AGENDA
SPECIAL COUNCIL MEETING OF THE MAYOR AND CITY COUNCIL
IN THE COUNCIL CHAMBERS – 81 ELKHORN ROAD
CITY OF SUN VALLEY, IDAHO
August 25, 2015 – 4:00 P.M.

CALL TO ORDER

ROLL CALL

PLEDGE OF ALLEGIANCE

PUBLIC COMMENT - *The Mayor and Council welcome comments from the public on any subject. Please state your name and address for the record. Public comments may be limited to three (3) minutes. Please note this is the only time during this meeting that public comment time will be provided.*

MAYOR AND COUNCIL RESPONSE TO PUBLIC COMMENT (5 min.)

COUNCIL COMMENT (5 min.)

MAYOR COMMENT (5 min.)

QUESTIONS FROM THE PRESS (3 min.)

PRESENTATIONS (30 min.)

1. Presentation of proposed City of Sun Valley Transportation Plan by consultant Brandon Keller, of Keller Associates;

ACTION/DISCUSSION (30 min.)

2. Discussion and direction to staff regarding the City of Sun Valley Transportation Plan;

ADJOURNMENT - *Meeting will conclude after the completion of agenda items or at the latest 9:00 p.m. Any item under discussion or consideration at 9:00 p.m. will be completed. Any remaining items on the agenda will be scheduled for another meeting.*

Please Note: The agenda is subject to revisions.
Anyone needing assistance to attend or participate should contact Sun Valley City Hall prior to the meeting at 622-4438.
Council packets are available online at www.sunvalley.govoffice.com.

City of SUN VALLEY

Transportation Plan

Revised June 9, 2015

KELLER associates

213112

DRAFT - Approved by P&Z Consent Agenda May 14, 2015

TABLE OF CONTENTS

Chapter 1 Introduction 1

1.1 Purpose 1

1.2 Scope 1

1.3 Technical Advisory Committee 1

1.3.1 TAC Meetings 2

Chapter 2 Demographics 4

2.1 Sun Valley and Surrounding Area 4

2.2 Population 4

2.3 Housing Units 6

2.4 Employment Characteristics 6

2.5 Current Land Use 7

Chapter 3 Existing Transportation System 11

3.1 Street Jurisdiction 11

3.2 Functional Classification 13

3.2.1 Recommendations 14

3.3 Bicycle and Pedestrian Facilities 19

3.4 Intermodal Inventory 21

3.4.1 Airport 21

3.4.2 Public Transit 21

3.4.3 Non-motorized Trails 23

3.4.4 Other Services 23

3.5 Bridges 23

3.6 Daily Traffic 24

3.7 Crashes 27

3.8 Speed Limits 30

Chapter 4 Regional Comprehensive and Transportation Planning 31

4.1 Comprehensive Plan 31

4.2 City Design Policies and Standards 31

4.3 Sun Valley Water and Sewer District and Wastewater Facility Planning 31

4.4 Sun Valley Resort 31

4.5 Blaine County Transportation Plan 32

4.6 Blaine County Bicycle and Pedestrian Master Plan 32

Chapter 5 Future Conditions Evaluation 33

5.1 Future Traffic Projections 33

5.2 Future Employment 33

5.3 Future Land Use 33

5.4 Potential Impacts of Future Expansion and Development 34

Chapter 6 Asset Management 35

6.1 Target Goals for Transportation Assets 35

6.2 Pavement Management 36
6.2.1 Pavement Inventory and Condition Survey 36
6.2.2 Types of Pavement Distress 37

6.3 Summary of Observed Conditions 40
6.3.1 Pavement Management Philosophy 40
6.3.2 Conditions Analysis 43
6.3.3 Maintenance Scenario Analyses 44
6.3.3.1 Scenario 1: Pre-2010 Bond Years Funding Analysis 46
6.3.3.2 Scenario 2: "Current" Budget ($135k) 47
6.3.3.3 Scenario 3: Modified "Current" Budget ($195k) 49
6.3.3.4 Scenario 4: Ideal Maintenance Level Funding Scenario 50
6.3.3.5 Maintenance Analysis Summary 51

6.4 Pathway Management 52
6.4.1 Scenario 1: $60k Annual Pathways Budget 53
6.4.2 Scenario 2: Annual Pathways Budget for Targeted RSL 54
6.4.3 Pathways Maintenance Conclusion 55

6.5 Sign Management 57
6.5.1 Inventory and Condition Survey 57
6.5.2 MUTCD Retroreflectivity Requirements 61
6.5.3 Observed Conditions and Recommendations 62
6.5.4 Pathway Bollard Inventory 66

Chapter 7 Recommendations 68

7.1 Capital Improvements 68
7.1.1 Dollar Mountain Lodge and Elkhorn Road Intersection Improvements 68
7.1.2 Dollar and Sun Valley Road (SH-75 Spur) Intersection Improvements 68
7.1.3 Elkhorn/Dollar/Fairway/City Hall Intersection Improvements 69
7.1.4 Traffic Sign Upgrades 69
7.1.5 Elkhorn and State Highway 75 Intersection Improvements 69
7.1.6 Policy Statements: Encroachment, ROW, Sight Distance, Bypass, etc. 69
7.1.7 Community School Crosswalk 70
7.1.8 Trail Creek Bicycle/Pedestrian Path Extension 70
7.1.9 Storm Water Master Plan 70
7.1.10 Pedestrian Crossing Improvements 70
7.1.11 Wayfinding Study 70
7.1.12 Speed Limit Study 70

7.2 Routine Annual Roadway Maintenance 71
7.2.1 Crack Sealing and Patching 71
7.2.2 Chip Seal Cycle 71

7.3 Road Rehabilitation and Reconstruction 71
7.3.1 Juniper Road Rehabilitation 71
7.3.2 Independence Creek Road Reconstruction and Fire Improvements 71
7.3.3 Elkhorn Road Rehabilitation 71
7.3.4 Prospector Road 72
7.3.5 Other Road Rehabilitation and Reconstruction Projects 72

7.4 Prioritization 73

7.5 Capital Improvement and Maintenance Plans 75
7.5.1 Capital Improvement Plan 75
7.5.2 Pavement Management Plan 75

Chapter 8 Funding 78

8.1 Local Funding 78
8.1.1 Idaho Users Revenue Fund 78
8.1.2 Vehicle Registration Fees 78
8.1.3 Impact Fees 79
8.1.4 Property Taxes 79
8.1.5 Sales Tax 79

8.2 State and Federal Funding 79
8.2.1 Local Rural Highway Investment Program (LRHIP) 79
8.2.2 Surface Transportation Program (STP) 80
8.2.3 Local Highway Safety Improvement Program (LHSIP) 80
8.2.4 Federal Bridge Program 80
8.2.5 Federal Lands Access Program (FLAP) 81
8.2.6 Community Choices for Idaho (CC4I) 81

Appendices I

Appendix A Excerpts from the 2014 ITD Systems Manual II

Appendix B Pavement Condition Inventory III

Appendix C Traffic Sign Inventory & Photos IV

Appendix D Pathway Bollard Inventory and Photos V

Appendix E ITD Bridge Inspection Reports VI

Appendix F Asphalt Distress Rating Sheet VII

Appendix G FHWA Maintaining Retroreflectivity Handout VIII

Appendix H Future Land Use Map IX

List of Figures

Figure 1 - Sun Valley Population 5
Figure 2 - Sun Valley Population Age Distribution 5
Figure 3 - Housing Units 6
Figure 4 - Activity Generators 9
Figure 5 - Existing Land Use 10
Figure 6 - Street Jurisdiction 12
Figure 7 - City Historical Functional Classification 16
Figure 8 - 2015 ITD Functional Classification 17
Figure 9 - Recommended Functional Classification 18
Figure 10 - Pathways and Bollard Locations 20
Figure 11 - Mountain Rides 2013 Monthly Ridership 21
Figure 12 - Sun Valley Public Transportation Funding 22
Figure 13 - Traffic Volumes 26
Figure 14 - Crash Events 27
Figure 15 - Crash Contributing Occurrences 28
Figure 16 - 2009-2013 Crash Locations and Severity 29
Figure 17 - Typical iWorQ Pavement Data 36
Figure 18 - Pavement Life Cycle 41
Figure 19 - Pavement Condition Map 42
Figure 20 - 2014 RSL Distribution 43
Figure 21 - 2015 RSL Distribution 46
Figure 22 - Scenario 1 2020 RSL Distribution 47
Figure 23 - Scenario 2 2020 RSL Distribution 48
Figure 24 - Scenario 2 2025 RSL Distribution 48
Figure 25 - Scenario 3 2020 RSL Distribution 49
Figure 26 - Scenario 3 2025 Distribution 50
Figure 27 - Scenario 4 2020 RSL Distribution 51
Figure 28 - Scenario 4 2025 RSL Distribution 51
Figure 29 - Current Funding vs. Ideal Funding over Time 52
Figure 30 - Current Budget RSL vs. Ideal Budget RSL over Time 52
Figure 31 - Pathways 2016 RSL Distribution 53
Figure 32 - Pathways 2021 RSL Distribution 54
Figure 33 - Pathways Scenario 2 2020 RSL Distribution 54
Figure 34 - Current Pathway vs. Ideal Budget over Time 55
Figure 35 - 2014 Pathway Pavement Conditions 56
Figure 36 - Sign Post Conditions 59
Figure 37 - Traffic Sign Conditions 60
Figure 38 - Bollard MUTCD Offset Compliance 67
Figure 39 - Pavement Management Zones 76
Figure 40 - Pathway Management Zones 77

List of Tables

Table 1 - Populations of Local Communities....4
Table 2 - Employment Distribution....7
Table 3 - Existing Land Use....7
Table 4 - 2014 Bridge Ratings....23
Table 5 - 2013 Traffic Volumes (Average Daily Traffic)....24
Table 6 - 1995 Traffic Volumes (24 Hour Counts)....24
Table 7 - Crash Injury Summary....27
Table 8 - Future Average Annual Daily Traffic (AADT)....33
Table 9 - Subjective Condition Ratings of Street Network....43
Table 10 - 2004-2013 Annual Road and Street Financial Reports Summary....45
Table 11 - Traffic Sign Support Data Summary....58
Table 12 - Traffic Sign Data Summary....58
Table 13 - MUTCD Street Name Sign Text Size Requirements....63
Table 14 - Road Rehabilitation and Reconstruction Projects....72
Table 15 - CIP Prioritization System....74
Table 16 - Capital Improvement List....75

List of Pictures

Picture 1 - Typical Bollard....19
Picture 2 - Separated Pathway....19
Picture 3 - Adjacent Pathway....19
Picture 4 - Bus Stop Sign....21
Picture 5 - Bus Stop Shelter....21
Picture 6 - Obscured Bike/Ped Sign....62
Picture 7 - Illuminated Street Name Sign....62
Picture 8 - D3-1 Street Name Signs....62
Picture 9 - Sign on Mayleaf Street....64
Picture 10 - Sign at Parker Gulch and Morning Star Intersection....64
Picture 11 - W11-2 with W16-7P Plaque....64
Picture 12 - Pedestrian-Actuated Flashers....65
Picture 13 - Pedestrian-Actuated Flashers and Button....65
Picture 14 - RRFB Signage....65
Picture 15 - R10-25 Instructional Plaque....65
Picture 16 - Bollard with Stop Sign....66
Picture 17 - Bollard with Warning Signs....66
Picture 18 - Post-mounted Path Stop Sign....66
Picture 19 - Wall-mounted Path Sign....66

CHAPTER 1 INTRODUCTION

1.1 Purpose

In 2013, the City of Sun Valley received a grant from the Local Rural Highway Investment Program (LRHIP), administered by the Local Highway Technical Assistance Council (LHTAC), for the development of a new transportation plan. A prior transportation plan was completed 16 years previously, in 1997. Significant growth since that time, and seasonally-fluctuating populations due to the resort nature of the area, necessitate new planning. A new transportation plan is further supported by the City's 2005 Comprehensive Plan, which calls for an updated transportation plan that establishes 5-year and long-range transportation-related capital improvement plans. This transportation plan takes a critical look at the existing transportation network within the City of Sun Valley. The purpose is to evaluate the existing transportation network within Sun Valley, identify needs within the system, and present a plan to address those needs.

1.2 Scope

The study began with the collection of existing data, including traffic counts, collision records, and geometric data. Evaluation of the data led to recommendations for improvements. The Plan also addresses bicycle and pedestrian movements and pathways, multi-modal transportation (public transit, trailheads, etc.), and the future transportation system. It takes into account projected growth plus present and future land uses, and evaluates future problems and solutions. Structured discussions with city residents and officials led to an understanding of the challenges facing Sun Valley in maintaining and improving their transportation network. This analysis provided the basis for the proposed improvements. The Sun Valley Transportation Plan establishes five-year and long-range Capital Improvement Programs (CIPs) in response to the needs identified.

The Transportation Plan is intended to be a living document that the City of Sun Valley can use to continually identify and prioritize transportation deficiencies within the City. As part of the development of this plan, tools were developed to assist City officials in making informed decisions. Pavement Management and Sign Management programs currently reside in iWorQ, a web-based data management system created for local government agencies. Through a partnership between LHTAC and iWorQ, Pavement Management and Sign Management applications are provided at no cost to Idaho counties and municipalities with populations less than 5,000. The inventories in these programs were updated as part of the transportation plan to help the City track and maintain their infrastructure.

1.3 Technical Advisory Committee

A Technical Advisory Committee (TAC) was established for this study. The TAC was formed to extend participation in the study to other interested parties, and to act as a conduit for local information regarding the efficiency of the current transportation system. The TAC reviewed study findings and documentation to ensure that the study is responsive to the actual needs of the City.

Members of the TAC include:

- Mark Hofman, Community Development Director, City of Sun Valley
- Bill Whitesell, Street Superintendent, City of Sun Valley
- Ray Franco, Fire Chief, City of Sun Valley
- Reid Black, Fire Code Compliance Officer, City of Sun Valley
- Walt Femling, Police Chief, City of Sun Valley
- Tim Silva, General Manger, Sun Valley Resort
- Kurt Nelson, Ketchum District Ranger, United States Forest Service
- Jim Keating, Executive Director, Blaine County Recreation District
- Jason Miller, Executive Director, Mountain Rides
- Mark Gilbert, Community Representative, Mountain Rides
- Nils Ribi, Community Representative, former City Councilmember

1.3.1 TAC Meetings

Five TAC meetings were held during the development of this study. The first meeting was held on February 6, 2014 and introduced members of the Technical Advisory Committee and explained the purpose of the Transportation Plan. The planning process and the role of the TAC were discussed. The committee was asked to start thinking about information they felt would be important to the study and to identify problem areas in town. This meeting was also Keller Associates' opportunity to gather information from city officials, businesses, and citizens about the nature and qualitative condition of the transportation system in and around Sun Valley.

The second meeting was held on April 1, 2014, and included a presentation to the TAC and public. The presentation focused on Sun Valley's pavement infrastructure. Exhibits showed the current conditions of path and roadway pavement. A draft Capital Improvement List and a sample prioritization system for ranking the improvements were presented. The TAC was asked what capital improvement needs should be considered, and to think about how to prioritize them.

In the third meeting, held on June 9, 2014, Keller Associates presented pavement maintenance scenarios utilizing various levels of funding. The scenarios illustrated the methodology behind pavement maintenance. An updated Capital Improvement list, with a rating system incorporating the thoughts and comments from the second TAC meeting, was presented.

A fourth meeting was held on August 5, 2014 to present additional maintenance scenarios along with traffic sign inventory findings. The TAC was asked to prioritize capital improvements according to criteria and weighting factors developed in the previous meetings. An electronic table was distributed to TAC members with the intent to get additional input to fine tune the CIP list and prioritization of projects. Comments and suggested changes were to be returned to Keller Associates by August 22.

A fifth meeting was held on October 7, 2014 and a draft Transportation Plan was presented to the TAC. Keller Associates went through key portions of the report and gathered initial comments from the TAC. These comments were incorporated and the draft was updated.

The updated draft was presented to the Planning and Zoning Commission on April 8, 2015 to explain the purpose and gather the Commission's input. There was a follow-up meeting on May 14, 2015 where the Planning and Zoning Commission recommended the plan for approval by city council.

The plan was formally presented to City Council on DATE…

CHAPTER 2 DEMOGRAPHICS

2.1 Sun Valley and Surrounding Area

The City of Sun Valley is a mountain resort community located east of Highway 75 and the Big Wood River in Blaine County, Idaho. It is on the edge of the Sawtooth and Challis National Forests in the Wood River Valley, adjacent to the city of Ketchum. Sun Valley sits at an elevation of 5,750 feet next to Dollar Mountain. Nearby, Mount Bald (Baldy) is considered to be a world class ski mountain with a resort run by the Sun Valley Company, the City's major employer. The Friedman Memorial Airport in Hailey to the south serves the area. Skiing, biking, hiking, ice skating, trail riding, tennis, fishing, and hunting are area attractions that draw tourists from all over the world. A lively arts community offers a variety of opportunities as well.

2.2 Population

The City of Sun Valley is unique in that it is a mountain resort community. Resort communities experience fluctuating population with seasonal peaks. The July 2014 draft of the Sun Valley Comprehensive Plan identifies a strong economy, resulting in increased real estate values and disposable income, as well as technological advances, which make mountain resorts more accessible for telecommuters, as factors that increase year-round appeal of mountain communities like Sun Valley. The draft Comprehensive Plan also provides that mountain resorts are forecasted to have even more pronounced and longer-lasting seasonal peaks.

Based on traffic counts conducted by the city, Sun Valley experiences population peaks during the winter and summer months, especially during holidays, corresponding with the area's seasonal recreation such as winter sports and mountain biking. Refer to Section 3.6 6.3 for further information on traffic volumes corresponding to the seasonal population peaks. The following section, 2.3 discusses housing units, showing that the majority of units are typically vacation homes or second homes and are not used as primary residences.

The permanent, year round populations of Sun Valley and Blaine County from the 2000 Census were 1,427 and 19,123, respectively. The city population from the 2010 census was 1,406, and the estimated population for 2013 is 1,408. Based on these values, the growth rate in Sun Valley from 2000 to 2010 was -1.5%. Table 1 lists growth rates for Sun Valley and nearby communities.

Table 1 - Populations of Local Communities

Community	Population 2000	Population 2010	% Change
Sun Valley	1,427	1,406	-1.5%
Ketchum	3,003	2,689	-10.5%
Hailey	6,200	7,960	28.4%
Bellevue	1,876	2,287	21.9%
Twin Falls	34,469	44,125	28.0%

Historic and forecasted populations for Sun Valley are shown on the following page in Figure 1.

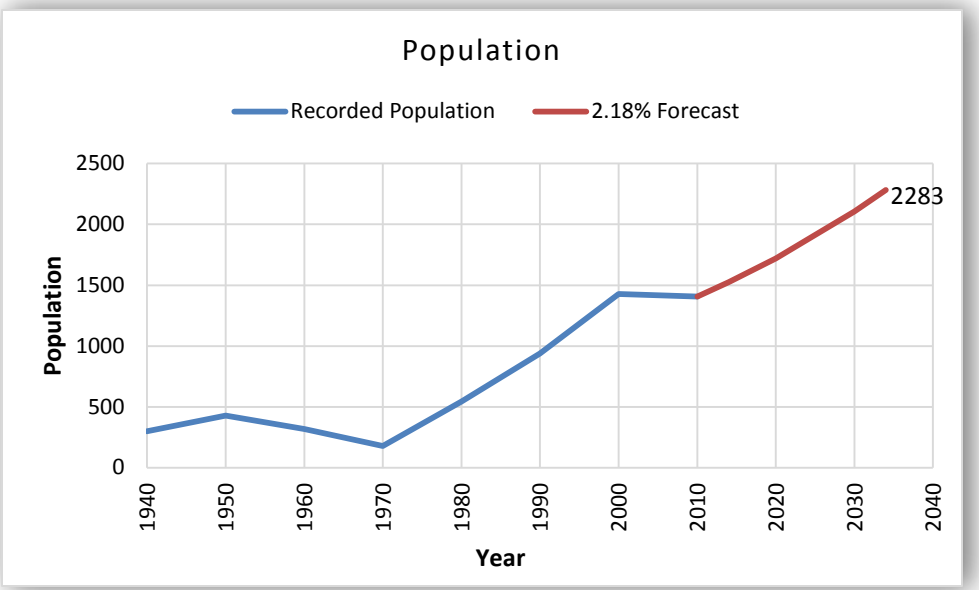


Figure 1 - Sun Valley Population

Based on the 2.2% annual growth dynamic from 1990 to 2010, it is anticipated that Sun Valley will have a population of 2,283 individuals by 2034, a 62% increase from 2010 population.

Using data taken from the United States 2010 Census, the following figure was created.

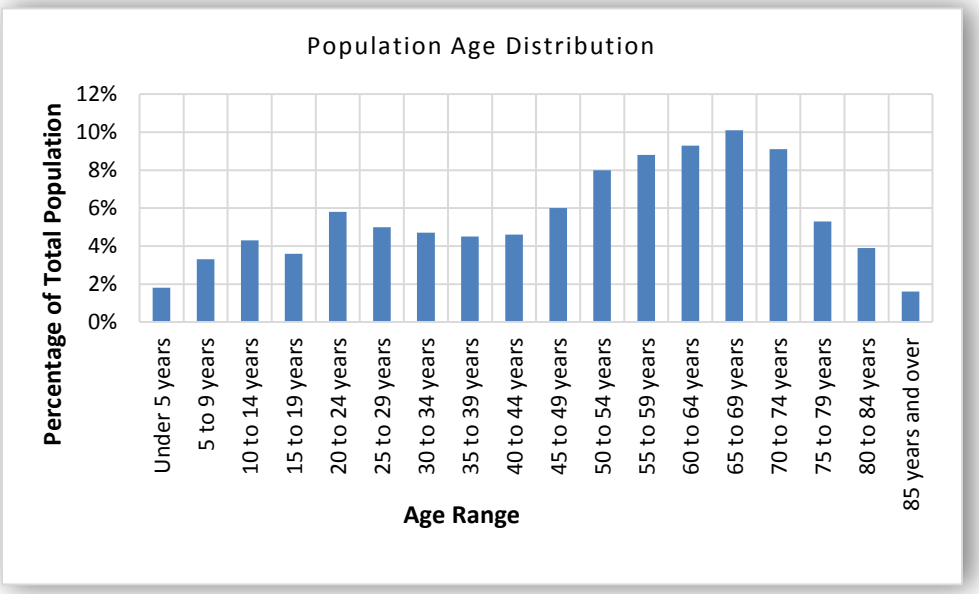


Figure 2 - Sun Valley Population Age Distribution

As shown in Figure 2, the population of Sun Valley is fairly uniformly distributed across ages 25 to 44. There is a slightly higher percentage of the population older than 44 years old and a slightly lower percentage of people that are younger than 25 years old. These numbers put the median age in Sun Valley at 54 years old. The median age for the population of the State of Idaho is 35 years, and 37 years for the United States.

2.3 Housing Units

As reported by the 2010 U.S. Census, there were 2,597 housing units, 622 (24%) of which were reported as occupied. Occupied generally means used as a permanent residence. There were 1,975 (76%) units reported as vacant. Vacant housing units are: for rent, rented and unoccupied, for sale, sold and not occupied, for seasonal, recreational, or occasional use, for migratory workers, or "other."

1,674 units were reported as being for seasonal, recreational, or occasional use, which represents 65% of Sun Valley's total housing units.

