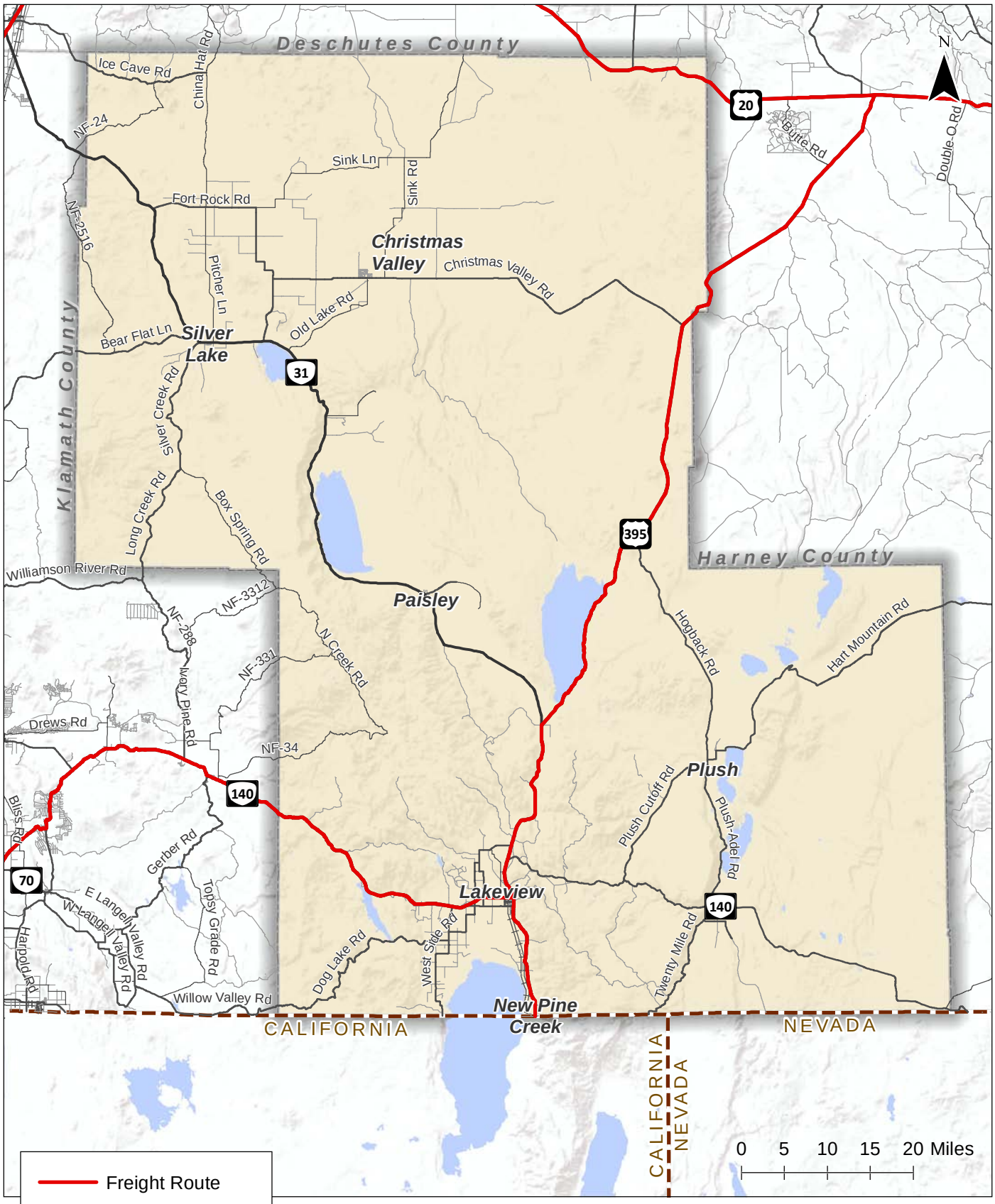
TRUCK FREIGHT ROUTES

Lake County contains parts of three freight routes. Figure 3-5 depicts the freight routes in the county. A small portion of the US 20 freight corridor, the only Oregon Freight Plan (OFP) strategic corridor in the county, crosses the northeastern corner. Two highways, 140 and 395, traversing the county are either part of the State Highway Freight System or are federally designated Truck Routes. The Lake County Airport is identified in the OFP as a freight facility in South Central Oregon (OFP Table 4-6).

RAIL SYSTEM

Frontier Rail provides the only rail service in the County. Figure 3-6 shows the rail system within the County. Frontier Rail, operating as Lake Railroad, provides freight rail service between Lakeview, Oregon and Alturas, California[3]. Passenger rail service is not provided in Lake County.