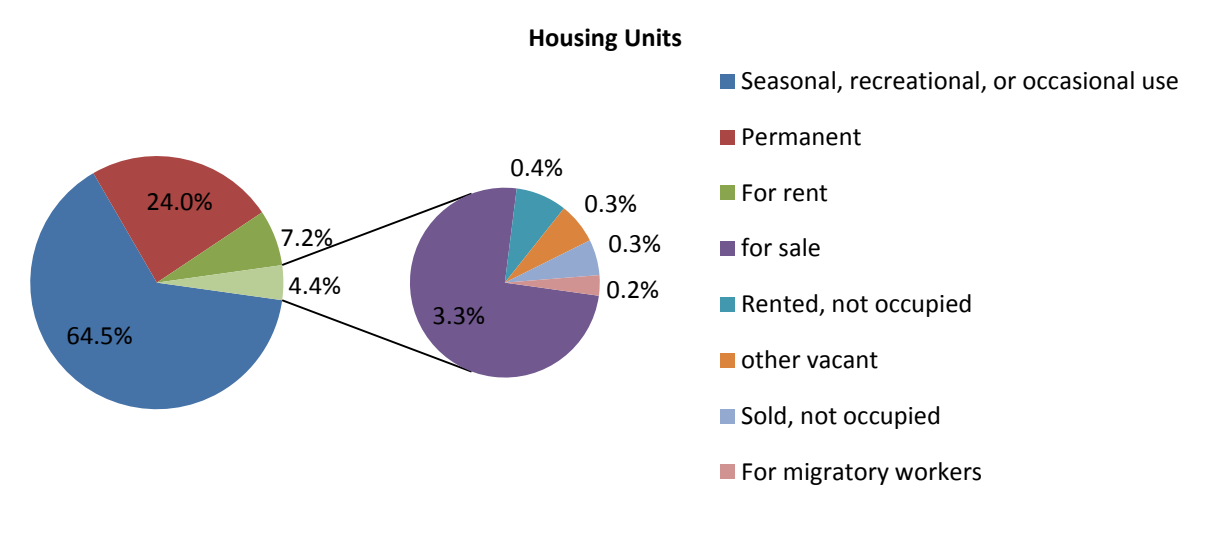


Figure 3 - Housing Units

The average number of persons per occupied dwelling unit is 2.26%, which is lower than both the United States average of 2.63% and the Idaho average of 2.68%.

2.4 Employment Characteristics

The mean annual household income for the City of Sun Valley (as reported in the 2008-2012 American Community Survey by the U.S. Census Bureau) was $69,874, compared to $59,974 for the State of Idaho and $51,371 for the United States (in 2012 dollars). Using an inflation calculator provided by the U.S. Bureau of Labor, the current mean annual household income in Sun Valley is estimated at $70,0897 (2014 dollars).

It is important to note that each year the Sun Valley Company employs and houses a large number of seasonal workers, typically college-aged, related to resort operations. This demographic is not captured in the reported census data of permanent population, housing units, or household mean income for the city.

Table 2 on page 7 shows the labor force distribution by industry (U.S. Census 2012).

As Table 2 shows, the arts, entertainment, recreation, and accommodation and food services industries account for nearly 40% of Sun Valley jobs. The major employer in the area is the Sun Valley Company at the resort and related businesses.

Table 2 - Employment Distribution

Employment Distribution	
Industry	**Percent**
Arts, Entertainment, and Recreation, and Accommodation and Food Services	39.7
Finance and Insurance, and Real Estate and Rental Leasing	15.6
Educational Services, and Health Care and social Assistance	11.3
Professional, Scientific, and Management, Administrative and Waste Management Services	10.8
Construction	7.5
Wholesale Trade	6
Agriculture, Forestry, Fishing and Hunting, and Mining	4.7
Transportation and Warehousing, and Utilities	3.3
Other Services	1.7
Retail Trade	1.6
Public Administration	1.5
Information	1.2
Manufacturing	1.1

2.5 Current Land Use

Land use within the city limits of Sun Valley can be broken into three major categories: residential, commercial, and recreation-public. Table 3 shows the percentage of land use in Sun Valley in each of those three categories. The majority of the land within the city limits is open space and is used for recreational purposes. This is consistent with the Comprehensive Plan, which calls for open space.

Table 3 - Existing Land Use

Land Use	
Residential	25%
Commercial	2%
Recreation-Public	73%

Figure 4 shows the locations of activity generators including schools, emergency services, hospitals, and major retail, commercial, and employment nodes within and around the city. Figure 5, based on land use GIS data obtained from the Blaine County GIS department, shows the land use within the city limits by area.

Land use categories are residential (RA, RS-1, RS-2, RM-1, RM-2) defined by dwelling units per acre (du/ac), resort commercial (CC), open space (OR-1 and OS), commercial (SC), and public/quasi-public (PI). The 2014 Comprehensive Plan update has new designations and categories for land use. See Section 5.3 for future land use information.

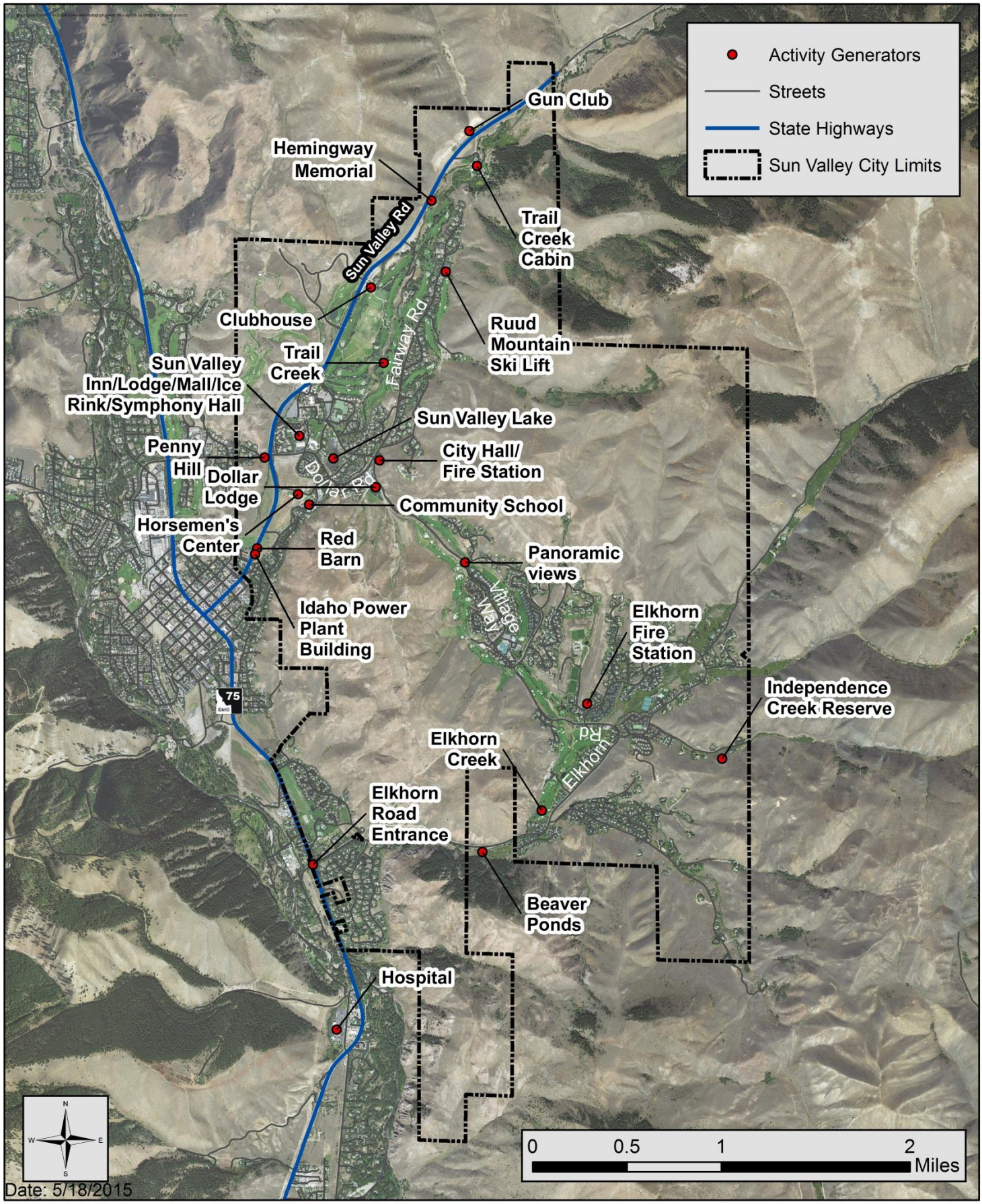


Figure 4 - Activity Generators

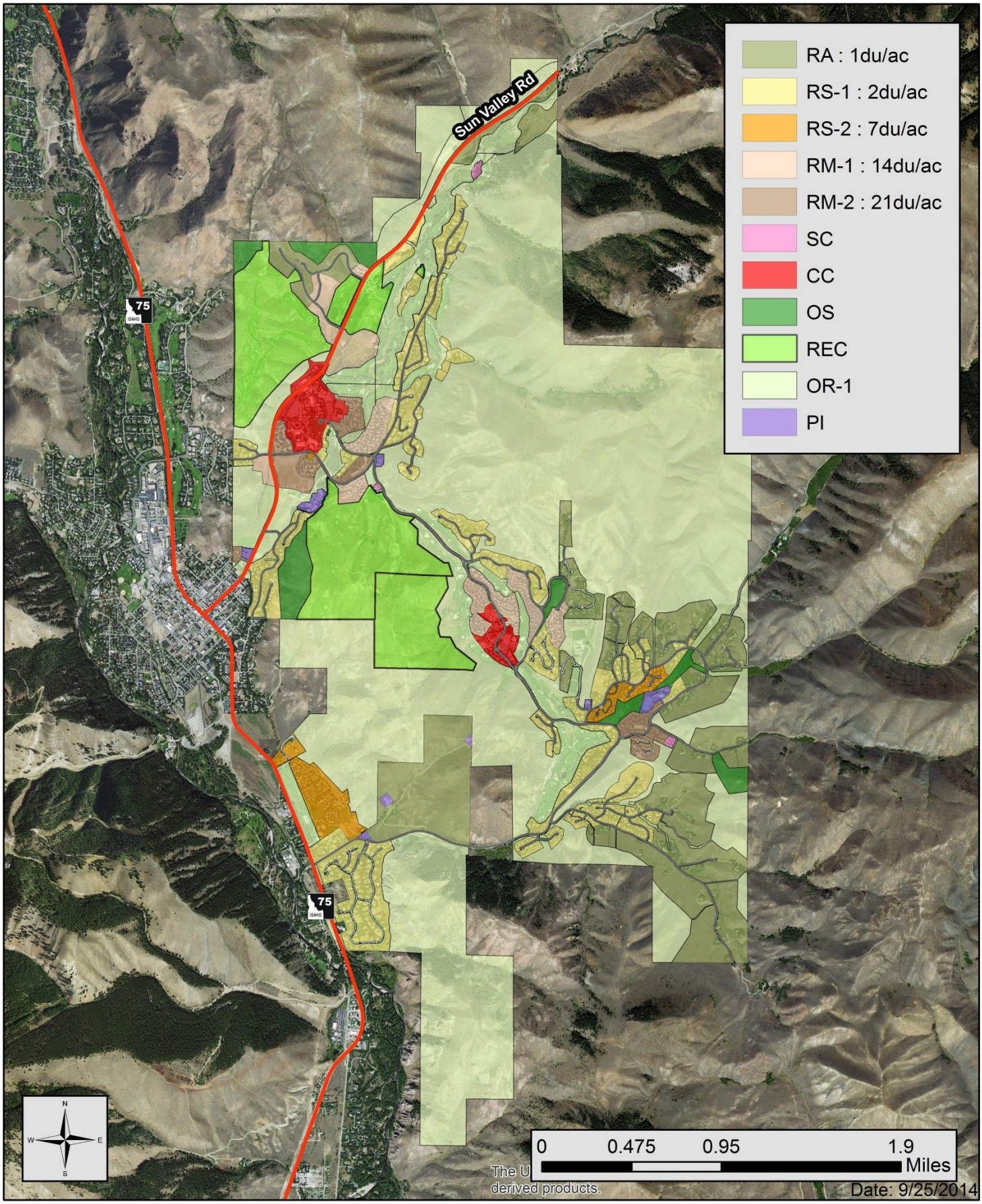


Figure 5 - Existing Land Use

CHAPTER 3 EXISTING TRANSPORTATION SYSTEM

This chapter details current conditions of the transportation system.

3.1 Street Jurisdiction

Keller Associates worked with City personnel to establish ownership and maintenance jurisdictions of streets within and around Sun Valley. The City of Sun Valley owns and maintains approximately twenty (19.8) centerline miles of asphalt streets. Sun Valley also maintains nearly 11 miles of shared-use asphalt pathways (see section 3.3 for more information on pathways). There are no unpaved streets in the City's inventory. The Idaho Transportation Department (ITD) owns and maintains Sun Valley Road (aka Trail Creek Road), which is designated as SH-75 Spur from SH-75 in Ketchum and northeast through Sun Valley to the City's northern city limit. There are also many privately-owned streets within City limits. Private roads in Sun Valley include the following:

Angani Way
Arapaho Ct.
Arrowwood Dr.
Aspen Ln.
Atelier Condo Dr.
Back Pay Way
Badeyana Dr.
Baldy View Loop
Bannock Ct.
Black Birch Dr.
Bluff Condo Dr.
Boleanna Ln.
Bonne Vie Condo Dr.
Boulder Ct.
Buck Ln.
Bunchberry Dr.
Camp Way
Cayuse Ct.
Chateau Cir
Chateau Ct.
Cheyenne Ct.
Chief Joseph Ct.
Cloud Nine Dr.
Community School Rd.
Cottonwood Condo Dr.
Coyote Ct.
Creekside Ln.
Crown Point Ln.
Crown Ranch Rd.
Dogwood Ct.
Dogwood Ln.
Dollar Meadow Condo Dr.
E Lane Ranch Rd.
East Lake Rd.
Fairway Nine Dr.
Fairway One Condo Dr.
Farnlun Place Rd.
Firewood Ln.
Fox Ln.
Foxtail Dr.
Golf Ln.
Half Dollar Ln.
Harker Ln.
High Country Ln.
Highland Ct.
Highlands Dr.
Horsemans Center Rd.
Huckleberry Ln.
Indian Springs Condo Dr.
Indian Springs Ln.
Inn Entry Ln.
Inn Service Rd.
Kitzbuhler Strasse
Kootenai Ct.
Lane Creek Rd.
Larrys Ln.
Legends Condo Dr.
Lodge Apartments Dr.
Lodge Entry Ln.
Lower Ranch Condo Dr.
Mall Ln.
Meadow Rd.
Mock Orange Dr.
Moritz Rd.
New Villager Condo Dr.
Nez Perce Ct.
Nine Iron Dr.
Ranch Ct.
Ridge Ln.
Rose Ct.
Sage Creek Reservoir Rd.
Sagewillow Rd.
Senabi Ln.
Shoshone Ct.
Snow Creek Condo Dr.
Snowcup Ln.
Summit 1 Condo Dr.
Summit 2 Condo Dr.
Sun Valley Condo Dr.
Sunburst Condo Dr.
Sunflower Ln.
Teheya Ct.
Trail Creek Cabin Rd.
Trail Creek Condo Dr.
Upper Ranch Condo Dr.
Villa Ct.
Villager Condo Dr.
W Lane Ranch Rd.
West Lake Rd.
Weyyakin Dr.
Wildflower Condo Dr.
Wildrose Ln.
Willow Rd.
Woodruff Ct.

Figure 6 on page 12 shows roadways in the Sun Valley area and their respective owners (ITD, cities, and private).

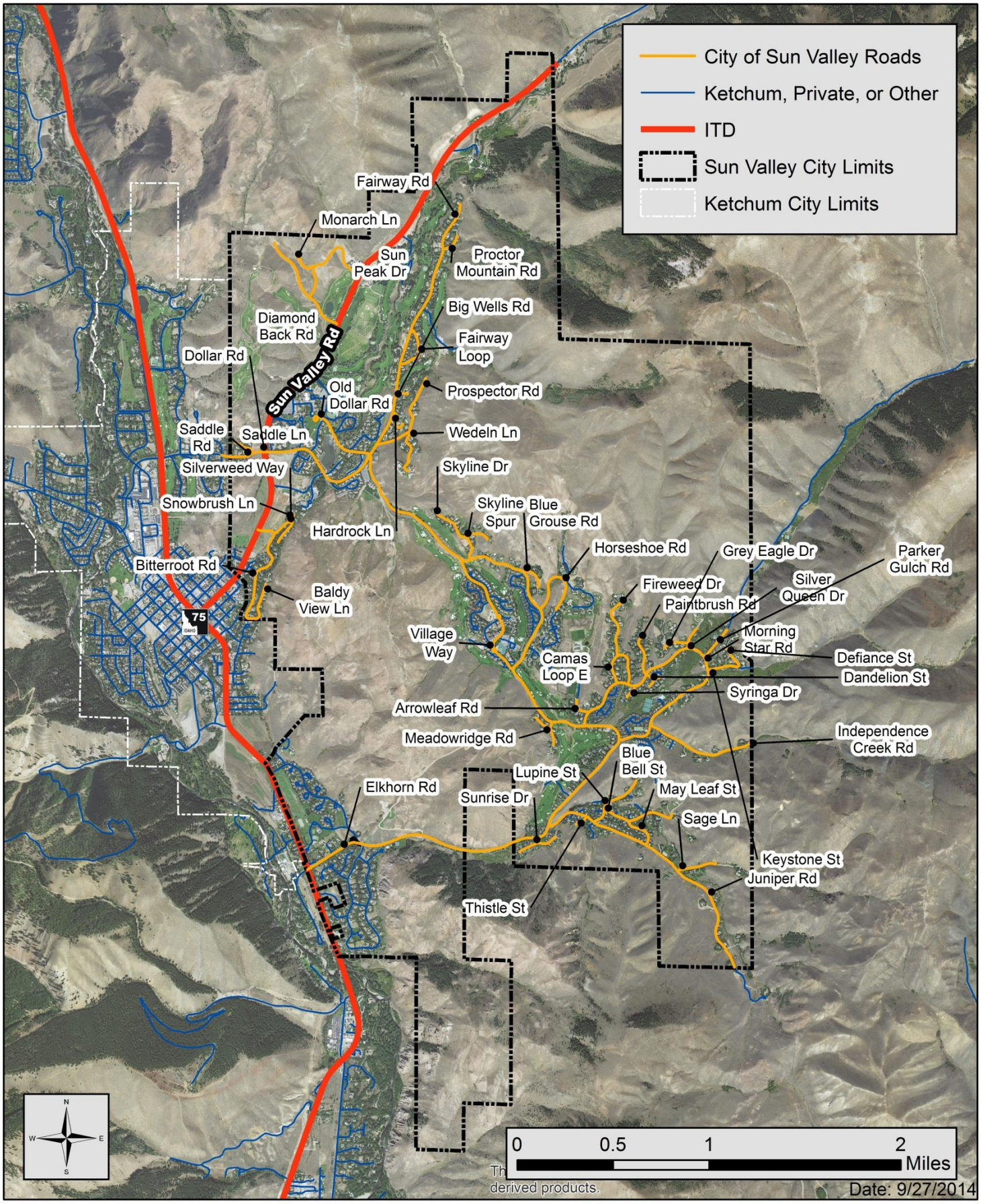
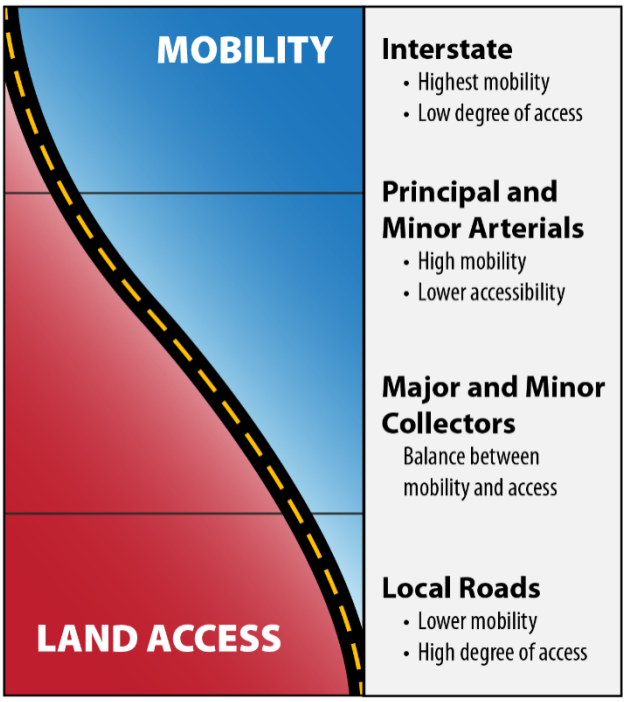


Figure 6 - Street Jurisdiction

3.2 Functional Classification

The Functional Classification System is the process by which streets and highways are grouped into classes, according to the type of service they are intended to provide. In simplistic terms, functional classification reflects a roadway's balance between providing land access versus providing point-to-point mobility. Generally, roadways fall into one of three broad categories: arterials, collectors, and local roads.



Historically, urban and rural area functional classification designations differed from one another. In 2013, the FHWA changed this policy so that there is now no difference between urban and rural classifications. The FHWA functional classifications are explained below.

- Principal Arterial
  - Interstate
  - Other Freeways & Expressways
  - Other
- Minor Arterial
- Collector
  - Major Collector
  - Minor Collector
- Local

Arterial: These roads have the highest speeds, with the goal of providing a high level of mobility with limited access. They are more numerous than interstates and provide a connection between regional areas. Common characteristics of arterials are:

- Moderate to long distance
- High speed
- High traffic volume (can be multi-lane)
- Link between smaller communities
- Link communities to interstates

Collectors: Collectors gather traffic from local roads and connect them with arterials. They provide the most balance between access and mobility. In rural areas, collectors are often divided into major and minor collectors. Common characteristics of collectors include:

- Moderate distance
- Moderate speeds
- Moderate to high traffic volumes

Local: Local roads primarily provide access to land and individual homes, but with limited mobility. Common characteristics of local roads include:

- Access to adjacent land
- Shortest distance
- Low speed
- Low volume

The majority of the streets within Sun Valley are local roads serving residential areas. Historically, the City has classified their main roads as follows:

- Highway
  - SH-75
  - Sun Valley/Trail Creek Road
- Arterial
  - Saddle Rd
  - Dollar Rd
  - Elkhorn Rd
- Collector
  - Fairway Rd
  - Morning Star Rd
  - Juniper Rd

A map of this information is shown in Figure 7 on page 16. These historical classifications by the City do not necessarily match current FHWA-recognized functional classifications. Functional classifications for Sun Valley roads, as shown in Figure 8 on page 17, were taken from an ITD-generated GIS database and represent the official classifications recognized by FHWA and ITD for funding purposes. These classifications reflect recent statewide updates done by ITD and submitted to FHWA in 2015.

Classifications may change depending on the roadways' type of use. Currently Sun Valley/Trail Creek Road is classified as a Major Collector. It provides access to local roads within Sun Valley and National Forest land, and is used heavily by both commercial and non-commercial traffic. It becomes a Forest Service road north of the City limits. State Highway 75 is classified as a Minor Arterial. Though not within City limits, it is a major route to Sun Valley for out-of-area visitors. The Friedman Memorial Airport lies adjacent to the west side of SH-75 south of Sun Valley, and is another main means of transportation to the Sun Valley area.

3.2.1 Recommendations

Saddle, Dollar, and Elkhorn Roads, which provide access to local roads between SH-75 and Sun Valley Road, should be classified as Major Collectors. Elkhorn Road is the main means of access to Dollar Mountain amenities and the Elkhorn Village area. It also serves as a de facto SH-75 “bypass route” when road work and other causes of delay occur on SH-75. Fairway, Morning Star, and Juniper Roads, which provide access to many local roads along their rights-of-way, could potentially be classified as Minor Collectors.

As functional classification plays a part in qualifying for some Federal Aid funding programs, it would be beneficial for the City of Sun Valley to request a change in the functional classification of the previously mentioned streets. This process involves submitting an Idaho Functional Classification/Urban Boundary Change Request Form to ITD. This form requires information about the roadway and justification for the request. Excerpts from the ITD 2014 Systems Manual regarding Functional Classification updates can be found in Appendix A[1]. Recommended classifications are illustrated in Figure 9 on page 18.

A number of factors affect turnaround time for a functional classification approval from ITD and FHWA. If an application is submitted during the interim of a statewide update based on the decennial census and depending on the number of changes proposed, it could take one to two months from the time of submittal. If a request is submitted during the statewide update, it generally takes much longer because of larger amounts of changes being input into the state's system.

[1] ITD is constantly changing the update process. The most current edition of the ITD Systems Manual should be consulted. At the time of this report the most current is Version 1.9, printed September 1, 2014.

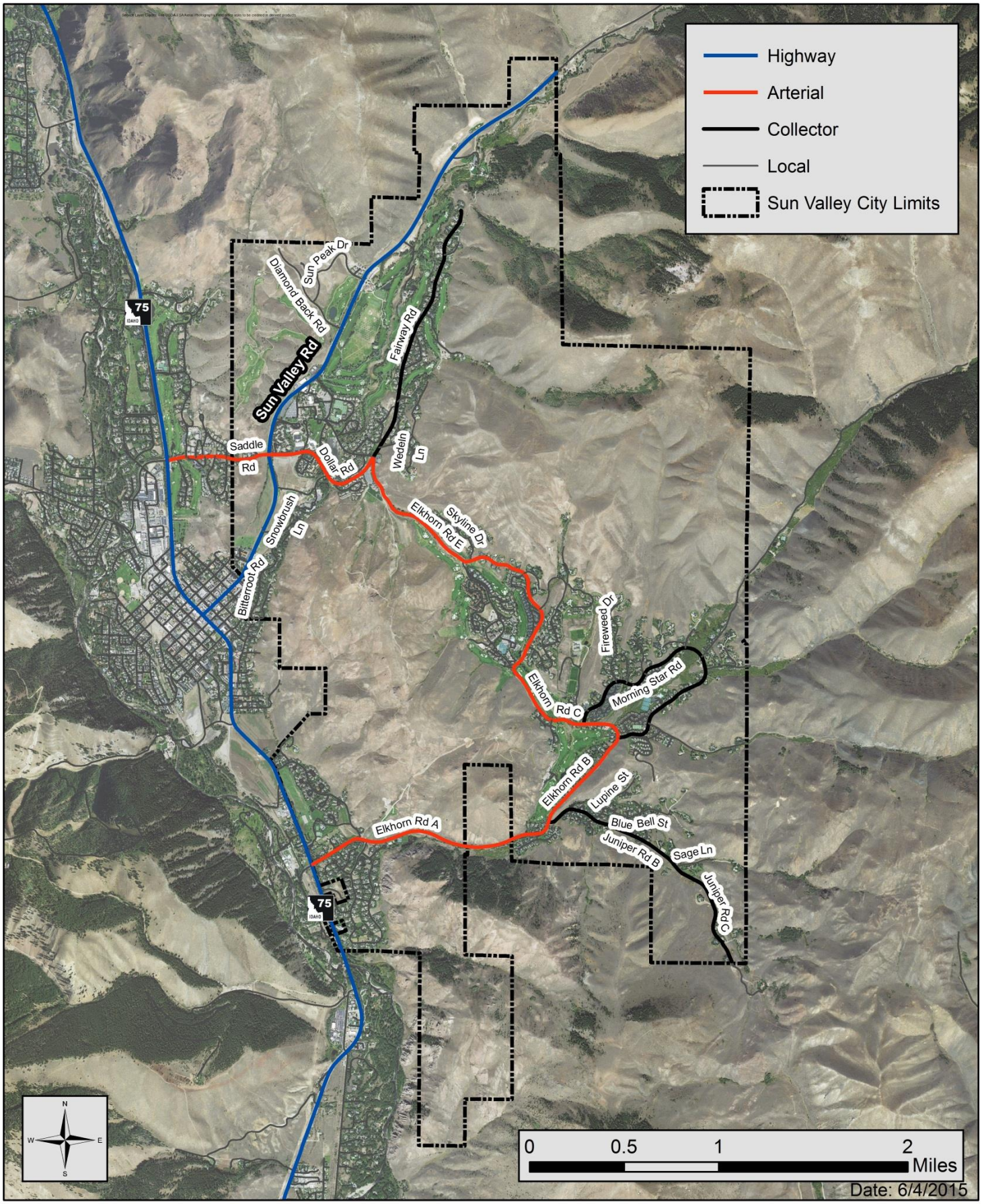


Figure 7 - City Historical Functional Classification

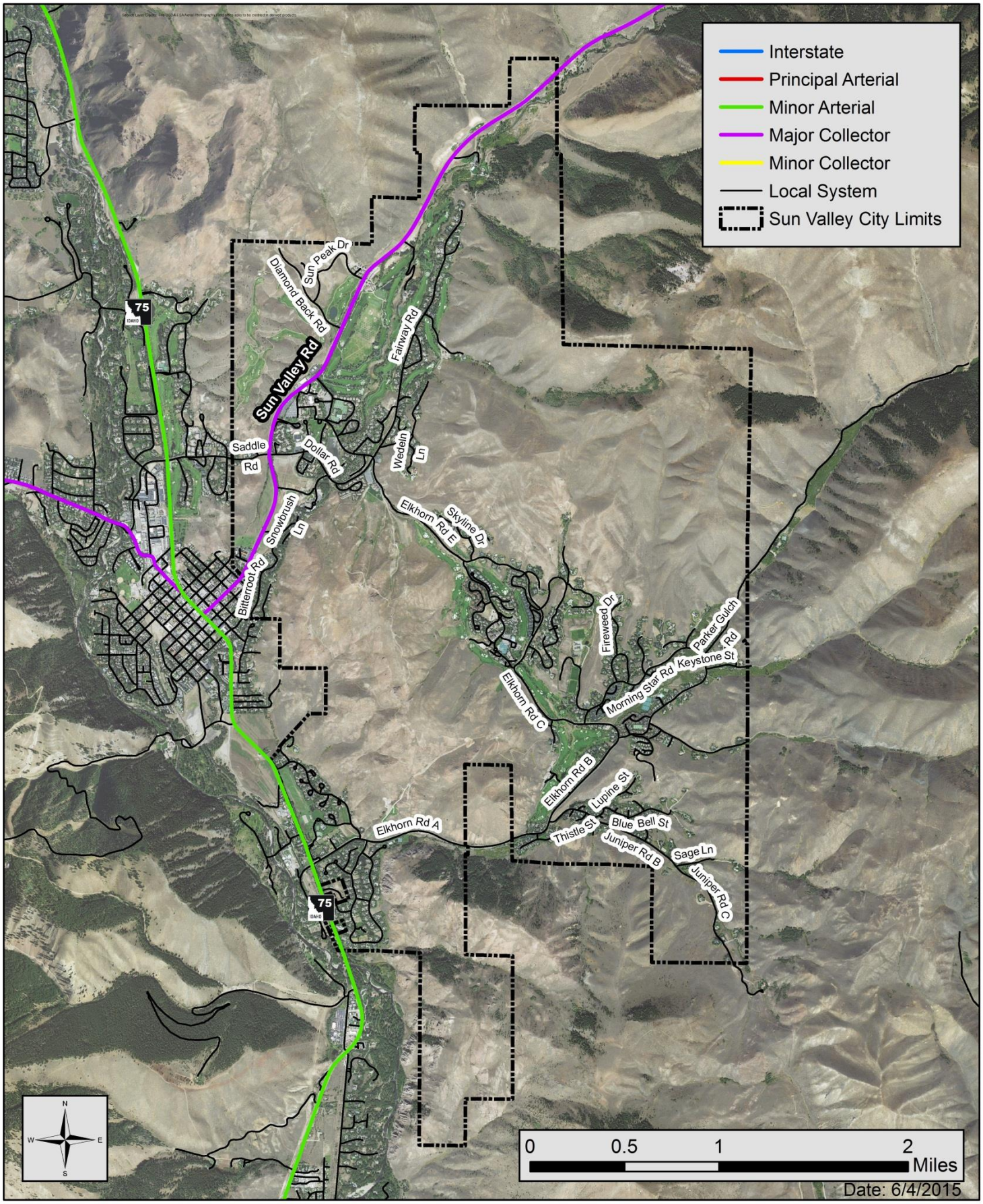


Figure 8 - 2015 ITD Functional Classification

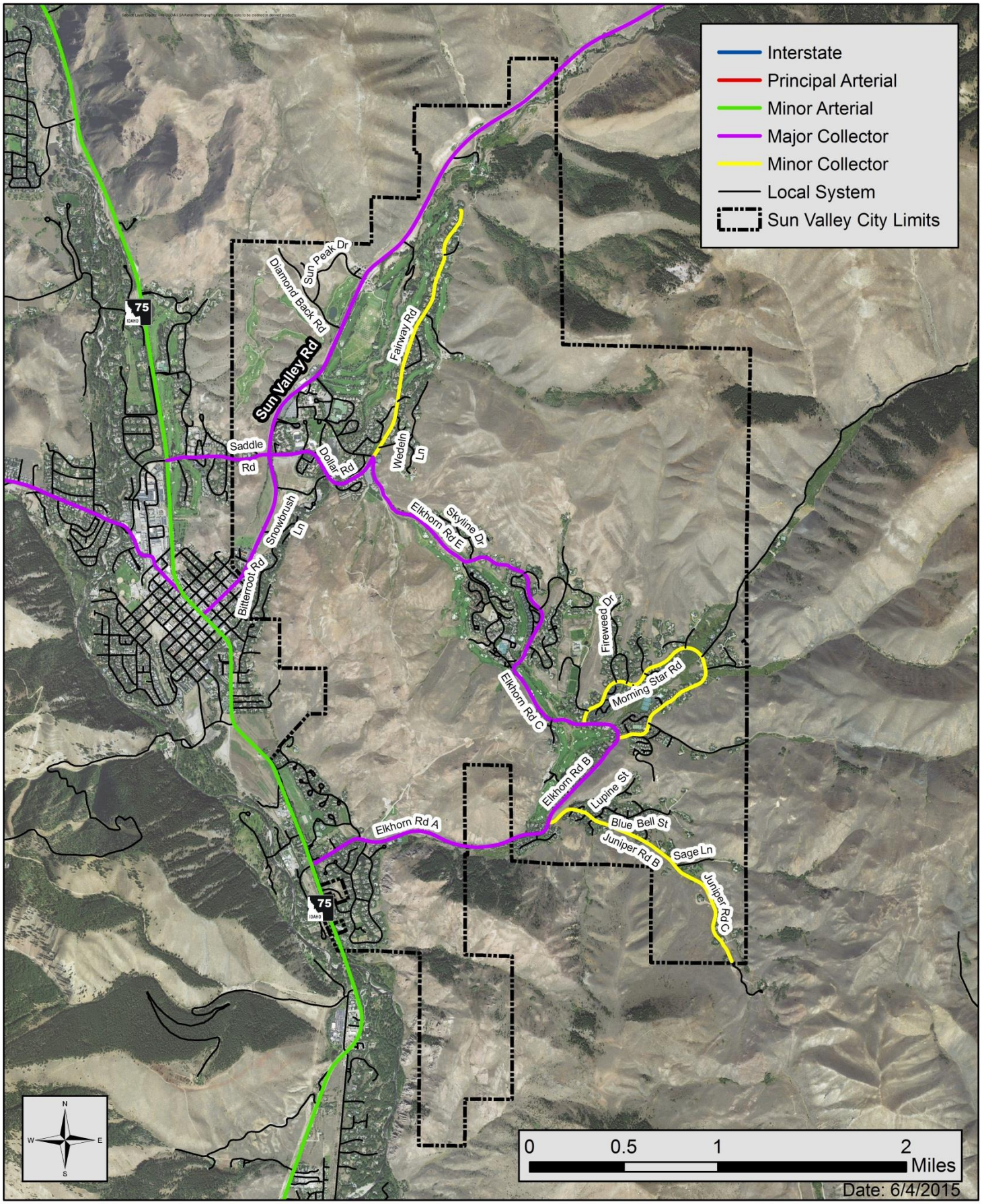


Figure 9 - Recommended Functional Classification

3.3 Bicycle and Pedestrian Facilities

A major component of Sun Valley's transportation system is a heavily used pathway and trail network. The City owns and maintains nearly 11 miles of shared-use asphalt pathways. They serve pedestrians, bicyclists, joggers, rollerbladers, and equestrians. There is also traditional concrete sidewalk along the east side of State Highway 75 from Elkhorn Road to Weyyakin Drive that is within ITD right-of-way. ITD has a maintenance agreement with the homeowners' association of the Weyyakin Subdivision.

Picture 1 - Typical Bollard

Pathways in Sun Valley are asphalt paths, typically 12 feet wide. Paths along Diamond Back Rd. and Sun Peak Dr. in the White Cloud development are brick pavers. They are in City right-of-way but are maintained by the local home owners association. Traffic control on pathways is provided by wooden bollards with plaques. Bollard and pathway pavement conditions were inventoried; pathway pavement conditions and maintenance analysis are discussed in Section 6.1.4. Refer to Appendix D for a copy of the bollard inventory and photos.

Pathways are present alongside Dollar, Elkhorn, Morning Star, Saddle, Sun Valley/Trail Creek, and Village Way Roads. Pathways are either located immediately adjacent to streets (Picture 2), separated by concrete curbing and gutter; or else they are offset from the street (Picture 3), separated by a swale. Figure 10 on the following page shows pathway and bollard locations.

Paths immediately adjacent to roads are two-way, which results in cyclists moving in the opposite direction of adjacent motorist traffic. This is problematic at intersections, where motorists typically do not expect bike traffic from the direction opposite of motor traffic. This issue is identified in the Blaine County Bicycle and Pedestrian Master Plan. The Bike/Ped Master Plan recommends that if new adjacent pathways are constructed, they should be one-way in the direction of adjacent traffic and located on both sides of the street.

Picture 2 - Separated Pathway

Picture 3 - Adjacent Pathway

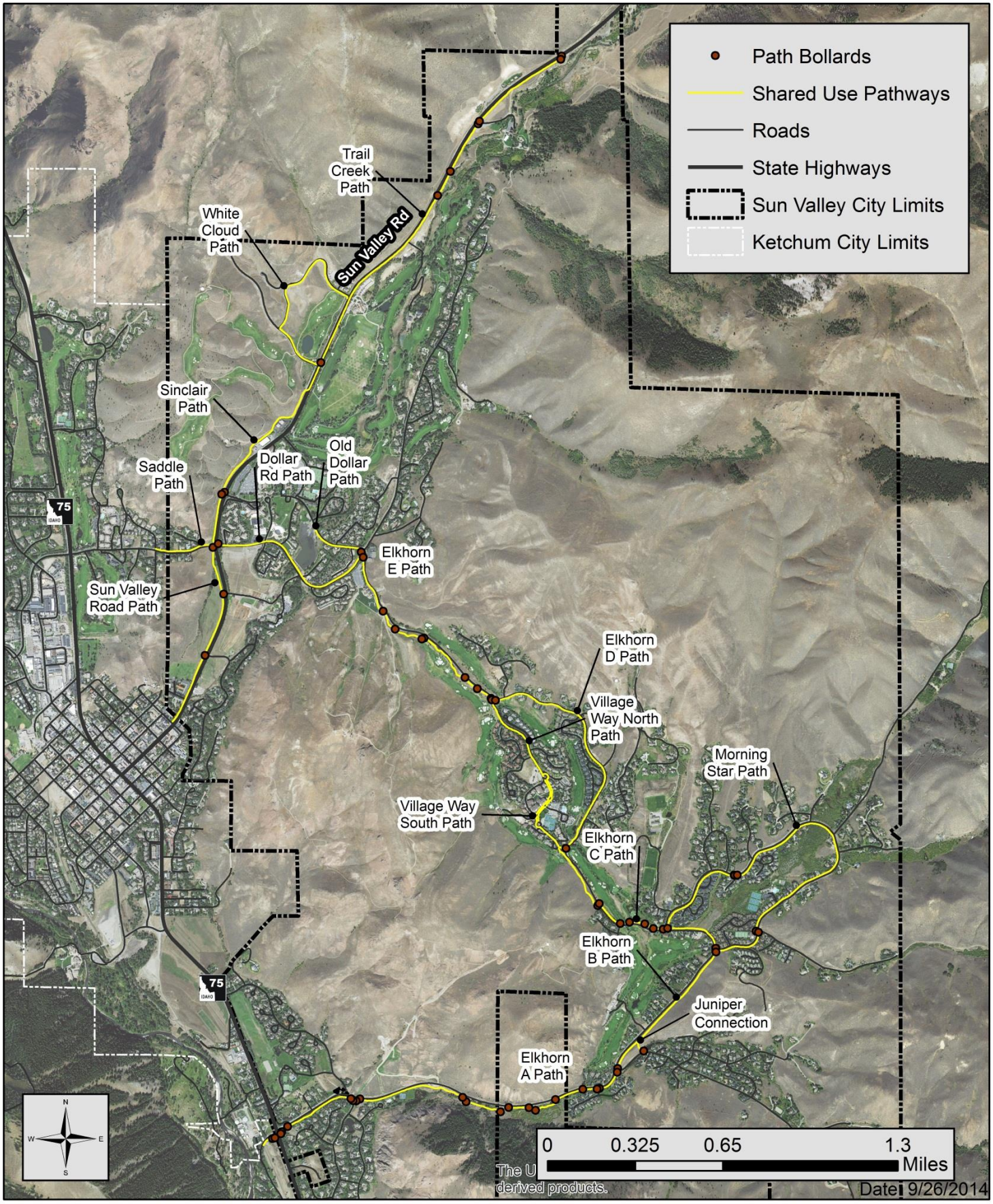


Figure 10 - Pathways and Bollard Locations

3.4 Intermodal Inventory

Sun Valley is served by several forms of intermodal transportation.

3.4.1 Airport

Approximately 15 miles to the south of Sun Valley is the Friedman Memorial Airport. The Friedman Memorial Airport is jointly owned by the City of Hailey and Blaine County, and conducts approximately 3,300 Aircraft Traffic Control Tower (ATCT) operations per month.

3.4.2 Public Transit

Mountain Rides Transportation Authority was formed in 2007 after merging three separate local organizations including Ketchum Area Rapid Transit (KART). It is jointly operated as a public agency by participating cities and Blaine County. Mountain Rides provides public transportation in the form of bus, van and car pool, and bike share. Bus services include free town bus with two year-round and three peak season routes for Ketchum and Sun Valley. A valley route connects Bellevue, Hailey, Ketchum, and Sun Valley. Van routes run to Sun Valley from Twin Falls, Shoshone, Gooding, Jerome, and Fairfield.

Picture 4 - Bus Stop Sign

Picture 5 - Bus Stop Shelter

Mountain Rides operates a fleet of 17 buses and 15 vans. There are 40 bus stops and 6 bus shelters within City of Sun Valley right of way. Shelters at bus stops throughout Sun Valley provide limited protection from the elements for transit users, which helps encourage public transportation use. Many shelters have been constructed or upgraded in recent years. Sheltered stops include a wooden shelter, bench, and a bicycle parking rack (Picture 5).

Passenger data for 2013 obtained from Mountain Rides was used to create Figure 11. Over 484,000 riders used Mountain Rides' bus and van services in 2013. The month when most rides occurred was January.

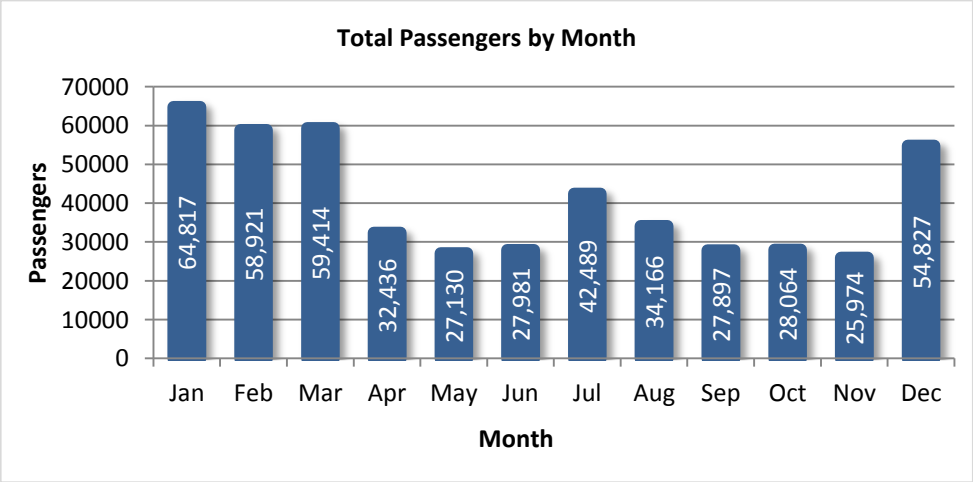


Figure 11 - Mountain Rides 2013 Monthly Ridership

Transit levels are described by Mountain Rides as follows:

- Current transit levels
  - Peak – 30 min. frequency with service to all areas of Sun Valley
  - Off-peak – 1 hour frequency with service from Elkhorn Springs with no service in Morning Star or Twin Creeks
- Future transit level need:
  - Peak – 15 min. frequency to all areas of Sun Valley
  - Off-peak – 30 min. frequency to all areas of Sun Valley

Increased funding will be needed to meet future transit level needs. Mountain Rides provided information on historic and projected public transportation investment by Sun Valley shown in Figure 12.

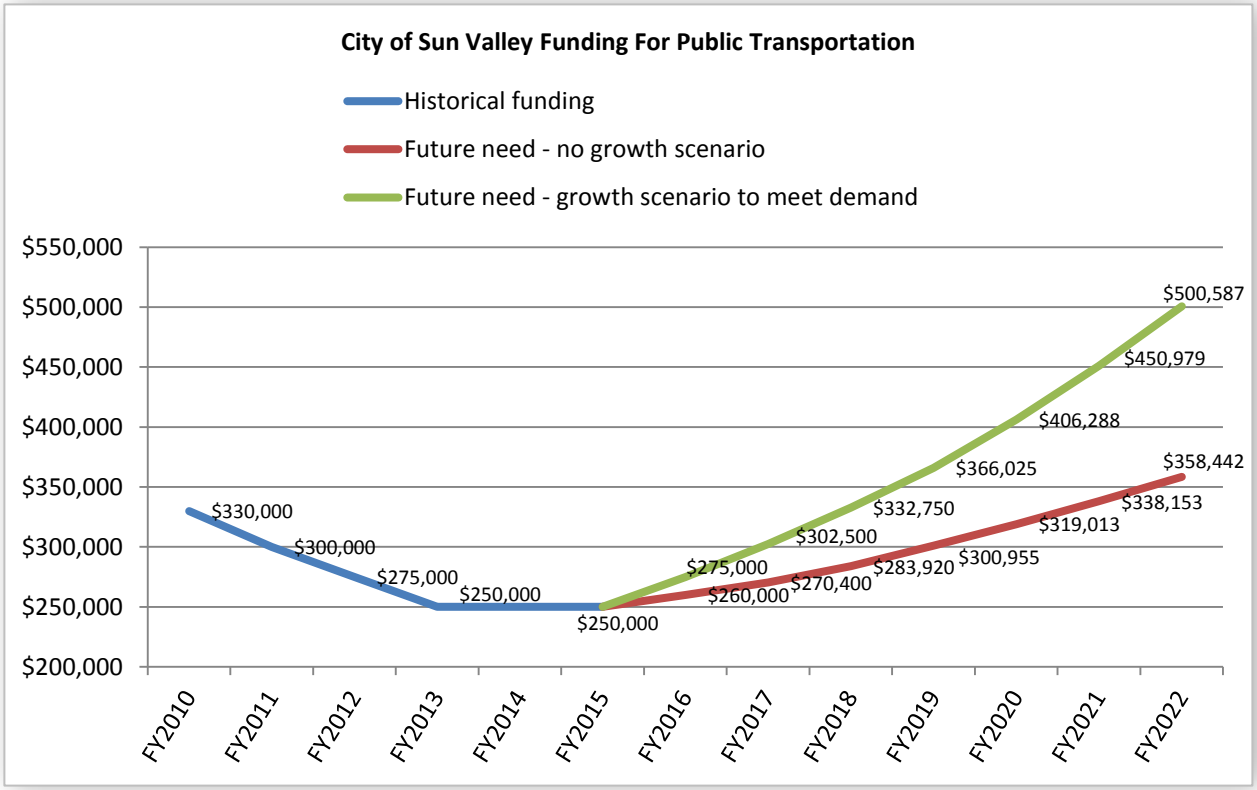


Figure 12 - Sun Valley Public Transportation Funding

Annual funding has decreased since 2010. It is projected that an increase in annual funding is required to meet expected needs due to demand and growth of public transportation.