[3] . The Lake Railroad expanded in 2009 when it assumed operations of the connecting Union Pacific branchline from Alturas to Perez, where the railroad now interchanges with the UP.
http://www.trainweb.org/highdesertrails/lcr.html



Freight Routes
Lake County, Oregon

Figure
3-5

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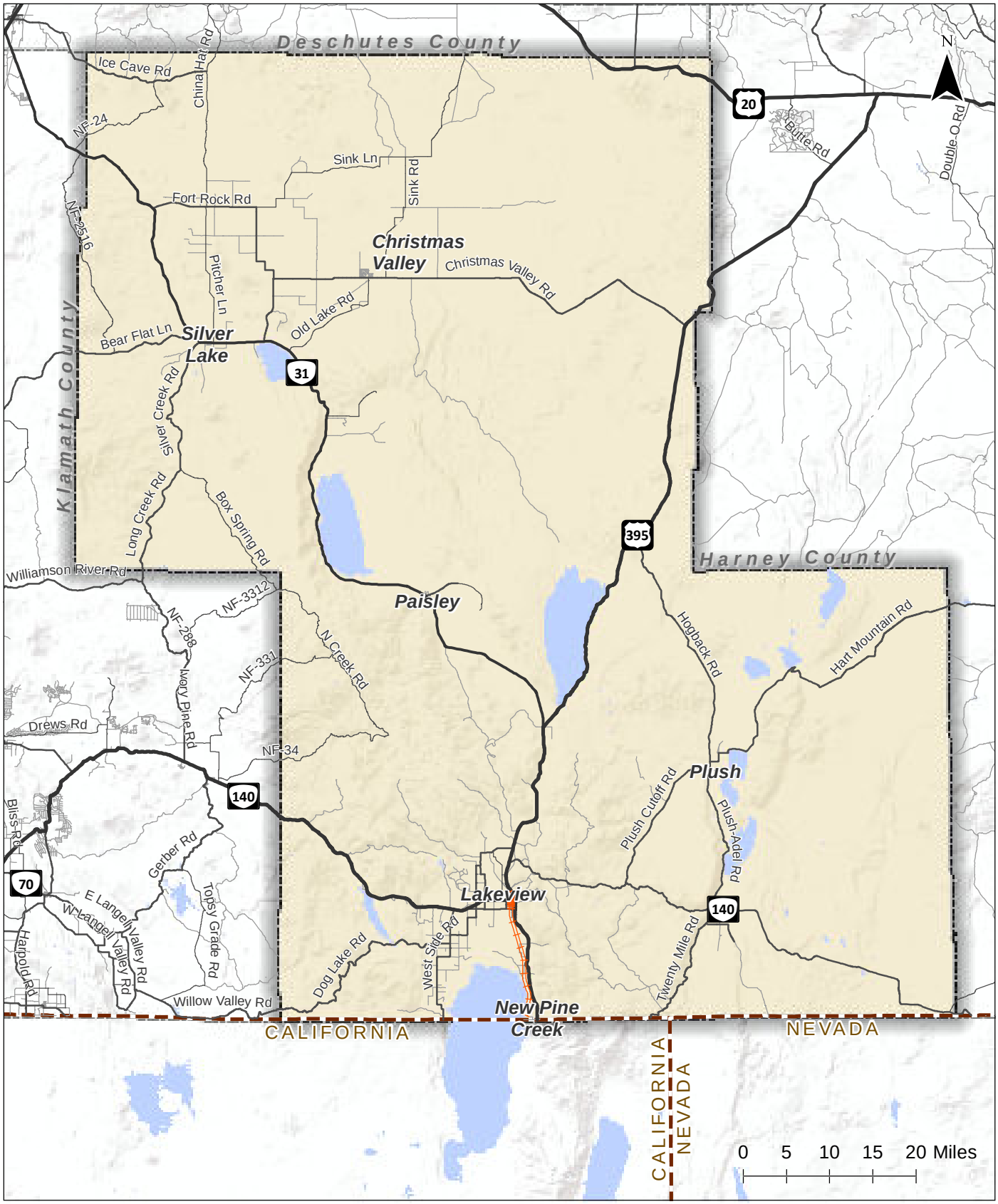
Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl
Data Source: Oregon Department of Transportation,Sources: Esri, USGS, NOAA



Lakeview Railroad

Railroad Facilities
Lake County, Oregon

Figure
3-6

Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl
Data Source: Oregon Department of Transportation,Sources: Esri, USGS, NOAA

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AIR TRANSPORTATION SYSTEM

Five airports serve Lake County. Two are general aviation airports and the other three are remote access/emergency service airports. They are as follows:

- Lake County Airport – Category III (Regional General Aviations Airport)
- Christmas Valley Airport – Category IV (Local General Aviations Airport)
- Paisley Airport – Category V (Remote Access/Emergency Services Airport)
- Silver Lake Airport – Category V (Remote Access/Emergency Services Airport)
- Alkali Lake State Airport – Category V (Remote Access/Emergency Services Airport)

The Oregon Aviation Plan (OAP) defines category III airports as regional general service airports located in geographically significant locations and serve multiple communities within the service area. Category IV Airports function to accommodate general aviation users and local business activities, as defined by OAP. Category V Airports accommodate limited general aviation use in smaller communities and remote areas of Oregon as well as provide emergency and recreational use function.