3.4.3 Non-motorized Trails

This study does not address the many unpaved trails use for non-motorized purposes throughout the city. Such trails are used for activities such as hiking and mountain biking.

3.4.4 Other Services

Other transportation services are provided by various agencies that serve special needs populations and operate in an "on demand" mode. School bus service is provided throughout Blaine County. Mountain Rides also provides ADA service. None of these transit services place a significant burden on the City roadway system.

3.5 Bridges

Bridges with a span of 20 feet or greater are inspected through a national program administered by ITD. The visual inspection is intended to document surface and underwater structural conditions, as well as provide a planning-level cost estimate for improvements. From these inspections, a sufficiency rating is calculated. The sufficiency rating (range of 0 to 100) reflects the structural adequacy and condition, serviceability and functional obsolescence, compliance with current design standards, and importance for public use; and determines eligibility for federal funds. Bridge conditions are inspected every 12 to 24 months.

There are four bridges in Sun Valley with a span of 20 feet or greater. These bridges are generally in good condition, with an average sufficiency rating above 80. Full copies of the inspection reports can be found in Appendix E. The bridge sufficiency ratings and National Bridge Inventory (NBI) ratings are summarized in Table 4.

Table 4 - 2014 Bridge Ratings

Bridge Key	Features	Route	NBI Rating*	Sufficiency Rating
33310	Trail Creek	Silverweed Way Rd	FO	74.8
33320	Trail Creek	Dollar Rd	ND	79.4
33326	Trail Creek	Old Dollar Rd	ND	82.9
33305	Trail Creek	Bitterroot Rd	ND	84.2

***NBI Rating: FO = Functionally Obsolete, ND = Not Deficient**

Based on available inspection reports, one city bridge is functionally obsolete. A functionally obsolete bridge is one that was built to outdated standards that no longer meet the minimum federal requirements for a new bridge. These bridges are not automatically rated as structurally deficient, nor are they inherently unsafe. Functionally obsolete bridges include those that have sub-standard geometric features such as narrow lanes, narrow shoulders, poor approach alignment or inadequate vertical under clearance. The classification of functionally obsolete (FO) is also a term used as a priority status for federal bridge replacement and rehabilitation funding eligibility.

3.6 Daily Traffic

As discussed in Chapter 2, due to the resort nature of the area, Sun Valley experiences seasonal population fluctuations and nontraditional travel patterns; this is reflected in daily traffic data collected during various times of year. A small permanent population in relation to total housing units and substantial seasonal and weekly population variations are characteristics of Sun Valley. Visitation is highest in winter and summer as opposed to spring and fall, and weekends as opposed to weekdays.

The 1997 Transportation Plan utilized these unusual conditions in the collection of a series of traffic counts to identify local patterns and times of peak traffic conditions. "Peak traffic" represents the highest volumes of traffic experienced at specific locations. Peak summer traffic is traditionally experienced during the Fourth of July and Labor Day weekends and the winter peak between Christmas and New Year's Eve. Late October is indicative of non-peak traffic volumes. This methodology was repeated by the city in 2013 for this updated transportation plan. Traffic counts for 2013 are summarized in Table 5.

Table 5 - 2013 Traffic Volumes (Average Daily Traffic)

Location	Fourth of July (7/4-7/5)	Labor Day (9/1-9/3)	October (10/25-10/28)	Christmas Week (12/27-12/28)
Dollar Road (East of Sun Valley Road)	6,790	4,284*	3,137	9,556
Elkhorn Road (South) (East of SH 75)	4,045	2,418*	2,026	4,310
Morningstar Road (North of Elkhorn Road)	1,108	720*	474	1,211
Sun Valley Road (South of Bitterroot Road)	10,102	7,023*	4,831	11,538

From L2 Data provided by City * Volumes abnormally low due to Beaver Creek Fire

For comparison, the 1995 traffic volumes found in the 1997 Transportation Plan are shown in Table 6.

Table 6 - 1995 Traffic Volumes (24 Hour Counts)

Location	Fourth of July	Labor Day	October	Christmas Week
Dollar Road (East of Sun Valley Road)	NA	8,100	2,700	9,700
Elkhorn Road (South) (East of SH 75)	2,500	4,300	1,600	4,100
Morningstar Road (North of Elkhorn Road)	1,500	1,000	500	1,400
Sun Valley Road (South of Bitterroot Road)	-	-	-	-

It should be noted that in late summer 2013, in result of the Beaver Creek Fire, traffic volumes were significantly lower than expected. Reported 2013 AADT from ITD for Highway 75 and Sun Valley Road

was also lower than expected. Ridership data obtained from Mountain Rides for 2012 was used to try and extrapolate Labor Day traffic volumes for 2013; however, the data was inconclusive.

Overall, traffic volumes in Sun Valley are low (reflective of October volumes); however, peak seasons and events affect traffic volumes. Traffic is highest during the winter holiday season, coinciding with winter activities at the resort. During peak seasons, mobility and congestion are affected; intersections become more congested and mobility suffers.

It is also important to note that residential mail service is not available in Sun Valley. All mail is delivered to the post office located at 100 Sun Valley Road near the village shops. Residents travel to the post office to collect daily mail and these trips increase traffic volume which contributes to congestion.

Figure 13 on the following page shows the locations of City traffic counts and 2013 Average Annual Daily Traffic (AADT) for highways obtained from ITD. City traffic counts for Sun Valley road during peak times is double that of ITD's AADT.

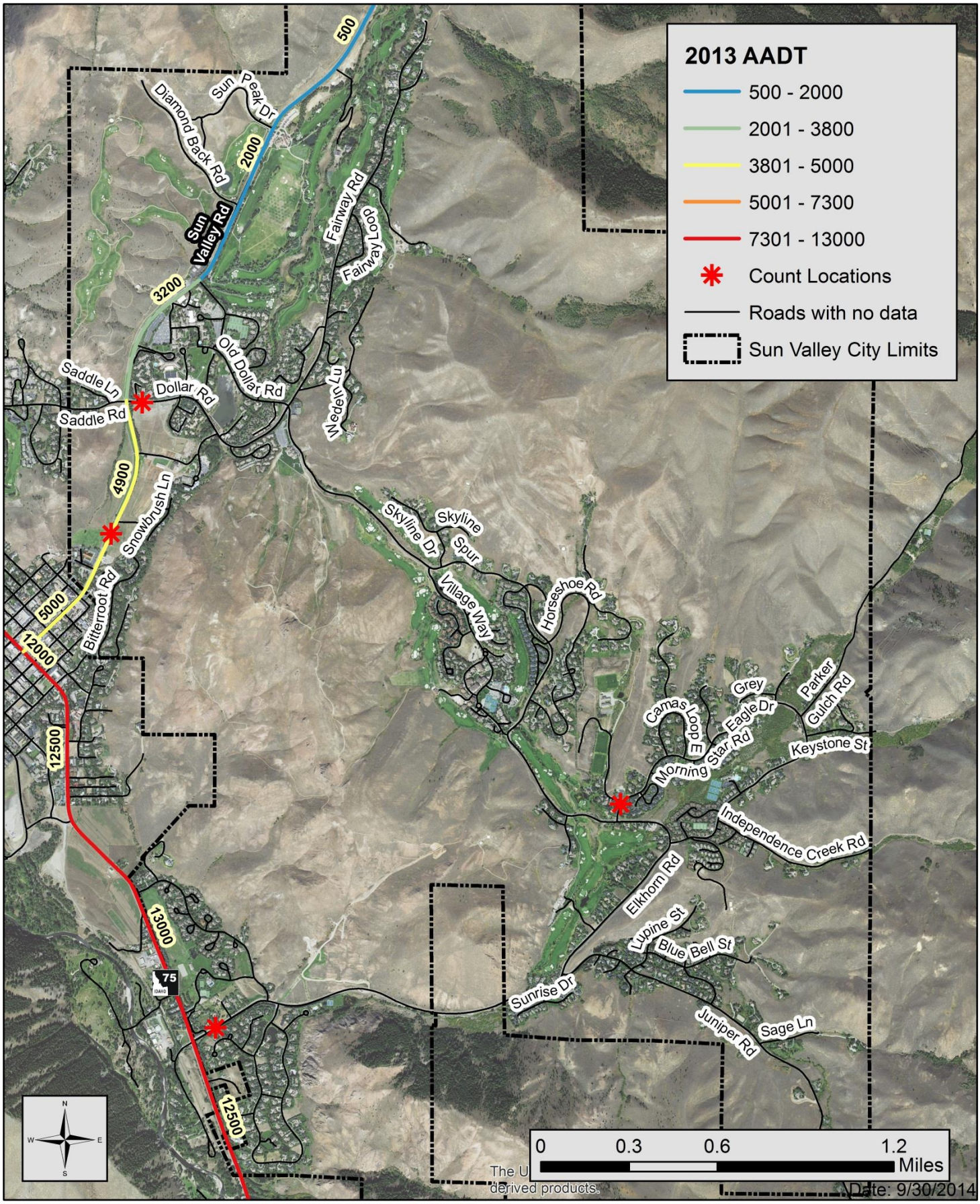


Figure 13 - Traffic Volumes

3.7 Crashes

Crash data from 2009 to 2013 was obtained from an ITD database containing comprehensive crash locations and causes for all of Idaho. This data is typically received from crash reports filed by Idaho State Patrol, local sheriff's offices, and municipal police departments. The data was imported into a GIS program to identify intersections and roadway segments with a high frequency of crashes. Crash-related injuries within Sun Valley city limits are summarized in Table 7 below.

Table 7 - Crash Injury Summary

Severity	Description	Number of Occurrences
A Injury Crash	Serious Injury	2
B Injury Crash	Evident Injury	6
C Injury Crash	Possible Injury	10
Property Damage Report	Property Damage Only	26

Overall, 45 crashes involving 63 vehicles were reported between 2009 and 2013. These crashes involved 83 people and resulted in 30 injuries. There were no fatalities. Of the 45 crashes, 11 occurred on a state highway system road (Sun Valley Road). Of the 45 total crashes, 8 were intersection related (3 on a State Highway System intersection).

Crash events and the frequency at which they occurred are shown graphically in Figure 14 below. The most frequently-occurring crash involved rear-ending.

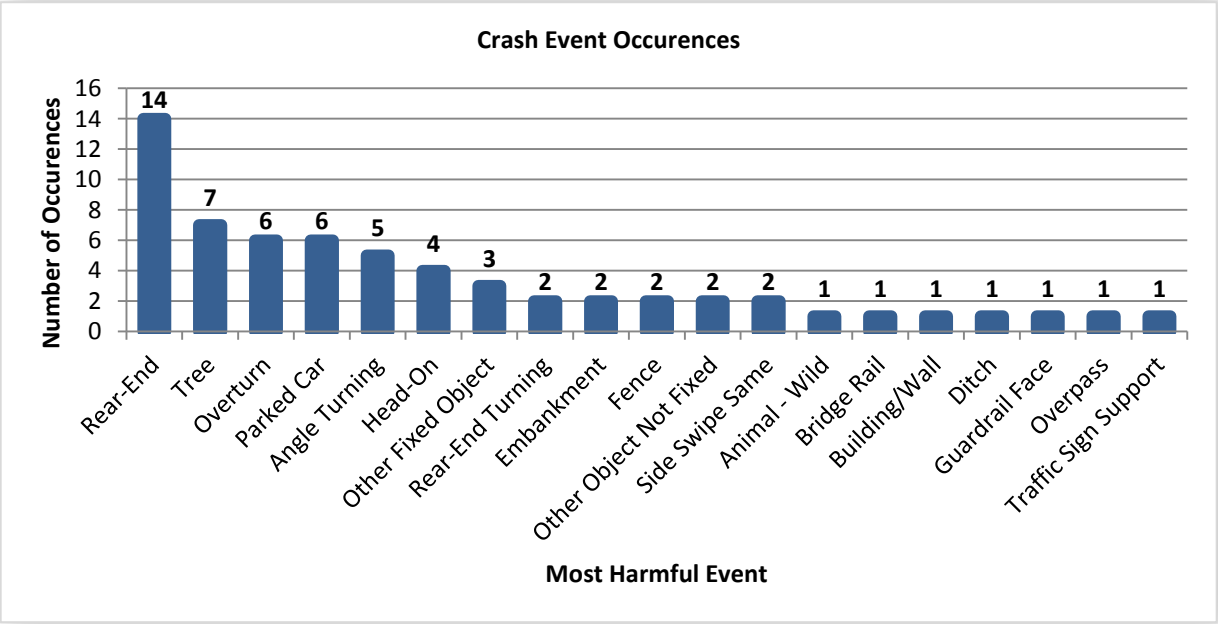


Figure 14 - Crash Events

Contributing circumstances for the crashes are shown graphically in Figure 15.

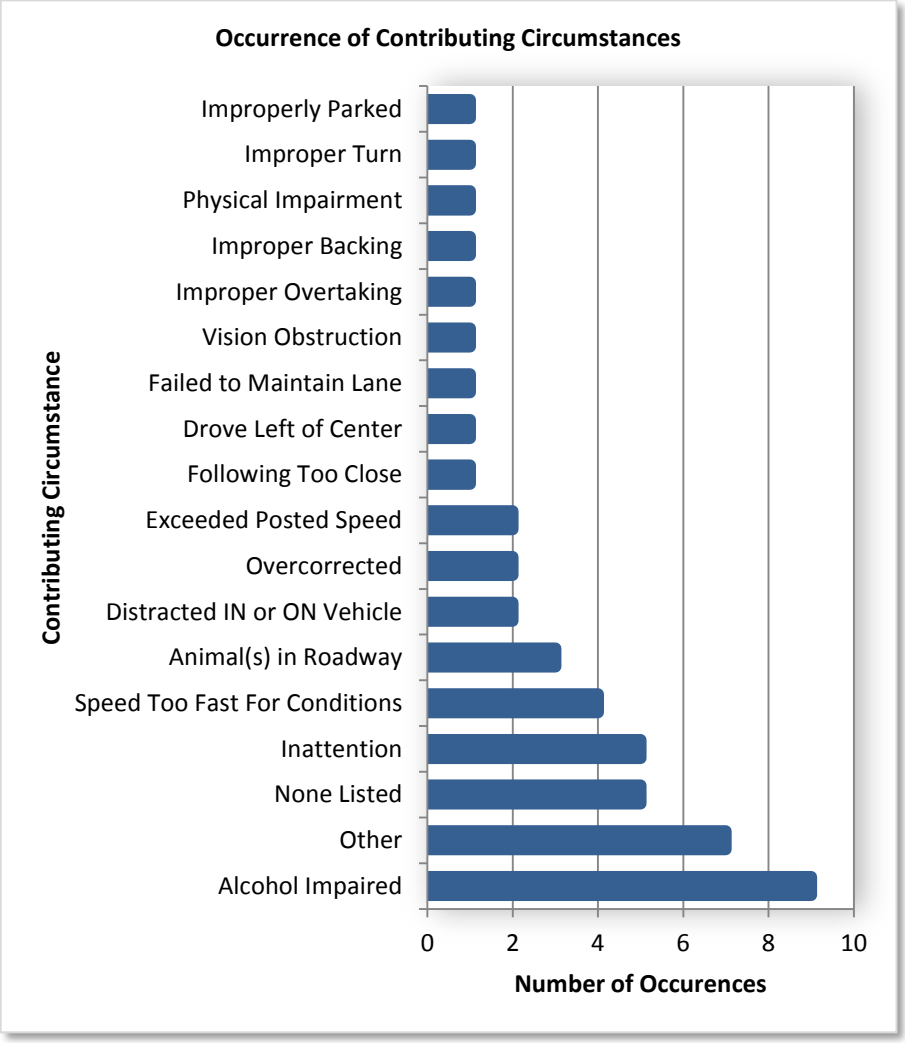


Figure 15 - Crash Contributing Occurrences

The most common contributing circumstance was alcohol impairment. A map showing the locations of all reported crashes in Sun Valley between 2009 and 2013 can be found in Figure 16. The map is color coded to injury severity.

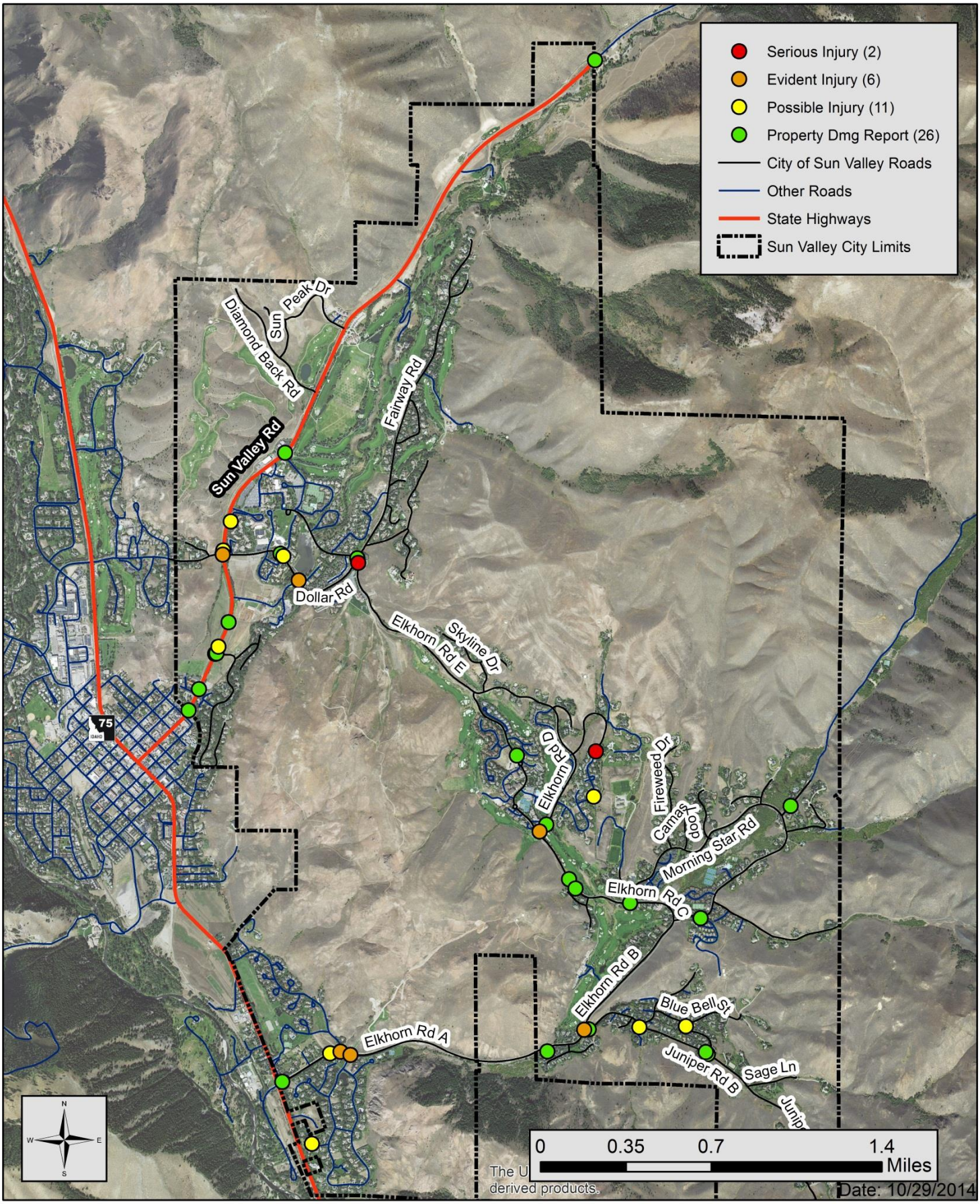


Figure 16 - 2009-2013 Crash Locations and Severity

3.8 Speed Limits

Speed limits throughout the City were recorded and analyzed for consistency. The speed limit in Sun Valley varies from 15 miles per hour to 35 miles per hour.

Elkhorn Road is 30 mph from the Dollar Road intersection to past the southeastern Morning Star Road intersection. From the southeastern Morning Star Road intersection, the Elkhorn Road speed limit raises to 35 miles per hour to its intersection with SH 75.

Dollar, Old Dollar, Fairway, Village Way, Morning Star, and Juniper Roads have a posted speed limit of 25 miles per hour. Exceptions to this include the southern segment of Morning Star Rd from Elkhorn Rd to Independence Creek Road (15 miles per hour) and the portion of Village Way between Bonne Vie Condo Drive and Legends Condo Drive (20 miles per hour).

The TAC identified roadways that potentially warrant lower speed limits. Elkhorn Road covers mountainous terrain characterized by curves and varying grades. Elkhorn Road may warrant lower speed limits. Morning Star Road faces similar geometric challenges and was identified as a potential candidate for lower speeds. A portion of Juniper Road (Segment A) from its intersection with Elkhorn Road to approximately the Thistle Street intersection is one such roadway segment. The current speed limit is 25 mph.

The Community School area of Dollar Road was also identified as a problematic area in regards to speeding. The Police Department receives several calls from citizens and parents of students about people driving too fast for school conditions. A speed radar trailer was parked near the Community School Road intersection as a deterrent to speeding and to log data. Police Department analysis revealed that speeding during high volume times for the school was done by school-related vehicles and traffic.

CHAPTER 4 REGIONAL COMPREHENSIVE AND TRANSPORTATION PLANNING

Regional comprehensive, transportation, and other planning studies were evaluated to ensure this Transportation Plan works in conjunction with regional planning documents.

4.1 Comprehensive Plan

A 2015 update to the Sun Valley Comprehensive Plan was underway at the time this report was being prepared. The prior plan and draft versions of the update support a new City Transportation Plan. Drafts of the comprehensive plan update indicate that currently there are three prominent areas for development within Sun Valley: the Sun Valley Resort/Village Core; Sun Valley Gateway; and the Dollar Mountain, Prospector Hill, and Sun Valley Municipal Complex.

Traffic impact studies are recommended for these developments. An initial study was conducted prior to the 2008 economic recession; it is typical for studies conducted prior to the recession to be redone to reflect current economic conditions.

4.2 City Design Policies and Standards

The Comprehensive Plan calls for the development and implementation of design, streetscape and signage standards to serve pedestrian, bicycle, and vehicular traffic. City Code identifies the most current edition of the Idaho Standards for Public Works Construction (ISPWC) as the minimum engineering standards for use within the city. The city also has its own design standards which reference standards provided by the American Association of State Highway and Transportation Officials (AASHTO).

4.3 Sun Valley Water and Sewer District and Wastewater Facility Planning

Water and Sewer District improvements requiring road work should be coordinated with street network capital improvements, with utility work occurring in the year prior to road work when possible.

4.4 Sun Valley Resort

A 2007 Transportation Study carried out by consultants for the Sun Valley Company analyzed how the build-out of five Land Use Planning Areas (LUPAs) and two residential and commercial developments would impact transportation conditions in Sun Valley. The LUPAs and developments identified in the 2007 include:

- The Resort/Village Core LUPA #1
- Gun Club/White Clouds LUPA #2

- Gateway LUPA #3
- Horseman's Center/Community School LUPA #4
- Dollar Mtn./Prospector Hill/Sun Valley Municipal Complex LUPA #5
- Elkhorn Springs Master Plan
- Sunshine Master Plan

The main focus of the 2007 study was the Gun Club LUPA (LUPA #2). The Gun Club LUPA #2 project has since been completed. The Symphony Hall, part of LUPA #1, has also been completed.

Planning studies conducted prior to the economic recession (circa 2008) reflect pre-recession conditions and forecasts. These studies should be redone to incorporate post-recession conditions.

4.5 Blaine County Transportation Plan

Capital improvement projects listed in the Blaine County Transportation Plan which are in or near Sun Valley include Trail Creek Road from the end of pavement to the county line. Base improvements, widening, and drainage improvements would occur. The affected portion of Trail Creek Road is not in City Limits.

4.6 Blaine County Bicycle and Pedestrian Master Plan

The Blaine County Bicycle/Pedestrian Master Plan was being finalized at the time of this report. The Master Plan recommends capital improvement projects in the Sun Valley area.

CHAPTER 5 FUTURE CONDITIONS EVALUATION

This chapter discusses future conditions of the transportation system.

5.1 Future Traffic Projections

To identify areas that should be improved in the Capital Improvement Plan, it was necessary to examine the future roadway conditions in Sun Valley. ITD provided forecasted traffic data for certain roadways in Sun Valley, which is summarized in Table 8.

Table 8 - Future Average Annual Daily Traffic (AADT)

Route	Beginning MP	End MP	Road Name	From	To	AADT 2013	AADT 2015	AADT 2035	Annual Growth	% Change
SH-75	128.21	128.376	SH-75	River St E	Sun Valley Rd	12000	12970	22700	2.8%	75.0%
SH-75 Spur	0.189	1.488	Sun Valley Rd	Walnut Ave	Hospital Rd	4270	5200	7200	1.6%	38.5%

These traffic projections apply only to roads listed, and do not reflect changes in other local roads. Traffic volumes on the minor arterial (SH-75) outside of Sun Valley and on the major collector (Sun Valley Road) through Sun Valley are projected to increase by an average of 75 and 39 percent, respectively, over 20 years. However, traffic volumes on these roads are still relatively low, and this increase will not likely result in recurring congestion to Sun Valley facilities. As is currently experienced, congestion can be expected during special events.

Since the population in Sun Valley is forecasted to increase approximately 62% by 2034, the traffic volume on local roads is expected to increase proportionally. This is consistent with ITD's area forecasts.

5.2 Future Employment

Unless there are significant changes to the demographics of Sun Valley, it is believed that the future employment distribution will remain similar to the existing employment distribution. Examples of significant changes could include a new large employment entity or an employment entity leaving the area. None of these changes is expected to take place in the near future.

5.3 Future Land Use

The 2015 Proposed Updated to the Comprehensive Plan identifies prominent areas for future development within Sun Valley. Each area is called a Land Use Planning Area (LUPA). These areas are the Sun Valley Resort/Village Core; Sun Valley Gateway; and the Dollar Mountain, Prospector Hill, Sun Valley Municipal Complex, and the Elkhorn/Sunrise property.

Land use designations and categories identified on the 2014 Comprehensive Plan update Future Land Use Map are defined as follows: Public/Quasi-Public, High Density Residential (up to 21du/ac), Medium Density Residential (up to 14du/ac), Low Density Residential (up to 4du/ac), Commercial, Resort Commercial, Recreational, and Open Space. A copy of the map is shown in Appendix H.

5.4 Potential Impacts of Future Expansion and Development

It is important to note that as development occurs and the transportation system is expanded, maintenance needs will increase. These needs will include actual maintenance of new roadways and other infrastructure as well as the ability to accommodate the equipment and material required for maintenance, such as storage and related needs. Additional space such as a lot may need to be acquired and designated for city use.

It will also be important to work closely with the Sun Valley Fire Department and Sun Valley Police Department to determine what impact expansion of the transportation network will have in regards to emergency response and law enforcement.

It is also important to note that heavy equipment related to construction using city roads may cause the roads to deteriorate more quickly. It would be beneficial for Sun Valley to require major construction projects utilizing city roads to help maintain those roads. Minimizing the amount of heavy equipment traffic on roads in general will help prevent more rapid deterioration.

CHAPTER 6 ASSET MANAGEMENT

An asset management plan is a strategic and systematic process for operating, maintaining, upgrading, and expanding an organization's infrastructure with the goal of maintaining a set standard. In terms of transportation, pavement is typically one of the most valuable assets an agency possesses, after city personnel. That being said, one of the most important programs an agency can implement is a pavement management plan that enables its leadership to make informed decisions on how to allocate resources to best maintain its assets.

The asset management plan detailed in this document involves Sun Valley's pavement and signage. As discussed in Chapter 1, the management program is facilitated through iWorQ, a web-based platform that provides a mapping application with tools for inventory, data collection, inspection, and data management. The actual pavement analysis in this report was produced using Transportation Asset Management Software (TAMS), a program developed by the Utah Local Technical Assistance Program (LTAP – similar to Idaho's LHTAC) at Utah State University. TAMS functions essentially the same as the iWorQ pavement program, but it is used by Keller Associates in conducting pavement analysis because it offers more in-depth analysis functions.

Though public transit is not included in the asset management sections of this report, it is a highly valuable asset in which the city should invest in and manage like any other asset. The development of a public transportation management plan should be coordinated with Mountain Rides.

6.1 Target Goals for Transportation Assets

Asset management plans outlined in this chapter target standards and goals. Targeted goals for pavement utilize the concept of remaining service life (RSL), a value of 0 to 20 years, which is explained in the following sections. For most road departments and municipalities in Idaho, a system-wide average RSL of 12 years is recommended, with less than 3% of the network at a terminal service level (RSL 0 to 3 years). Due to the resort-nature of Sun Valley, a higher system-wide RSL may be desired. Section 6.2 explains pavement maintenance and maintenance strategies to achieve a targeted RSL.

For pathways in Sun Valley, a higher level of service should be maintained due to the nature of pedestrian and bicycle activities. Poor pavement condition is essentially harder on bicycle and pedestrian activities than cars. A system-wide average RSL of 16 is recommended, with minimal amounts of the network in poor condition.

Traffic control signs in Sun Valley should be inspected annually. Signs with a condition rating of fair, poor, or replace should be replaced with MUTCD compliant signs. Sign supports should be repaired and replaced as necessary and as soon as they are identified as deficient.

6.2 Pavement Management

A Pavement Management Program (PMP) consists of the evaluation of existing pavement structures to determine their condition, predict future deterioration, and determine the type of work required to maintain or improve pavements cost effectively. To be used effectively, it must be used in conjunction with good engineering judgment.

6.2.1 Pavement Inventory and Condition Survey

A database containing roadways that Sun Valley owns and maintains was created by Keller personnel and linked to a GIS map. Data was obtained from the City and from field inspections by Keller personnel. The street network was broken into 53 management segments, and each segment was given a unique identification number in the database. The management segments were identified by Sun Valley Street Department personnel and represent the City's historical management segments.

Segments are homogenous management units allowing for a comprehensive inventory with respect to physical features (width, length, surface type). Segments in Sun Valley are generally an entire street length. Exceptions to this include Elkhorn, Juniper, Prospector and Village Way, which are broken into sub-segments. The GIS map enables a user to select a road segment and view its associated data.

A pavement condition survey consisting of a visual inspection was conducted in November 2013 by Keller personnel. Each street segment was inspected to create an inventory. Figure 17 illustrates the typical inventory information collected for each pavement segment as found in iWorQ.

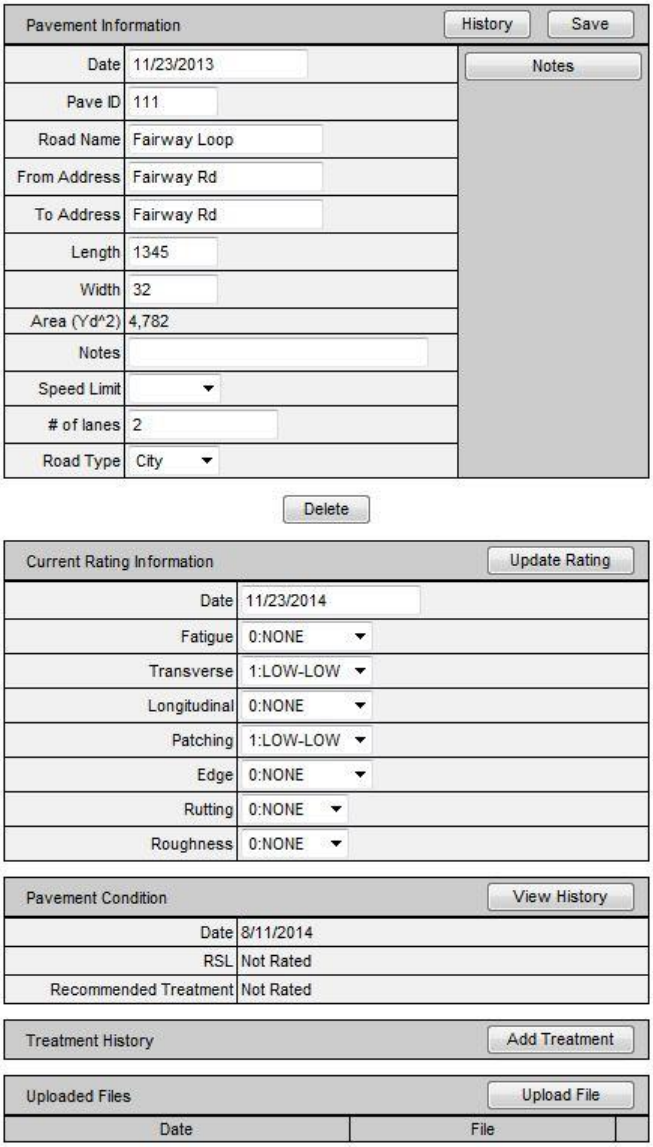


Figure 17 - Typical iWorQ Pavement Data

There are several methods to evaluate pavement condition. Distress types observed in Sun Valley were rated based on the Strategic Highway Research Program (SHRP) Distress Identification Manual published by Federal Highway Administration (FHWA), which is a leading resource for pavement condition surveys. This is the rating system utilized by iWorQ and TAMS pavement management software.

The rating system uses a matrix format that scores the severity of the distress against the extent of the distress. Extent is determined by the amount of road surface area which is affected by the pavement distress. Low extent means the distress appears in less than 10% of the segment. Medium extent means the distress appears in 10-30% of the segment. High extent generally means the distress is present in 30% or more of the segment.

Severity refers to how far the cracking has progressed, and is often a function of the crack width. For example, a low severity crack is less than ¼ in. wide, a medium severity crack is between ¼ and ¾ in. wide, and a high severity crack is over ¾ in. wide. A copy of the asphalt distress rating sheet (found in Appendix F) shows the distress types and their corresponding rating matrices. More information on the various distress types is discussed in Section 6.2.2 .

TAMS and iWorQ use the results of the condition survey to assign each road segment a Remaining Service Life (RSL). RSL is a value between 0 and 20 that predicts the number of years the pavement has before it reaches the end of its useful life. Based on the RSL and the distress that caused the RSL, a maintenance action or treatment for each segment is recommended by the software.

6.2.2 Types of Pavement Distress

Below is a discussion of the major types of pavement distresses, including typical causes and repair options. More in-depth information can be found in the SHRP Pavement Distress Identification Manual. Pictures in this section are from the SHRP manual. For reference to scale, the ruler shown in the pictures is one foot long, unless otherwise specified.

<u>Fatigue Cracking</u>

Fatigue cracking occurs in areas that are subjected to repeated traffic loadings, such as in the wheel path. Such wear usually results in a series of interconnected cracks that in later stages will resemble a chicken wire or alligator pattern. Some common causes of fatigue cracking are loss of base support due to poor drainage, increased heavy traffic loading, inadequate structural design, or poor compaction during construction. Due to the failure of the underlying base layer, repair by crack sealing or seal coating is generally ineffective. Fatigue cracking can be repaired by excavating localized areas and replacing the base and sub-base. Large areas of distress require reconstruction of the entire road segment. Improvements to drainage should also be considered during repair.

Longitudinal Cracking

Longitudinal cracks are parallel to the pavement centerline. Centerline or lane cracks are caused by inadequate bonding during construction. They usually start as hairline cracks, and widen and erode with age. Longitudinal cracks in the wheel path indicate they may actually be fatigue cracks (see above). If caught early when the severity is low, crack sealing is an excellent repair option. However, if not addressed early they will continue to ravel, widen, develop into multiple cracks, and allow moisture to penetrate and weaken the base and sub-base.

Transverse Cracking

Transverse cracks are perpendicular to the pavement centerline. They are often regularly spaced and generally caused by movement due to temperature changes and hardening of the asphalt with aging. They usually begin as hairline cracks that are widely spaced (over 50' apart). Similar to longitudinal cracks, they will continue to ravel and widen with age and should be treated early by crack sealing.

Block Cracking

Block cracks are interconnected cracks that divide the pavement -into rectangular pieces. Larger blocks are generally classified as longitudinal and transverse cracking. Closer spacing indicates more advanced aging caused by shrinking and hardening of the asphalt over time. Possible causes are usually due to the inability of the asphalt binder to expand and contract. Low severity cracks can be repaired by a crack seal. High severity cracks require a mill and overlay for repair.

Potholes and Utility Cuts

Potholes are small bowl shaped depressions in the pavement surface that penetrate all the way through to the base course. Most usually occur on roads with thin asphalt surfaces, and seldom occur on roads with 4" of asphalt or greater. Generally, potholes are the end result of fatigue cracking often combined with poor drainage. As fatigue cracking becomes severe, small chunks of pavement begin to break away - creating the pothole. Utility trenches that exhibit signs of settlement are also a pavement distress. Poor compaction of the trench backfill is usually the underlying cause. Potholes and utility trenches can be repaired by patching; however, when the distress becomes extensive, reconstruction is usually the recommended treatment.

Edge Cracking

Edge cracking is the formation of crescent-shaped cracks near the edge of the road. It is caused by lack of support of the road edge, and is sometimes due to poorly drained or weak shoulders. If left untreated, additional cracks will form until it resembles alligator cracking. The appropriate treatment for edge cracking depends on its severity and extent. If caught in the early stages, crack sealing can be very effective. Once the damage has progressed, an overlay or reconstruction becomes necessary.

Rutting

Rutting is a surface depression in the wheel path. There are two basic types of rutting: pavement rutting and subgrade rutting. Pavement rutting is usually the result of insufficient compaction during construction. If not compacted enough initially, the pavement will continue to densify under traffic loads. Subgrade rutting occurs when the subgrade fails due to settlement or lateral movement. In this case, the pavement settles into the subgrade ruts causing the surface depression in the wheel path. The method of repair depends on the type of rutting. Severe pavement rutting should be repaired by a mill and overlay. Subgrade rutting can only be repaired by replacing the entire pavement and failed base. The straight edge in picture to the right is three feet long.

6.3 Summary of Observed Conditions

Sun Valley maintains a total of 19.8 miles of asphalt roads. There are no unpaved roads under Sun Valley's jurisdiction.

Chip seals carried out in 2012 and 2013 covered approximately 64% of the street network. Underlying distresses were hidden under the sealcoats and were not apparent during the fall 2013 visual survey. To determine the underlying conditions of the roads covered with chip seal, 2012 pavement ratings and input from the Street Superintendent and City Engineer were used to determine current pavement conditions. Based on the determined conditions, further field inspections, and additional input from city personnel and the TAC, treatments and maintenance actions were recommended.

Road work has primarily consisted of crack and chip sealing, occasional overlays, and Cement Recycled Asphalt Base Stabilization (CRABS). CRABS is a reconstructive technique where existing pavement and a certain depth of base material are pulverized. The pulverized material is mixed together and laid down as a new base. The oils from the asphalt mixed with the existing base creates a very stable base upon which a new asphalt mat is laid. Cement is added to the pulverized mix along with water prior to laying and grading the mix as new base material. The addition of cement creates a much more stable base upon which to pave an asphalt mat.

Based on the determined conditions, Sun Valley's roads are in overall fair condition, with a network average remaining service life of 9.5 years. A map color-coded to pavement condition is found on the following page (Figure 19).

6.3.1 Pavement Management Philosophy

As discussed in Section 6.2.1 the pavement management software determines RSL and recommends a treatment based on the distresses present in a particular roadway segment. The critical challenge in managing a pavement network is timing routine and preventative maintenance, rehabilitation, and reconstruction to achieve the highest level of service and longest useful life at the lowest cost.

Most new asphalt pavements will deteriorate to a "Good" condition category after about 8 years (RSL = 12). This corresponds to a drop in the service life of the pavement of 33% and is the optimal time to apply preventative maintenance. After 12 years (RSL=8), most asphalt pavements will deteriorate to a "Fair" condition rating. This corresponds to a 60% drop in pavement life and is the optimal time to consider rehabilitation treatment. If no rehabilitation is undertaken at this point, the street will likely deteriorate to the "Poor" category within another three years (RSL=5). Cost comparisons show that reconstruction strategies cost three to five times more than rehabilitation strategies. The cost of preventative maintenance is about one-third the cost of rehabilitation strategies, or one-sixth the cost of reconstruction.

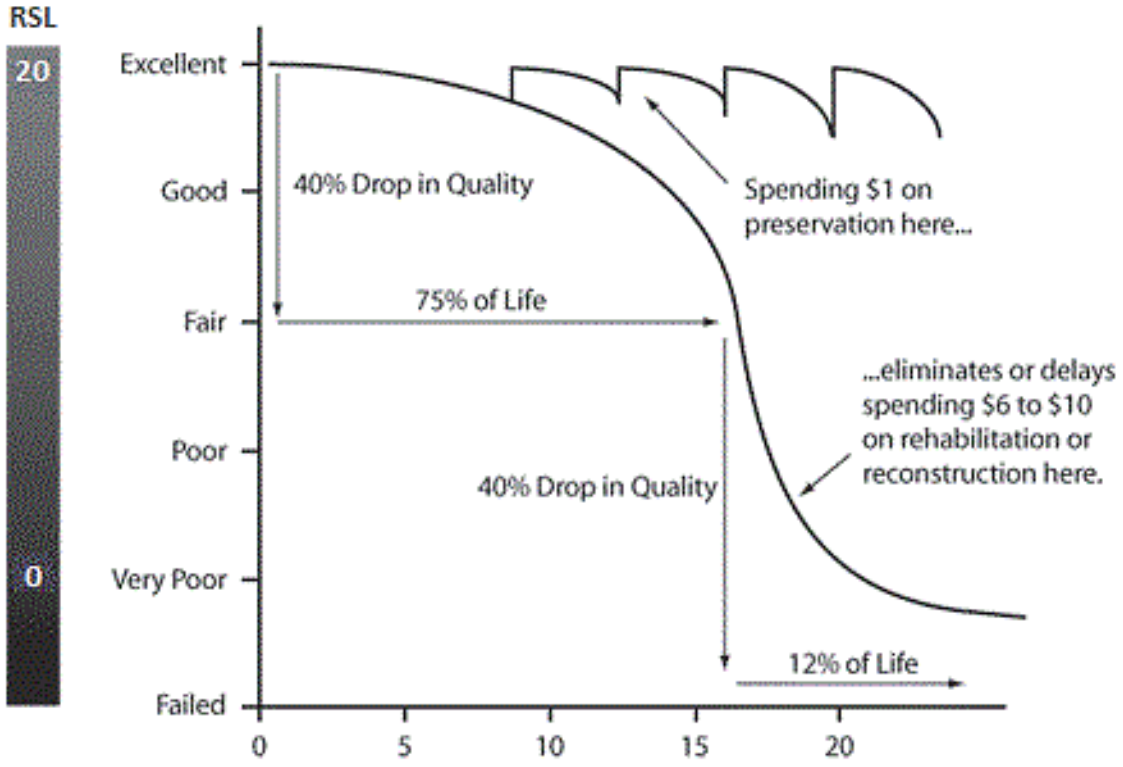


Figure 18 - Pavement Life Cycle

Figure 18 above is a generic pavement performance chart from FHWA which illustrates the idea behind pavement maintenance. The main curve maintains a downward trend over the life of a pavement indicating a deteriorating condition. By performing preventative maintenance early on in a pavement's life or once it has been restored to a like-new condition, the useful service life can be cost-effectively extended. The condition increases when a preservative treatment is applied, (vertical "jump" in condition) then the curve begins to deteriorate again. Another preventative treatment is applied at a later time, and the condition is improved ("jumps" again). It is important to note that preventative maintenance will generally not extend the life of a pavement indefinitely; the drop in quality after the third iteration on the curve is lower than after the first two.

If maintenance is deferred, the pavement will deteriorate more rapidly, and the cost of bringing the pavement back into a good condition will increase. It is more cost effective to "keep good roads good" than to let them deteriorate to a point where expensive rehabilitative treatments or reconstruction is required.

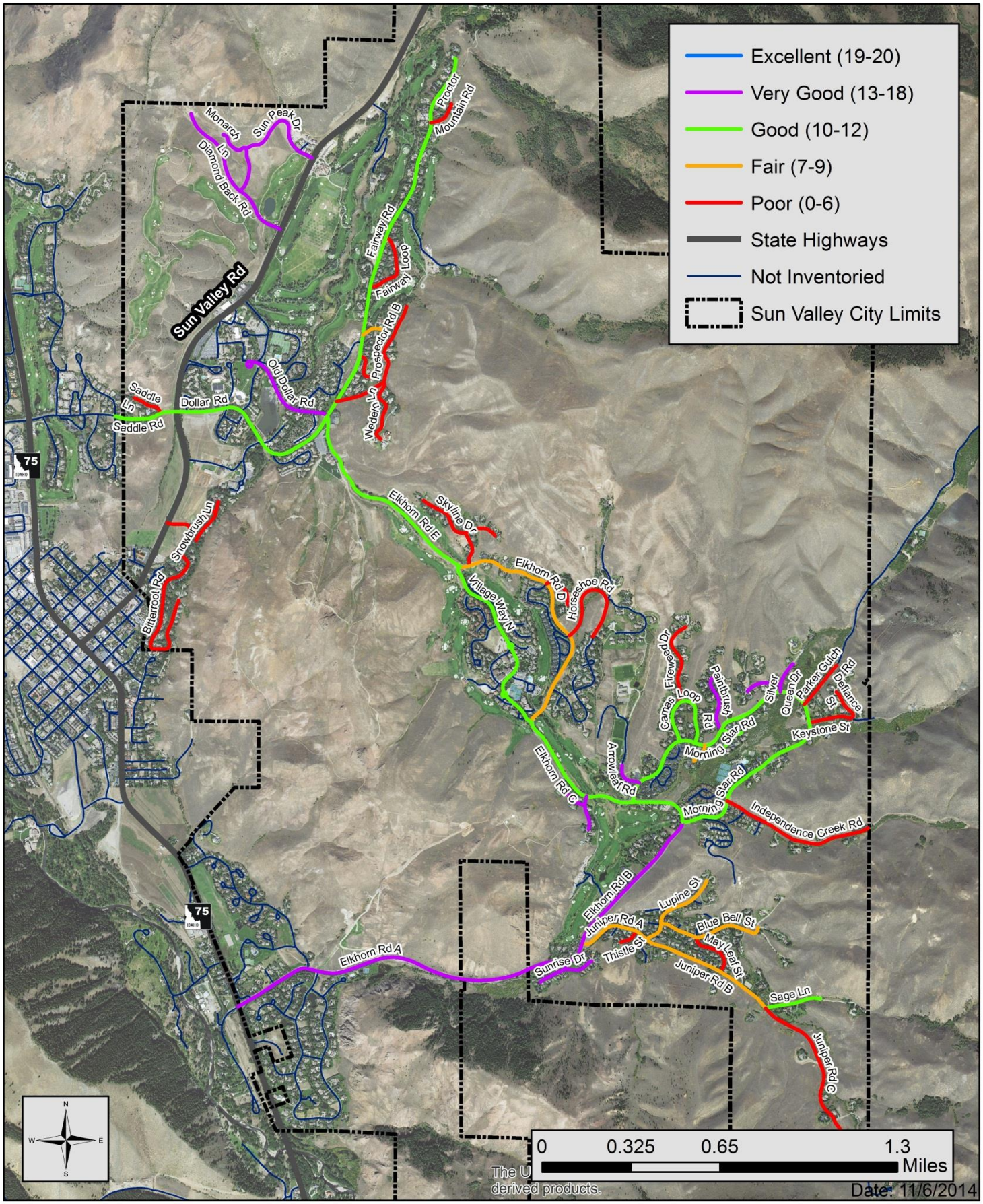


Figure 19 - Pavement Condition Map

6.3.2 Conditions Analysis

It is generally accepted that a good road network has the following characteristics:

- Average RSL of road network is 10 years or greater
- Less than 3% of the system has 0 - 3 years RSL
- A bell-shaped distribution with the mean falling at or about 12 years RSL

The City of Sun Valley is unique in its resort nature. Maintaining a higher level of service is a priority to promote tourism which is a major economic factor. Analyses outlined in section 6.3.3 target a higher average remaining service life in the various scenarios.