INTERMODAL CONNECTIONS

Intermodal connections for passenger service exist in the form of transit, pedestrian and bicycle, and automobile connections. Intermodal connections for freight exist in the form of rail, truck, air, and water transport connections. This section describes those connections.

Freight Transportation

Freight is a key component of the regional economy within Lake County. Goods and services are transported via freight routes into, out of, and within the County. As such, access to freight services is critical.

Freight centers exist near local industrial lands, mostly on the outskirts of town. Other industrial and agricultural lands exist in the county, but are much more dispersed.

Passenger Transportation

ODOT completed a Park and Ride Plan for Region 4 in 2012. As part of this process, two stakeholders from Lake County were interviewed about existing transit services. The outcome of that study found that Lake County was not a priority to establish a park and ride location due to lack of existing service and the low likelihood of service being established in the future.

BRIDGE CONDITIONS

ODOT maintains an inventory of bridge conditions within the County. This inventory is provided in Appendix E. This table includes State, County, and City owned facilities.

Sufficiency rating is a measure between 0 and 100 calculated by the Federal Highway Administration (FHWA), based on factors such as condition, materials, load capacity, and geometry (i.e., dimensions). FHWA uses the rating as a tool to prioritize the allocation of funds for bridge repairs. In general, bridges with a sufficiency rating of less than 50 are given priority. The sufficiency rating is used to identify deficiencies, which may include structural issues or functional issues. For example, older bridges may be narrow and not designed to the same width or height clearance of today's standards. Therefore, a sufficiency rating does not necessarily indicate a structural issue.

There is one bridge with sufficiency rating below 50 within Lake County:

- Deep Creek Highway, Highway 431 (OR 140), Bridge 08848A

Additionally, there are three bridges that are classified as "structurally deficient/distressed" in the 2014 ODOT Bridge Condition Report:

- Canal, Highway 431 (OR 140) at Milepoint 30.67, Bridge 08850
- Canal, Highway 431 (OR 140) at Milepoint 31.40, Bridge 08849
- Twentymile Creek, Highway 431 (OR 140), Bridge 09538

These four structures are all open today.

MARINE TRANSPORTATION SYSTEM

Lake County and the City of Paisley are landlocked without access to major waterways. As such, marine transportation is not a component of the county transportation system.

PIPELINE TRANSPORTATION SYSTEM

No major pipeline systems exist within Lake County.

CONCLUSION

The assessment of the existing and future land use and transportation system conditions identified the following:

- The vast majority of the transportation system within Lake County is owned and operated by the county or ODOT.
- Lake County is connected to the national and statewide highway network via three Statewide Highways (US 20, US 395, and OR 140 west of Lakeview), one Regional Highway (OR 31), and one District Highway (OR 140 east of Lakeview).
- Population projections for Lake County show relatively flat population growth over the next 20 years.
- All state highways and County roadways are adequately meeting existing vehicle and truck demand
- County two-lane roads are not subject to ODOT standards; however, all County roadways currently operate well below ODOT mobility targets.
- All study intersections have crash rates below the 90th percentile statewide crash rate for similar facilities.
- 18 fatal crashes occurred in Lake County from 2009-2013. Most of these fatalities occurred during fixed object crashes.
- Continuous sidewalks are not available in the County or with the City of Paisley.
- Four bridges in the County were identified as having low sufficiency ratings.
- There is no fixed route transit service in the County. The Lake County Senior Center operates a limited demand-responsive shuttle service for elderly residents.
- Freight traffic travel occurs mostly by truck with some rail.

The needs documented in this memorandum will be used to develop project alternatives after input from the Project Advisory Committee has been received.

REFERENCES

1. Oregon Highway Plan
2. 2010 Highway Capacity Manual
3. ODOT Analysis Procedures Manual

APPENDICES

Appendix A Traffic Count Data

Appendix B Methodology Memorandum

Appendix C Existing Conditions Traffic Operations Analysis Worksheets & Queue Length Calculations

Appendix D ODOT Crash Data (2009-2013)

Appendix E Bridge Inventory