The current average RSL for the City of Sun Valley's street network is approximately 9.5 years. Figure 20 shows the current RSL distribution for Sun Valley's street network in terms of percent of surface area of the network.

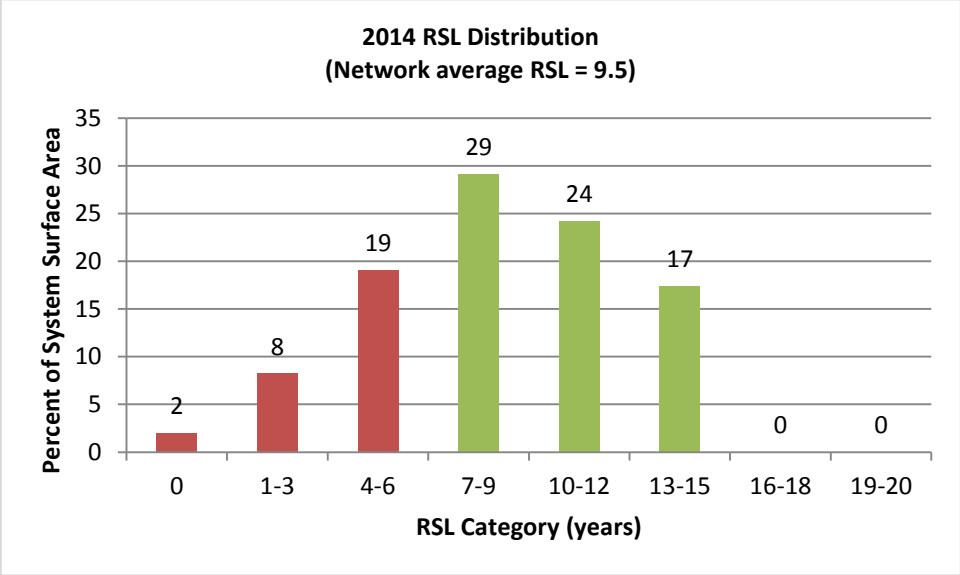


Figure 20 - 2014 RSL Distribution

Table 9 displays the same information along with corresponding subjective ratings of poor, fair, good, very good and excellent.

Table 9 - Subjective Condition Ratings of Street Network

Rating	Poor			Fair	Good	Very Good		Excellent
RSL (Years)	0	1-3	4-6	7-9	10-12	13-15	16-18	19-20
% of Network	0%	6%	13%	32%	23%	26%	0%	0%
Total %	19%			32%	23%	26%		0%

Nineteen percent of the street network in Sun Valley is considered to be in poor condition. Approximately 32 percent is rated as in fair condition, while 49% of the network is considered to be in good and very good condition. None of the system is in excellent condition.

This distribution puts the current overall condition of Sun Valley's roads in "fair" condition. Approximately six percent of the network is currently at 3 years or less RSL. If no maintenance is to occur in the next five years (year 2019), then over 60 percent of the entire street network would be rated to be in poor condition.

6.3.3 Maintenance Scenario Analyses

Sun Valley has spent various amounts on pavement preservation over the years. Sun Valley's Annual Road and Street Financial reports from 2004 through 2013 were used to determine annual maintenance funding. Prior to 2010, street maintenance funds were procured through bonds. In 2010, when a bond did not pass, funding for street maintenance dropped significantly. Table 10 on the following page summarizes the Annual Road and Street Financial reports.

The data from the reports was used to develop maintenance scenarios to aid in understanding the pavement conditions in Sun Valley. The maintenance scenarios that were analyzed include:

- Scenario 1
  - 2004-2019 Average Annual Budget
    - $850k annual budget
    - Based on funding procured through bonds
- Scenario 2
  - "Current" budget
    - $195k annually
    - Based on 2010-2013 average annual budget
      - $135k to roads and $60k to pathways, annually
- Scenario 3
  - Modified "current" budget
    - Entire $195k budget to roads
- Scenario 4
  - Ideal Maintenance Scenario (no established funding level)

Each maintenance scenario assumes that no maintenance will occur in 2014. Funding for 2014 was applied to pathway projects, including the Sinclair Path retaining wall upgrades and Trail Creek rehabilitation. Due to lack of maintenance in 2014, the average network remaining service life was predicted to deteriorate by one year to 8.5 years RSL, bringing the starting year to 2015. All maintenance scenarios assume that the listed budget is allocated to streets only, not shared-use pathways. A separate analysis was conducted for pathways (Section 6.4).

Figure 21 shows the RSL distribution for 2015, the starting year for each maintenance scenario. All following distribution charts have the percent of system in the poor category (0-6 years RSL) shaded in red.

Table 10 - 2004-2013 Annual Road and Street Financial Reports Summary

		Fiscal Year									
Line	**Description**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
30	Roads (rebuilt, redesign, or 2" Overlay upgrade)	$ 488,384	$ 636,717	$ 70,782	$1,055,359	$1,006,938	$ 718,217	$ -	$ -	$ 61,886	$ -
31	Bridges, culverts and storm drainage	$ 248,286	$ 341,300	$ -	$ -	$ 42,155	$ -	$ -	$ 3,800	$ 400	$ -
	Total	$ 736,670	$ 978,017	$ 70,782	$1,055,359	$1,049,093	$ 718,217	$ -	$ 3,800	$ 62,286	$ -
35	Chip Sealing or Seal Coating	$ 57,247	$ -	$ 141,196	$ 88,885	$ 11,314	$ 79,053	$ 80,785	$ 22,365	$ 111,481	$ 375,960
36	Patching	$ -	$ 12,177	$ 1,125	$ 11,356	$ 8,702	$ 8,954	$ 14,333	$ 24,054	$ 11,427	$ -
38	Grading/Blading	$ -	$ -	$ 2,297	$ -	$ 6,536	$ 38,892	$ 60,819	$ 5,189	$ -	$ -
	Total	$ 57,247	$ 12,177	$ 144,618	$ 100,241	$ 26,552	$ 126,899	$ 155,937	$ 51,608	$ 122,909	
	Yearly Total	$793,917	$ 990,194	$ 215,400	$1,155,600	$1,075,645	$ 845,116	$ 155,937	$ 55,408	$ 185,195	$ 375,960
		2004 through 2009 Average:					**$ 845,979**	**2010 through 2013 Average**			**$ 193,125**
		Budget used for optimization and projections:					**$ 850,000**				**$ 195,000**

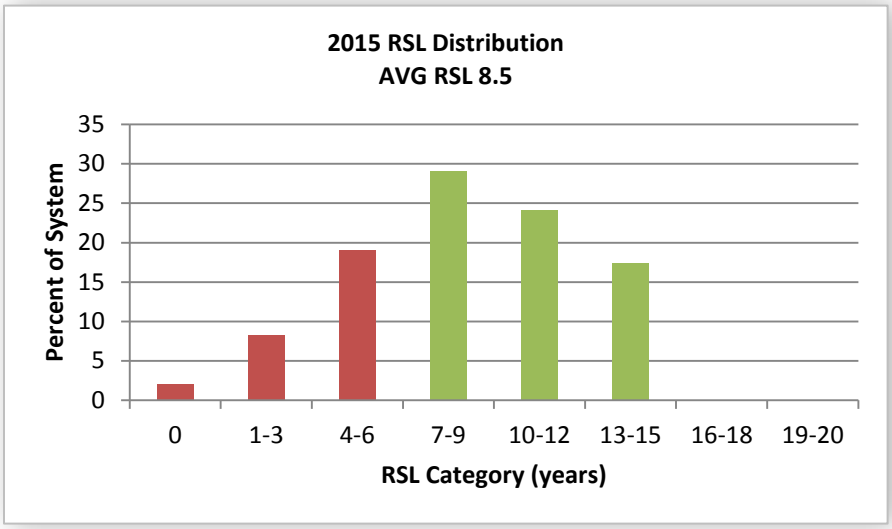


Figure 21 - 2015 RSL Distribution

6.3.3.1 Scenario 1: Pre-2010 Bond Years Funding Analysis

This analysis assumes annual funding of $850k based on the average annual funding for years 2004 through 2009, when funding was procured through bonds. Treatment types for this scenario include routine maintenance (chip sealing), and rehabilitation in the form of thin overlays or CRABS.

This scenario is a 3-step maintenance plan. The first step applies to years 2015 and 2016:

- 20% (in terms of surface area) of the street network would receive a chip seal
- 11% of the network would receive a thin overlay
- 5% of the street network would be rebuilt using CRABS

The second step applies to year 2017 and 2018:

- 20% of the network would receive crack sealing
- 5% of the network would receive a chip seal
- 5% of the network would receive a thin overlay
- 7% of the network would be rebuilt using CRABS

The third and final step applies to year 2019:

- 40% of the network would receive a crack seal
- 20% would receive a chip seal
- 2% would receive thin overlays
- 2% would be rebuilt using CRABS

The RSL distribution of the network over time is shown in Figure 22. By 2015, the RSL distribution of the network would improve to 9 years RSL.

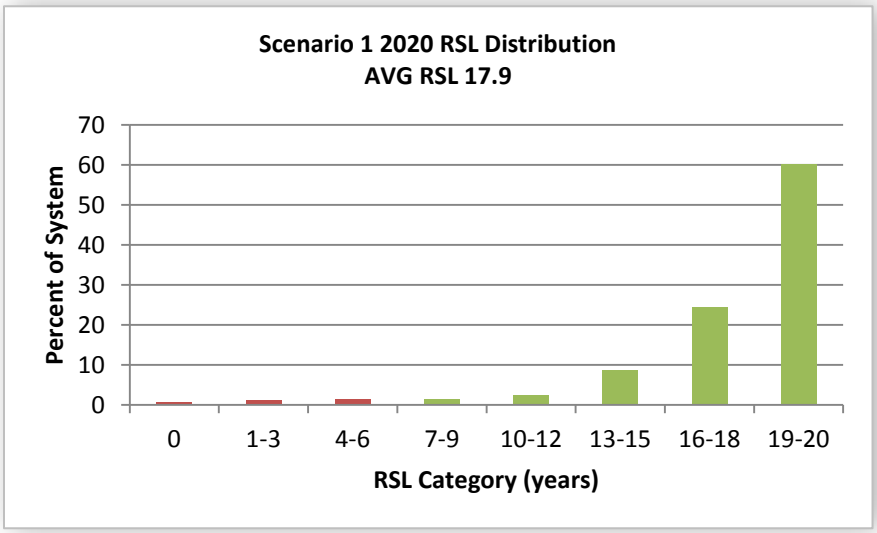


Figure 22 - Scenario 1 2020 RSL Distribution

After maintenance is performed in 2019, the average RSL would be 18 years. This is a very high level of service for Sun Valley. At this point, maintenance would be limited to routine and preventative maintenance such as crack and chip sealing.

6.3.3.2 Scenario 2: "Current" Budget ($135k)

The average annual budget for both street and path maintenance for 2010 through 2013 is $195k. Approximately $60k of the $195k went to pathway maintenance; this scenario is based on a street budget of $135k. It is also a two-step plan.

The first step applies to years 2015 through 2017:

- 16% of the network would be chip sealed each year

The second step applies to years 2019 through years 2024:

- 6% of the network is crack sealed
- 4% of the network is chip sealed
- 1% of the network is reconstructed with CRABS

Network RSL distribution is shown in Figure 23.

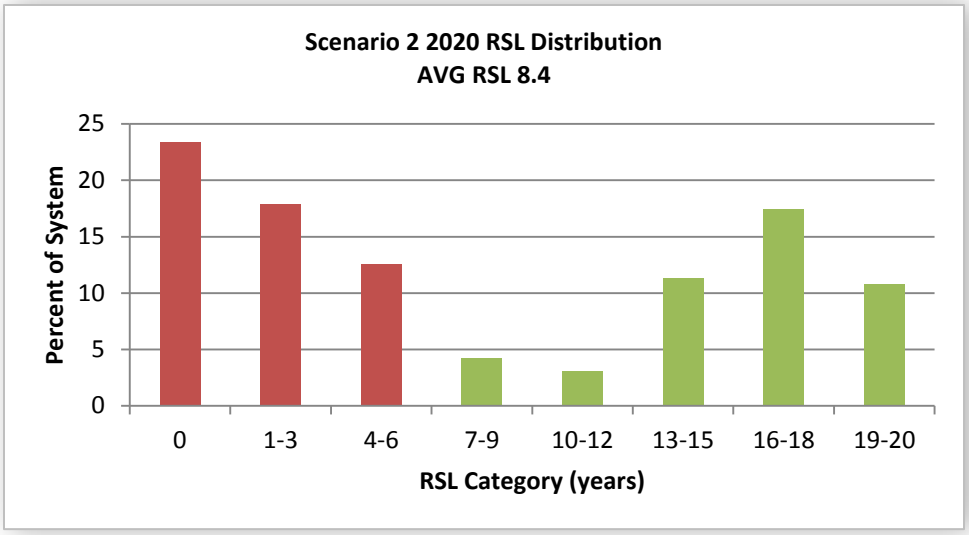


Figure 23 - Scenario 2 2020 RSL Distribution

By 2020, the average RSL would be approximately 8 years. In terms of average RSL, there is no change. However, a substantial amount of the network is projected to be in the poor category. It is clear that utilizing the current level of funding does not allow for real improvement in the street network.

The projection for this scenario was extended to 2025 utilizing the second step maintenance allocations (Figure 24).

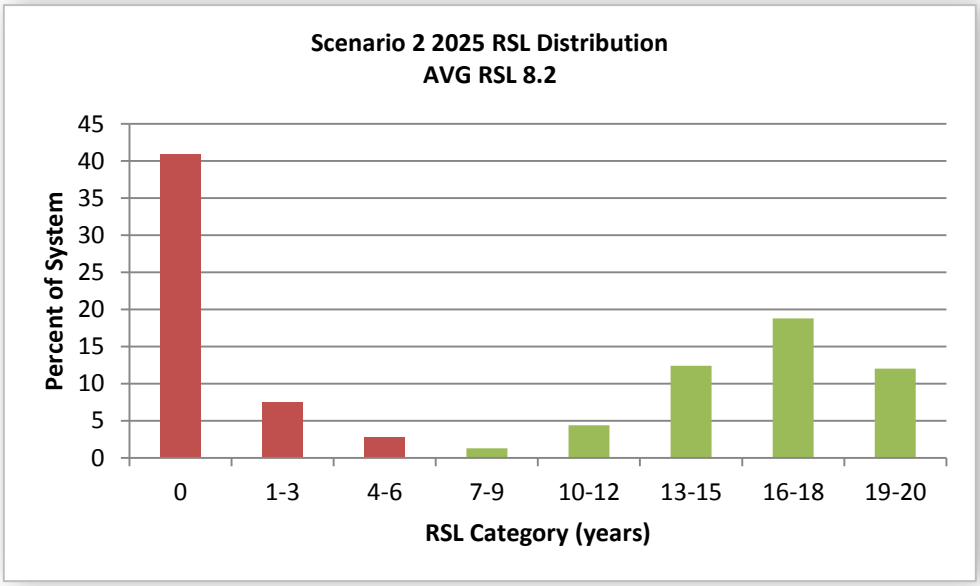


Figure 24 - Scenario 2 2025 RSL Distribution

The average RSL of Sun Valley's streets would be 8.5 years. Again, there would be no change in average RSL, but at this point roads in Sun Valley would be in extremely poor condition or very good condition. Roads in poor condition would require reconstructive efforts.

6.3.3.3 Scenario 3: Modified "Current" Budget ($195k)

The previous scenario was modified such that the assumed $60k for pathway maintenance was allocated to road maintenance, to bring total road maintenance funding to $195k annually. This is a 3-step plan;

The first step applies to years 2015 and 2016:

- 14% of the network would be crack sealed
- 20% of the network would be chip sealed

The second step applies to years 2017 and 2018:

- 11% of network would be crack sealed
- 10% chip sealed
- 1% reconstructed using CRABS

The third step applies to years 2019 and beyond:

- Same allocations as 2nd step but applied to different RSL categories

The RSL distribution in 2020 is shown in Figure 25.

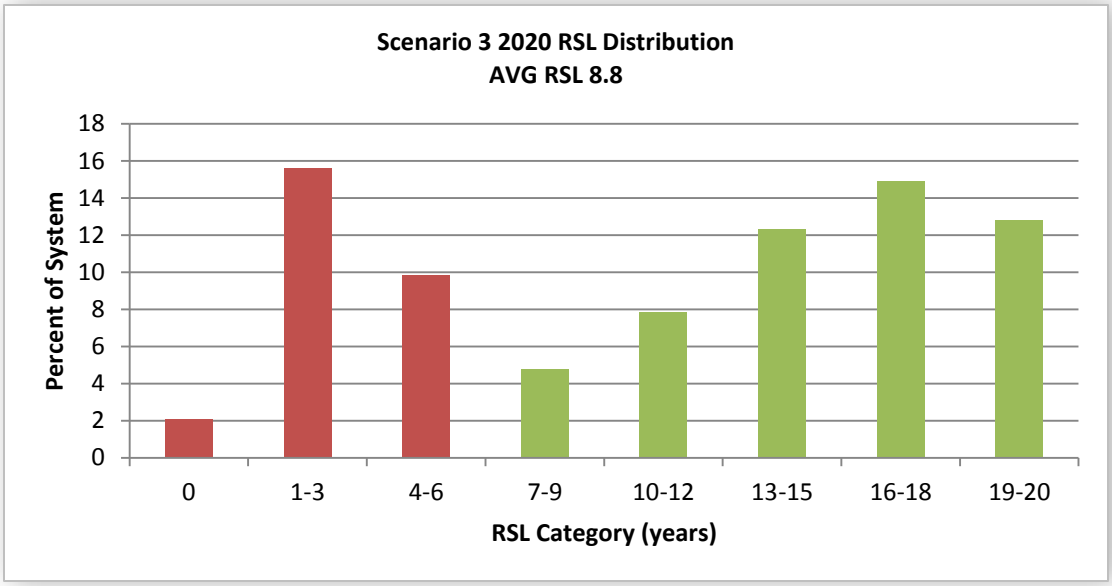


Figure 25 - Scenario 3 2020 RSL Distribution

In five years, the percent of the network in the poor category is somewhat less than that in the previous scenario. Distribution for 2025 is shown in Figure 26 on the following page.

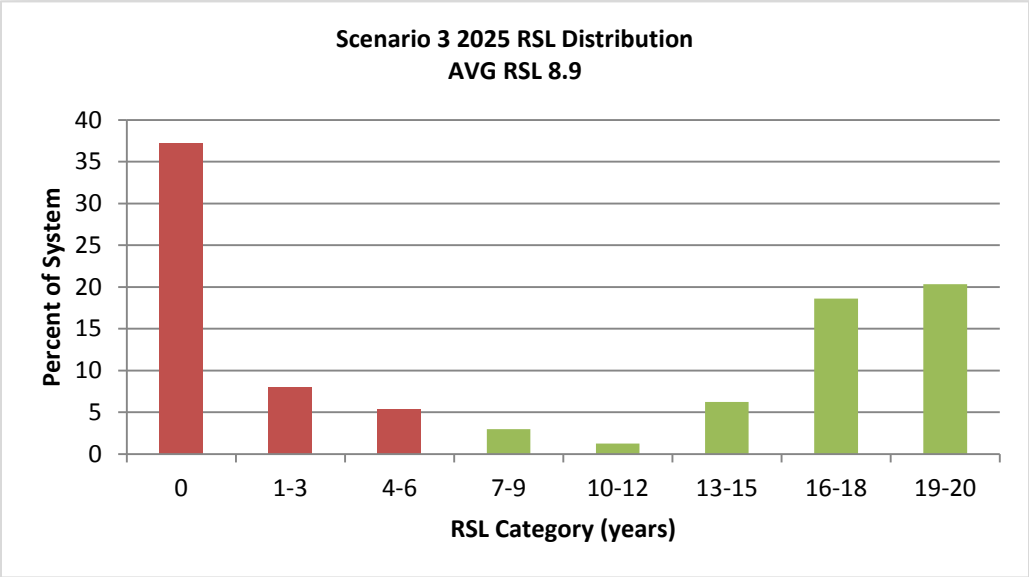


Figure 26 - Scenario 3 2025 Distribution

This distribution is also slightly better than that of the previous scenario, but still over 40% of roads would need to be reconstructed. This helps illustrate the need for additional funding for street maintenance.

6.3.3.4 Scenario 4: Ideal Maintenance Level Funding Scenario

This scenario analyzes the cost to achieve ideal street network characteristics. This is a multi-step plan. It should be noted that 2015 funding has been appropriated to chip sealing Elkhorn Road in its entirety. This represents approximately 24% of the street network. The first step of the multi-step plan is as outlined:

- $665k average annual funding for 1st five years
- $300k average annual funding for 2nd five years
- $480k average annual funding for all 10 years

The RSL distribution for 2020 utilizing this funding level is shown in Figure 27.

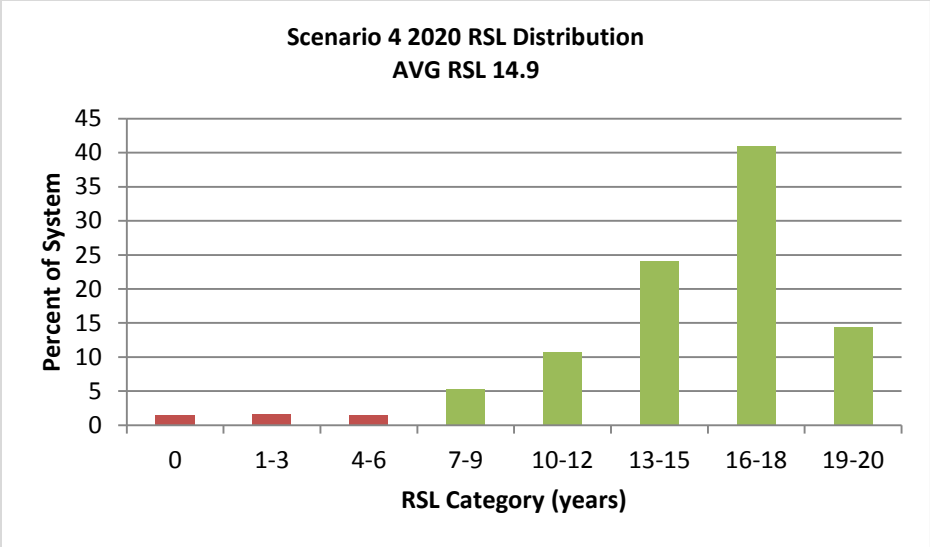


Figure 27 - Scenario 4 2020 RSL Distribution

At this point, 3.3 million dollars would have been spent, the overall condition of roads in Sun Valley would be very good, and funding could be lowered. The RSL distribution for 2025 is shown in Figure 28.

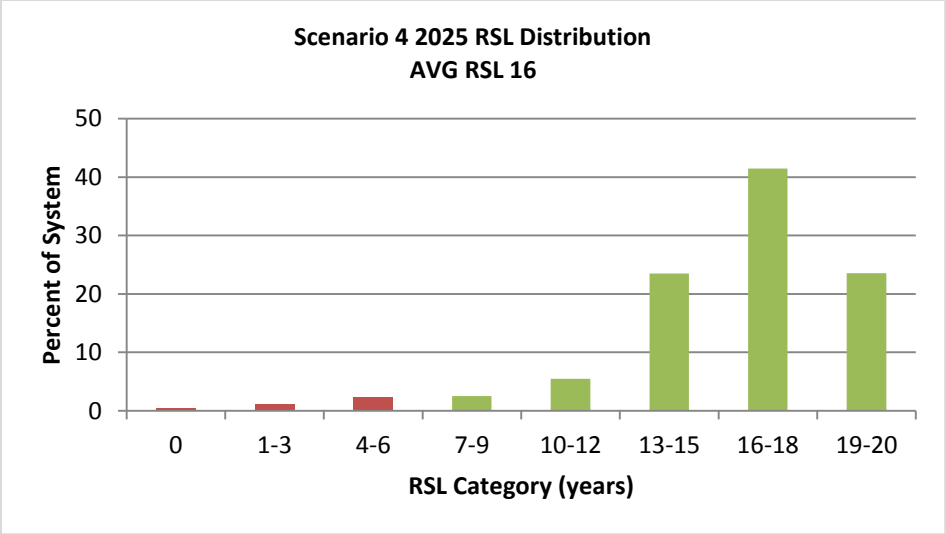


Figure 28 - Scenario 4 2025 RSL Distribution

The RSL distribution at this point is better than the minimum recommendations, with a high level of service and minimal amounts of the network in poor condition.

6.3.3.5 Maintenance Analysis Summary

The current average budget ($135k) would involve an expenditure of $675k over 5 years, and maintain an average RSL of 8 years with over 30% of the network in poor condition by 2020. To achieve ideal characteristics in the street network, $3.6 million would be needed over 5 years; this expenditure would provide a system average RSL of 15 years with minimal amounts of the network in poor condition. Figure 29 plots the ideal and current budget expenditures over time.

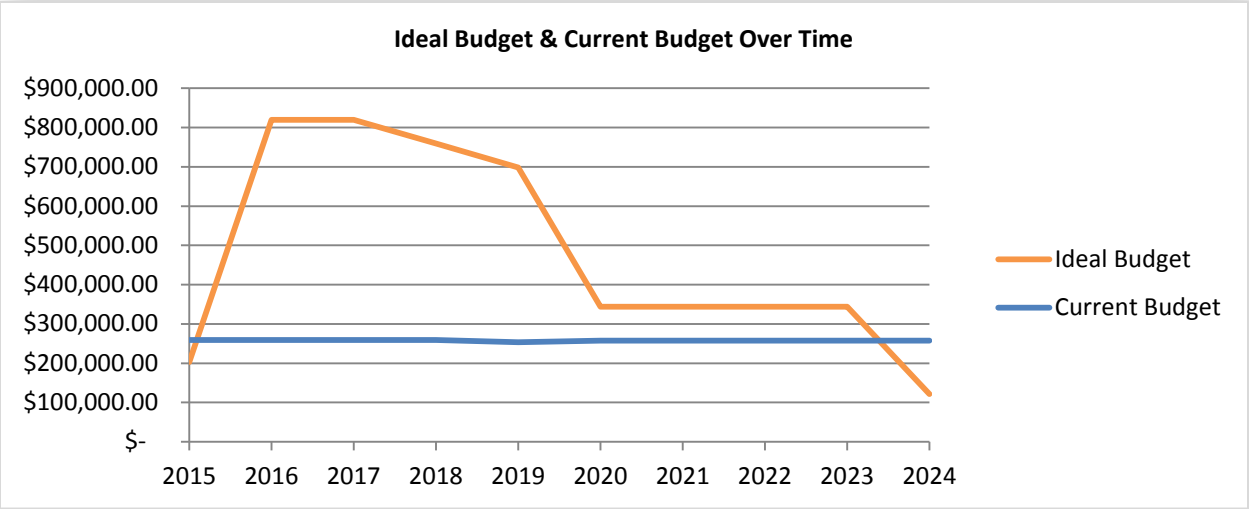


Figure 29 - Current Funding vs. Ideal Funding over Time

To put it in perspective, after 5 years of the current budget, $3.7 million in a single year would be required to increase the system-average RSL from 8 to 16 years (Figure 30).

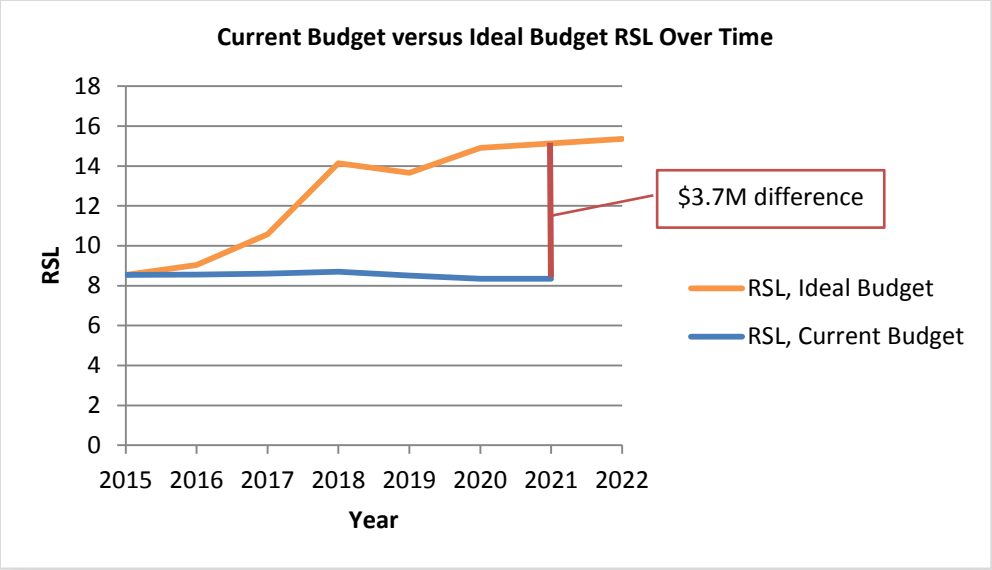


Figure 30 - Current Budget RSL vs. Ideal Budget RSL over Time

The total cost to achieve ideal characteristics becomes $4.7 million after 6 years, and will continue to increase as time progresses and improvements are delayed.

6.4 Pathway Management

Pavement condition of the shared-use pathways in Sun Valley was initially surveyed in fall of 2013. The Trail Creek Path was reconstructed and the Sinclair Path retaining walls were improved in summer 2014. These projects were incorporated into this report and inherent analysis. Pathway pavement overall is in good condition with a network average RSL of 12 years as of fall 2014.

Similar analysis techniques as used for roads were used for pathways. Pavement condition for pathways should target a higher system-wide RSL average than for typical streets. This is because of the nature of pedestrian and bicycle activities; poor pavement condition can be detrimental to bicycling, rollerblading, and other non-motorized modes of transport. Through discussion with the TAC, a system-average RSL of 16 years, with less than 3% of the system in a poor condition, was targeted.

Maintenance for pathways includes crack sealing, slurry seals, and CRABS. Two scenarios were analyzed: the "current" budget based on an annual average budget of $60k (scenario 1), and an ideal scenario that targets a system-wide RSL of 16 years (scenario 2). No pathway maintenance is scheduled for 2015, bringing the start year in the following scenarios to 2016.

6.4.1 Scenario 1: $60k Annual Pathways Budget

An annual average budget of $60k was assumed, which is what has been spent in recent years. The optimization starts in 2016. It should be noted that the amount of CRABS allocated over the maintenance scenario is not realistic. An annual expenditure of $10k to $20k won't fund much in the way of CRABS as is outlined in the scenario. However, these monies could be saved and applied to a larger project in the future. The RSL distribution for 2016 is shown in Figure 31.

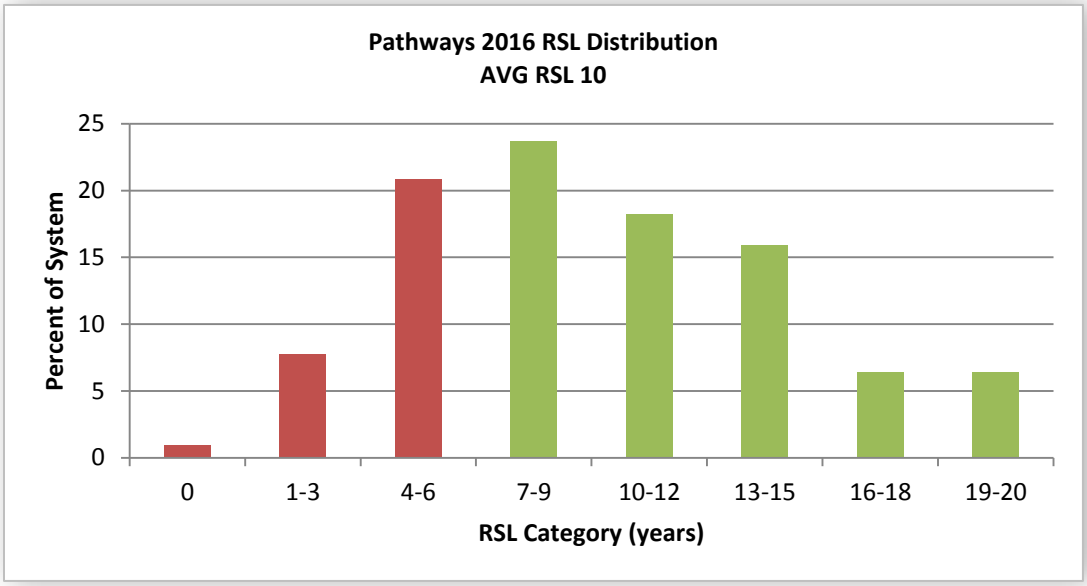


Figure 31 - Pathways 2016 RSL Distribution

After the maintenance in this scenario is performed, the RSL distribution is forecasted to resemble that shown in Figure 32.

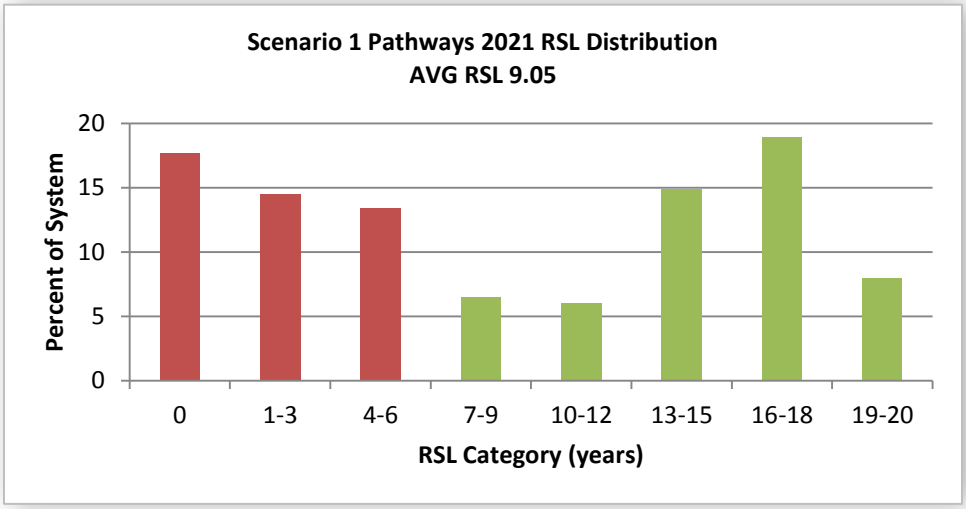


Figure 32 - Pathways 2021 RSL Distribution

There is a need for increased pathway maintenance funding; nearly half of the system is projected to be in poor condition (0-6 years RSL) by 2021 and the average RSL is less than desired. Approximately $315 would be spent over 5 years to achieve these conditions.

6.4.2 Scenario 2: Annual Pathways Budget for Targeted RSL

To help put a number on the funding needed to maintain a pathway pavement network with targeted conditions; Scenario 2 utilizes reconstruction and CRABS early on to lower the percentage of the system in fair and poor conditions with an annual average budget of $226k. The idea is that necessary reconstruction and rehabilitation occurs, and then pavements are sealed regularly. This maintenance plan is projected to raise the average RSL of pathways from 12 to 16 years by 2021. Figure 33 shows the pathway pavement condition for fall 2020.

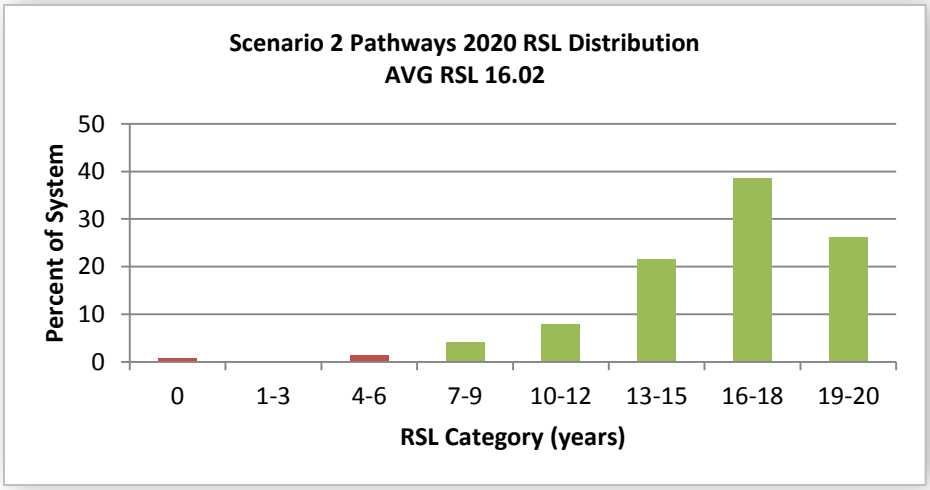


Figure 33 - Pathways Scenario 2 2020 RSL Distribution

The scenario achieves a system average RSL of 16 years with negligent amounts of the system at a terminal service level. Approximately $1.1M would be spent over 5 years to achieve these conditions.

6.4.3 Pathways Maintenance Conclusion

Annual funding for pathway maintenance must be increased to achieve the targeted system average RSL. In a single year, nearly $1.25 million would need to be spent to increase the RSL from 9 to 16 if current funding levels are carried out for the next five years as illustrated in Figure 34.

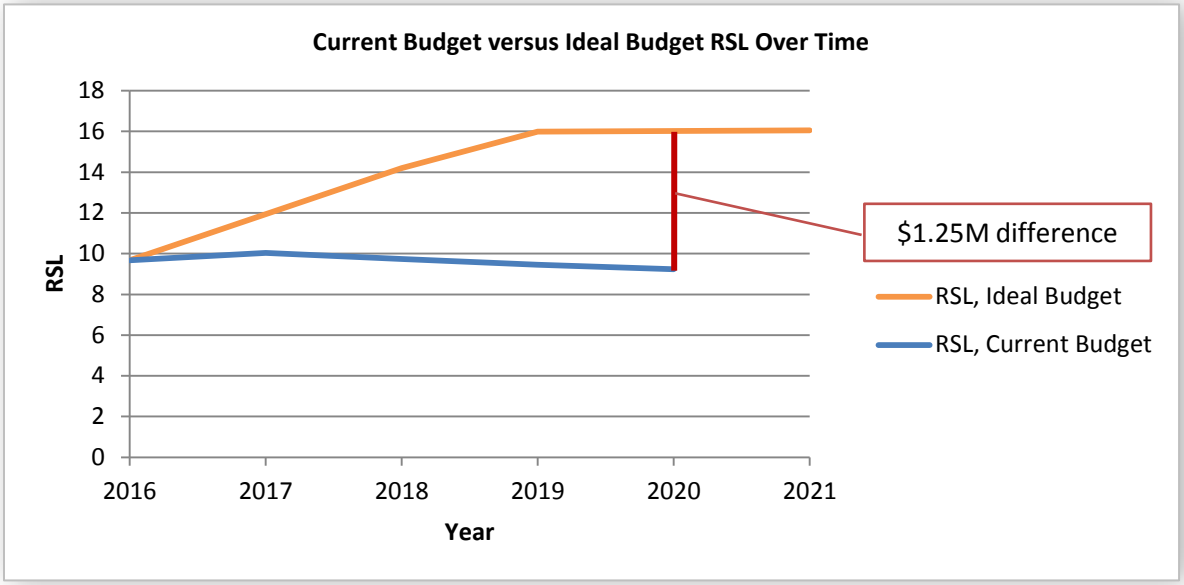


Figure 34 - Current Pathway vs. Ideal Budget over Time

Scenario 2 would spend less, in five years, than would be required to achieve the targeted conditions, in one year, after carrying out Scenario 1.

A map of pathways in Sun Valley, color-coded to condition, is shown in Figure 35.

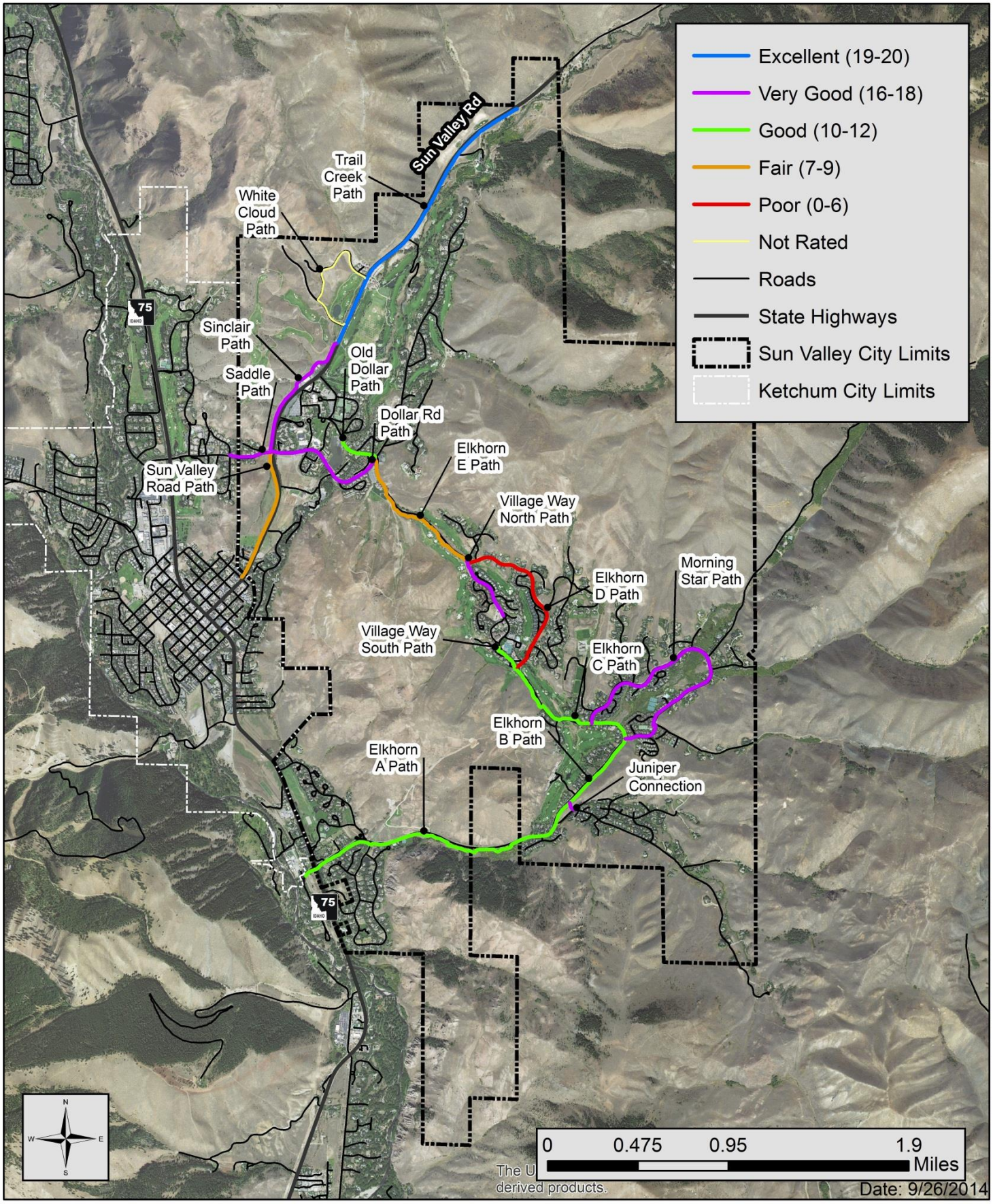


Figure 35 - 2014 Pathway Pavement Conditions

6.5 Sign Management

A sign management system is a tool to cost-effectively inventory, preserve, and improve the street sign network. Such a system provides:

- A complete physical inventory of the sign network
- Condition survey
- A needs assessment process
- Compliance with MUTCD requirements

Sun Valley has historically used an "as needed" approach to sign management. City, police and emergency personnel take note of sign installations in poor condition and pass that information to city personnel to fix the problem.

As part of this Transportation Plan, an iWorQ sign inventory was created. It allows for a detailed inventory of the City's sign network including condition and treatment methods. It also utilizes GIS in the form of an electronic map that provides a visual tool in maintaining the City's sign network.

6.5.1 Inventory and Condition Survey

Keller Associates personnel inventoried traffic sign installations in Sun Valley from June 17 through 20, 2014. Sun Valley has jurisdiction and maintains signs that control traffic on city streets. Signs located within city right of way, as well as signs that control traffic on private roads intersecting city roads, were inventoried. A support (sign post) was rated as follows:

- **Acceptable** if it was vertical and not bent, if the material of the support was in good condition, if the positioning of the support was correct, and if the support was secured safely.
- **Repair** was listed if the sign support was leaning diagonally, and/or if the support was not safely fastened into the ground. This rating only applied if the support was not bent beyond repair, and if the material of the support (especially at the base) was not deteriorated.
- **Replace** if it was not positioned correctly, the condition of the material was considerably deteriorated, it was bent beyond repair, or the base attachment was irreparable.

The MUTCD sets forth guidelines and standards for proper sign visibility, condition, and positioning in rural and urban locations.

A traffic sign was rated as follows:

- **Excellent** if it appeared to be brand new or without any indication of chips, cracks, rust, bends, or fading.
- **Good** if it appeared to be in its original excellent condition, with the exception of occasional minor chips, cracks, rust, bends, and/or fading.
- **Fair** if chips, cracks, rust, bends, and/ or fading were apparent throughout the face of the sign, but not to the point where the sign was difficult to read or understand.

- **Poor** if the text, numbers, or objects on the sign were defaced to the point that the sign was slightly difficult to read due to its distressed condition.
- **Replace** if the text, numbers, or object on the sign were defaced to the point that it was difficult to read.

These criteria coincide with MUTCD guidelines for cleanliness and visibility. The condition survey did not evaluate the signs' compliance with MUTCD retroreflectivity standards, which are explained in Section 6.5.2 .

The findings of the inventory and condition survey are summarized in Table 11 and Table 12.

Table 11 - Traffic Sign Support Data Summary

Supports - 247		
	Total	% Inventory
Support Condition		
Acceptable	233	94%
Repair	6	3%
Replace	8	3%
Support Type		
2x2 Steel	21	9%
Bridge Structure	2	1%
4x4 or 4x6 Wood	171	69%
6x6 or 6x8 Wood	53	21%
Telephone Pole	0	0%

Table 12 - Traffic Sign Data Summary

Signs - 326		
	Total	% Inventory
Sign Condition		
Excellent	65	20%
Good	178	55%
Fair	61	19%
Poor	11	3%
Missing	0	0%
Replace	11	3%
MUTCD Type		
Regulatory	151	41%
Warning	98	5%
Guide	69	51%
School	8	3%

Refer to Figure 36 and Figure 37 on the following pages for maps showing post and sign locations, color-coded to condition.

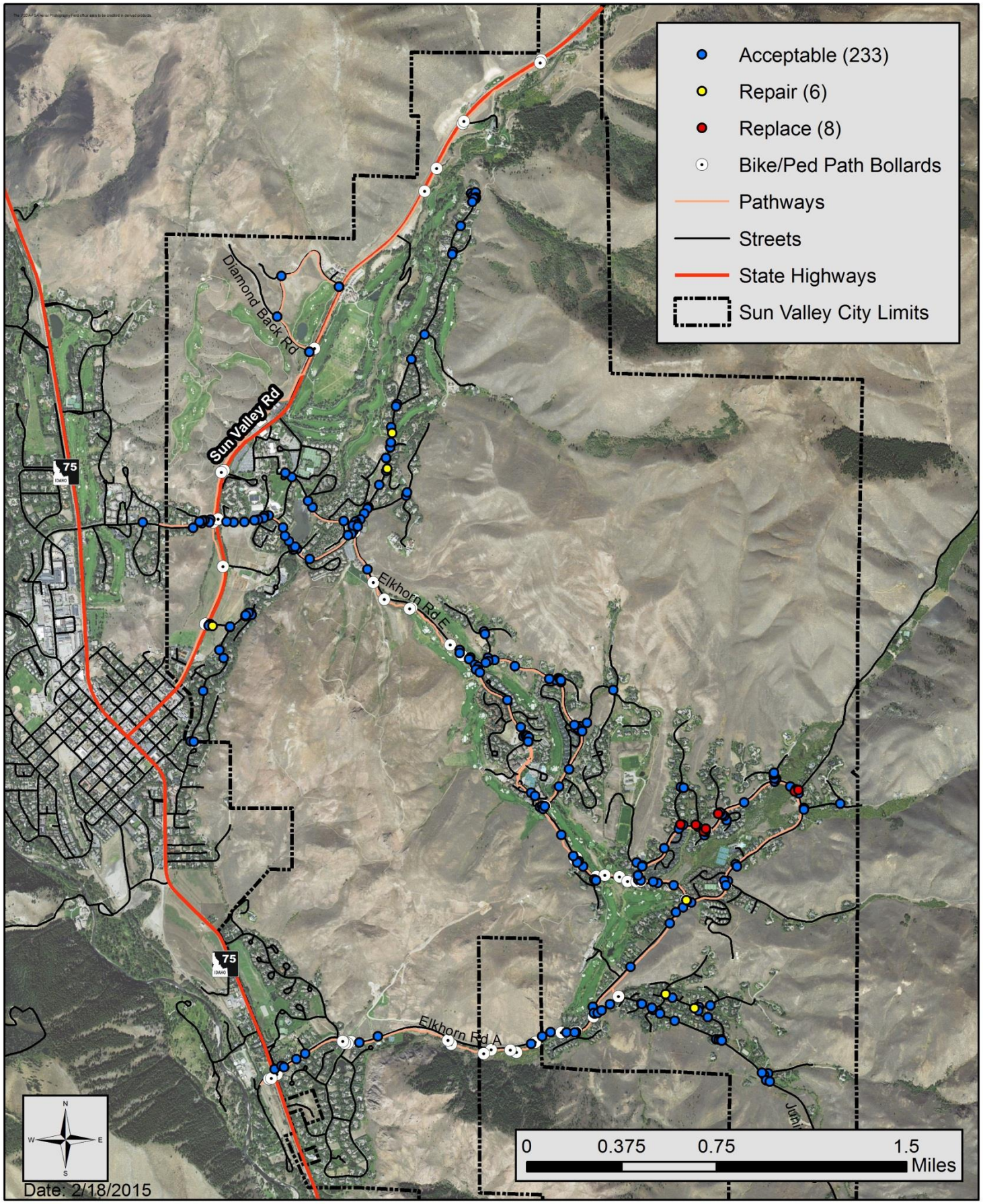


Figure 36 - Sign Post Conditions

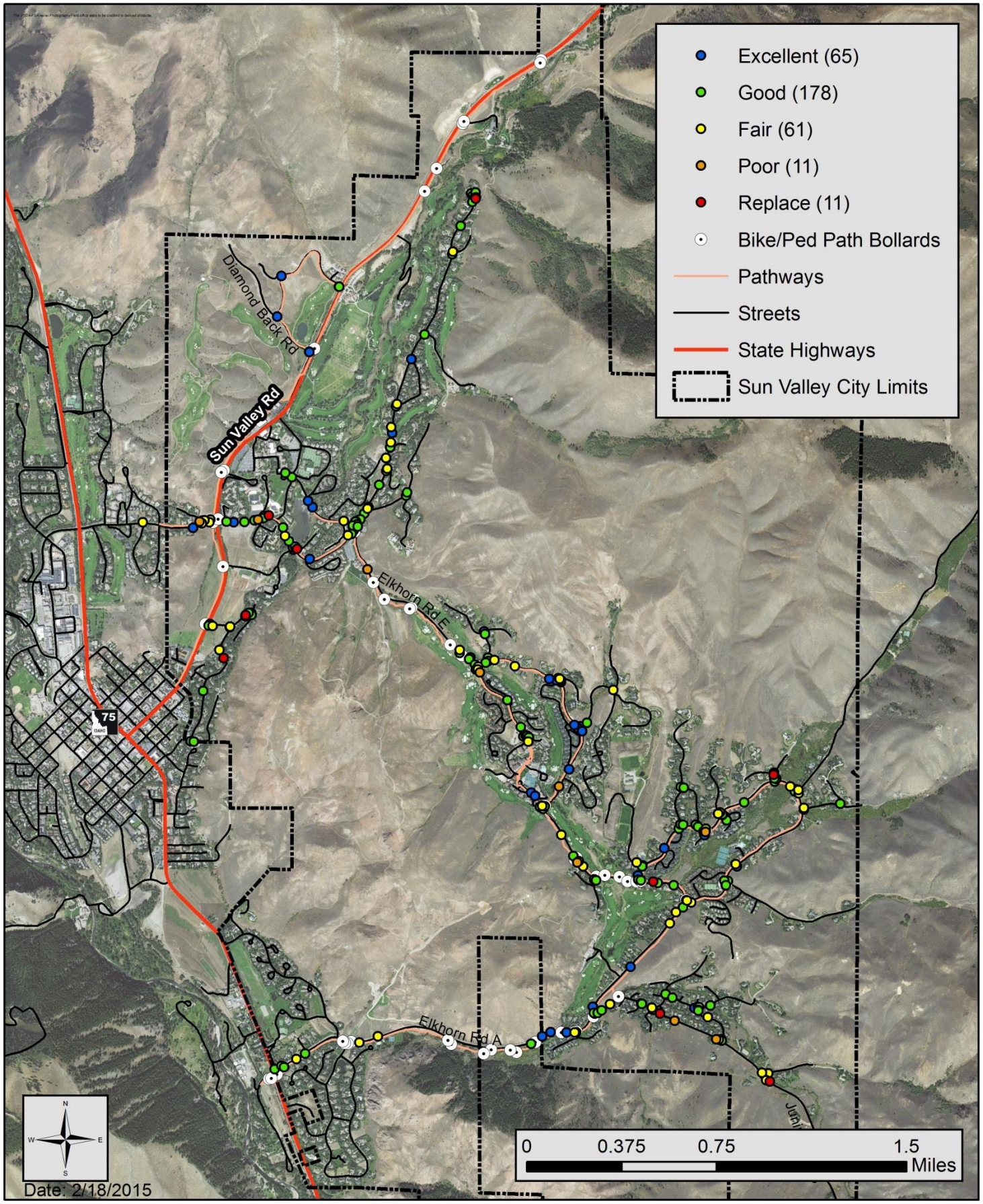


Figure 37 - Traffic Sign Conditions

6.5.2 MUTCD Retroreflectivity Requirements

New standards developed by the Manual on Uniform Traffic Control Devices (MUTCD) require that public agencies adopt a Sign Management Plan to ensure signs meet new minimum retroreflectivity requirements for traffic signs on public roads. Agencies must implement a sign management program by June 14, 2014. This date applies to regulatory and warning signs only. However, agencies are expected to replace guide signs (including street name signs) and other types of signs as resources become available.

The MUTCD outlines two basic assessment methods and three management methods of compliance:

- Measured Retroreflectivity - Assessment
- Nighttime Visual Inspection - Assessment
- Expected Sign Life - Management
- Blanket Replacement - Management
- Control Sign - Management
- Other Methods

Retroreflectivity can be measured with a retroreflectometer. A retroreflectometer can be costly to obtain, with a basic cost of $9,000 ranging up to $15,000 when equipped with additional features such as GPS and bar code readers.

With the visual nighttime inspection method, the retroreflectivity of an existing sign is assessed by a trained inspector conducting a visual inspection from a moving vehicle during nighttime conditions.

With the expected sign life method, individual signs are replaced before they reach the end of their expected service life. The expected service life is based on the time required for the retroreflective material to degrade to the minimum level. The sign life can be based on several different sources of information such as sign sheeting warranties, the performance of control signs, or actual field measurements.

Blanket replacement is similar to the expected sign life method except that all signs, grouped in a corridor or area, are replaced at specific intervals. This eliminates the need to assess retroreflectivity or track the life on an individual sign. The replacement interval is based on the expected sign life.

With the control sign method, replacement of signs is based on the performance of a sample of control signs. The control sign might be located in a service yard or be located with a grouping of signs for a particular area. The control sign is monitored to determine the end of retroreflective life. All field signs represented by the control sign must be replaced before the control sign reaches minimum retroreflective levels.

Other methods developed based on engineering studies can be used.

Refer to Appendix G for a FHWA-published document with additional information on maintaining retroreflectivity.

6.5.3 Observed Conditions and Recommendations

Sun Valley has over 245 sign installations to maintain. It is recommended that an annual spring inspection of Sun Valley's sign installations be conducted. Some signs within the City are slightly overgrown by brush or trees. This issue was identified in the sign condition survey. Preventing sign overgrowth is an important maintenance task that can easily be overlooked. If ignored for too long, the signs will become less and less visible. The overgrowth should be identified and trimmed back during the annual sign inspection. See Picture 6 below for an example of overgrown vegetation obscuring sign visibility.

Picture 6 - Obscured Bike/Ped Sign

Street name signs within Sun Valley are consistent; however, most do not appear to meet retroreflectivity guidelines established by the MUTCD. The following is an excerpt from the 2009 MUTCD, page 162:

> ***Standard:***
> *14* ***The Street Name sign shall be retroreflective or illuminated to show the same shape and similar color both day and night. The color of the legend (and border, if used) shall contrast with the background color of the sign.***
> *Option:*
> *15 The border may be omitted from a Street Name sign.*

Most street name signs in Sun Valley lack retroreflectivity (this was highly apparent to the naked eye, though retroreflectivity was not measured). Several sign installations appear to have mounted solar powered illumination (Picture 7). The functionality and effectiveness of these illumination devices was not evaluated as part of this study, though the TAC reported such illumination is generally not effective. It is recommended that Sun Valley replace street name signs with retroreflective D3-1 signs (Picture 8) identified in the MUTCD, or that adequate illumination devices are added to the street name signs that currently lack them.

Picture 7 - Illuminated Street Name Sign

Picture 8 - D3-1 Street Name Signs

The MUTCD provides guidance on coloration of street name signs (Section 2D.43, page 163). The following is an excerpt:

An alternative background color other than the normal guide sign color of green may be used for Street Name (D3-1 or D3-1a) signs where the highway agency determines this is necessary to assist road users in determining jurisdictional authority for roads.
Standard:
17 ***Alternative background colors shall not be used for Advance Street Name (D3-2) signs (see Section 2D.44).***
18 ***The only acceptable alternative background colors for Street Name (D3-1 or D3-1a) signs shall be blue, brown, or white. Regardless of whether green, blue, or brown is used as the background color for Street Name (D3-1 or D3-1a) signs, the legend (and border, if used) shall be white. For Street Name signs that use a white background, the legend (and border, if used) shall be black.***

As provided in the MUTCD excerpt above, Sun Valley may use brown background street name signs that would be similar to current signage (see Picture 8, page 62). This is an option when the city replaces current street name signs. It is recommended that private roads and developments be required to match city signage requirements (ultimately the MUTCD); signs should be upgraded as their physical condition warrants replacement.

Recent changes to the MUTCD provide text size requirements for street name signs (MUTCD Section 2D.43). Requirements are based on the speed limit of the road the sign serves, as shown in Table 13.

Table 13 - MUTCD Street Name Sign Text Size Requirements

Street Speed Limit (mph)	Upper-case Minimum Height (inches)	Lower-case Minimum Height (inches)
25 or less	4	3
25 to 40	6	4.5
40 or greater	8	6

Existing signs are not required to be replaced because of noncompliance with the new text size requirements; however, new signs and signs at the end of their service life must have the new letter sizes.

The sign inventory also found several "SLOW – CHILDREN AT PLAY" signs placed throughout Sun Valley (Picture 9 and Picture 10, following page). These signs should be removed. These signs are found in some municipalities and are intended to promote safety; however, they are not recognized by the MUTCD or Idaho Transportation Department. In fact, several states ban the use of such signs altogether. There are many reasons why such signs should not be permitted. A few reasons include (Source: Wisconsin DOT):

- "SLOW CHILDREN AT PLAY" signs are typically designed to look like warning signs (yellow background, black legend)
    - Warning signs warn drivers of hazards at specific locations (curve, pedestrian crossing, etc.) but Slow Children signs do not specify a location

- If installed in one area but not another, drivers may be led to believe that there are no children in areas without signs, thus making children more vulnerable
- Parents and guardians are given a false feeling of security.
    - No level of signage can protect a child should they be hit by a car
- "CHILDREN AT PLAY" signs do not reduce traffic speeds or make drivers more observant
- Nearly 30% of tort cases filed against roadway agencies pertain to signs
    - Signs not conformant with the MUTCD increase an agency's liability should an accident occur

Picture 9 - Sign on Mayleaf Street

Picture 10 - Sign at Parker Gulch and Morning Star Intersection

There are alternatives for these signs. Playground signs can be used if near a playground or park. Pedestrian crossing signs should be used where children frequently cross the road to warn motorists.

Picture 11 - W11-2 with W16-7P Plaque

There are several pedestrian crosswalks in Sun Valley. Signage at the crossings is somewhat inconsistent. All crosswalk signage should coincide with MUTCD guidelines which are explained below.

The crosswalk itself should have W11-2 signs supplemented with a W16-7P plaque (arrow pointing to crosswalk - Picture 11). Warning signs should be placed in advance of the crosswalk with a supplemental plaque which may state "AHEAD" (W16-9P) or the distance to the crossing (W16-2P). Pedestrian crossing signs and supplemental plaques may be either traditional yellow or fluorescent yellow/green.

Pedestrian-actuated flashing beacons are located at the crosswalk at 300 Dollar Road at the Sun Valley Pavilion (Picture 12 and Picture 13). The beacons and signage should be upgraded to current MUTCD standards. Existing flashing beacons should be replaced with Rectangular Rapid Flashing Beacons (RRFBs) and incorporated into typical crosswalk signage per new MUTCD guidelines (Picture 14). Instructional signs for pedestrians to operate flashing beacons should be replaced with R10-25 signs (Picture 15).

Picture 12 - Pedestrian-Actuated Flashers

Picture 13 - Pedestrian-Actuated Flashers and Button

Picture 14 - RRFB Signage

Picture 15 - R10-25 Instructional Plaque

6.5.4 Pathway Bollard Inventory

Bollards were mapped using a GPS device, assigned a unique ID, and photographed. Each bollard had its physical condition observed. Sun Valley has 62 bollards along its shared-used pathways. Bollards are wooden posts with sign plaques inlaid. Sign plaques are 8 inch squares.

Picture 16 - Bollard with Stop Sign

Picture 17 - Bollard with Warning Signs

Exceptions to the typical bollards included post-mounted stop signs at the Syringa and Morning Star intersection (Picture 18), and a wall-mounted sign at either entrance to the SH-75 underpass of the Elkhorn Road A Path (Picture 19). It is recommended that stop signs on pathways be made consistent.

Picture 18 - Post-mounted Path Stop Sign

Picture 19 - Wall-mounted Path Sign

For bicycle and shared-used pathways, the MUTCD requires that no portion of a sign or its support be placed less than two feet laterally from the near edge of the path. It also requires the minimum height of a sign to be four feet, measured vertically from the bottom of the sign to the elevation of the near edge of path surface.

Bollards in Sun Valley were found to be mostly in compliance with these requirements with a few exceptions. When a bollard was offset less than two feet, the offset distance was recorded. Figure 38 on the following page shows bollard locations color-coded to MUTCD offset compliance. The bollard inventory and photos can be found in Appendix D.

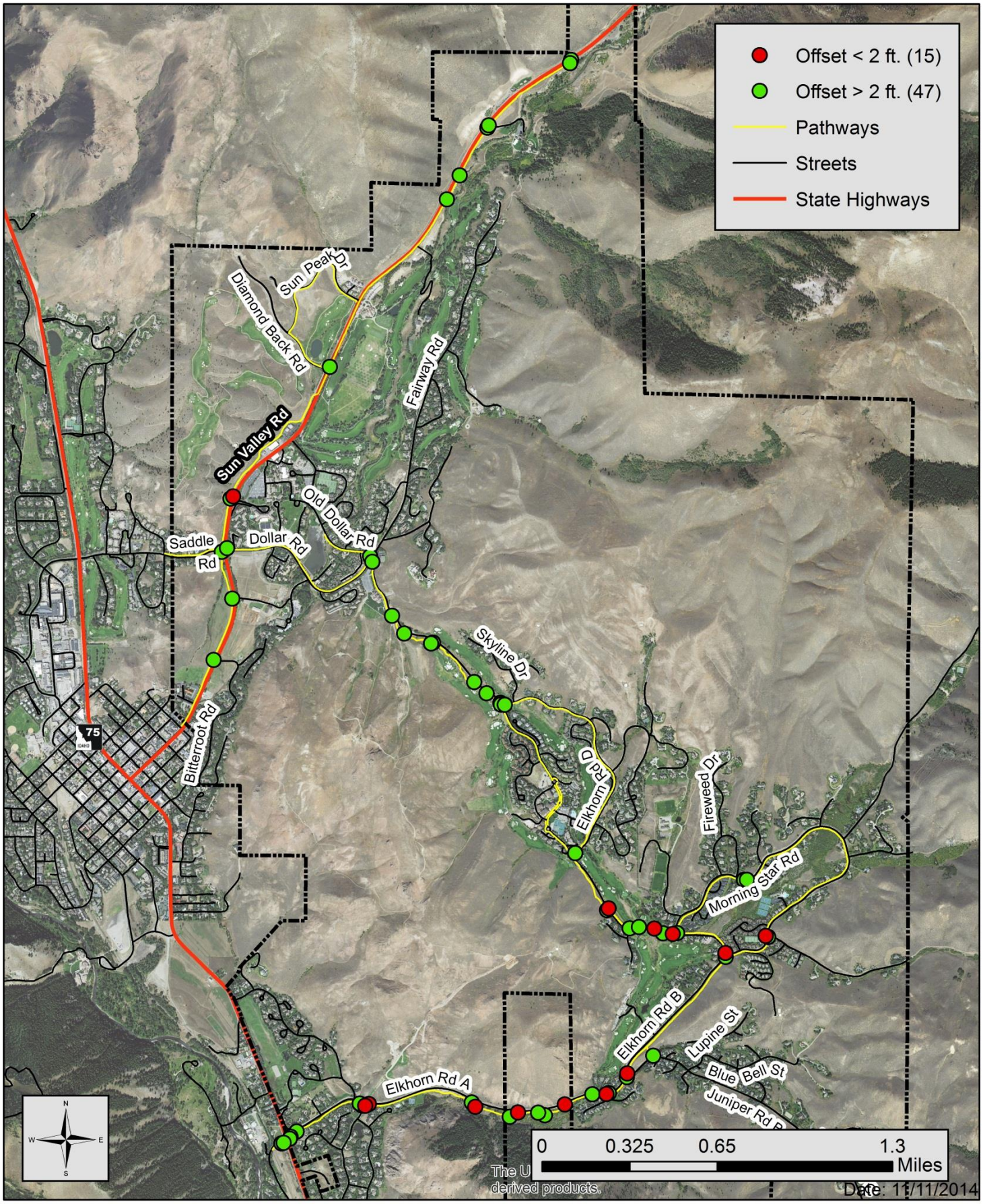


Figure 38 - Bollard MUTCD Offset Compliance

CHAPTER 7 RECOMMENDATIONS

This chapter identifies and details specific projects. These recommended projects are based on the existing and forecasted transportation system conditions, the specific goals and objectives of the City of Sun Valley, and compatibility with the comprehensive plan and other planning documents.

7.1 Capital Improvements

After all the facts and figures were collected and evaluated, existing conditions were presented to the TAC. The TAC then prioritized a list of projects as Capital Improvements to be completed within 5 years or as long-range goals. The recommended projects presented below represent the highest priority transportation projects for Sun Valley.

7.1.1 Dollar Mountain Lodge and Elkhorn Road Intersection Improvements

A long term fix is needed for the Dollar Mountain Lodge corridor of Elkhorn Road. Buses have difficulty turning out onto Elkhorn from the lodge; police are required to physically exit vehicles and direct traffic, which can be dangerous. There is a potential need for turning lanes and widening the section of road to facilitate merging traffic. This project could be combined with City Hall Intersection improvements.

7.1.2 Dollar and Sun Valley Road (SH-75 Spur) Intersection Improvements

Major congestion occurs during special events. Left turn lanes and protected signal phasing would help facilitate event traffic. Such a project would require widening of the current intersection to facilitate additional lanes. Sun Valley should coordinate with ITD District 4 to develop a traffic and intersection study needed to accomplish the intersection improvements.

An alternative to a signal would be a single-lane roundabout with full bicycle and pedestrian facilities. A roundabout has the benefits of less congestion and enhanced safety compared to a signal. It would also provide a means of turning around for snow removal equipment. Conflict points at a roundabout are far less than at a signal as well. Conflict points are locations within an intersection where vehicles cross paths with other vehicles or pedestrians. Each conflict point brings the potential for crashes.

Available research shows that roundabouts are safer or similar to conventional intersections for pedestrians. Single lane roundabouts, such as the one proposed here, are safer than multi-lane roundabouts in that there is less width for pedestrians to cross. Though there is admittedly a lack of good research regarding pedestrians and roundabouts, there are around 2,000 roundabouts in the United States and the number of pedestrian injuries is extremely low. There are no known pedestrian fatalities at a roundabout in the United States to date. Similarly to pedestrians, bicyclist injuries at roundabouts have been very low. A bicyclist has two options at a roundabout. They may use the lane and ride through the roundabout as a vehicle, or they may dismount and use the pedestrian crossing and pathway.

Roundabouts typically have several islands that lend themselves to landscaping and hardscaping (decorative pavement or brick pavers). They also do not require the use of unsightly poles and wires

used for traffic signals. This lends itself to a potentially beautiful entrance into Sun Valley that is aligned with the aesthetic nature of the area. No mechanical equipment is necessary to purchase and maintain the intersection (Sun Valley already has pavement maintenance equipment). Efficiency and environmental friendliness is also promoted with roundabouts. There are fewer complete stops at roundabouts and therefore less acceleration. This results in no heavy acceleration that can be heard at traffic signals which reduces air and noise pollution as well as fuel consumption. Generally a smaller amount of pavement is needed at a roundabout than traditional intersection which means less storm water runoff.

7.1.3 Elkhorn/Dollar/Fairway/City Hall Intersection Improvements

The geometry of the intersection is not optimal and could possibly be improved with a roundabout. Three accidents have occurred since 2009, two of which were reported as property damage only, and one as a type-A (Serious) injury. A Level of Service analysis and further study is recommended to determine the best solution and design.

7.1.4 Traffic Sign Upgrades

Replacement of signs rated “fair”, “poor”, or “replace” is recommended. Supports rated as “repair” or “replace” should be addressed. MUTCD requires Sign Management Plan implementation by June 14, 2014. There are various methods of compliance. All roads accessible to the public are required to follow the MUTCD and State guidelines pertaining to signage. Street name signs in Sun Valley lack retroreflectivity as established in the MUTCD. Street name signs should be replaced with compliant signs. Street name signs can have a locally-themed aesthetic as long as they meet MUTCD requirements.

7.1.5 Elkhorn and State Highway 75 Intersection Improvements

Poor drainage results in many potholes and poor pavement condition. Severe pooling occurs in the intersection. The intersection is the primary access to Elkhorn Road, the only way of travel to the Elkhorn area in Sun Valley. It is recommended that the City work with ITD in identifying possible solutions to issues at the intersection.

7.1.6 Policy Statements: Encroachment, ROW, Sight Distance, Bypass, etc.

In certain areas, roadside drainage can be difficult to maintain due to landscaping encroaching into drainage swales within city right of way. Sight distance was also a concern raised by the TAC. It may be useful to enact policies to address encroachment, rights of way, and sight distances.

Elkhorn Road serves as a de facto bypass route when construction or other delays occur on State Highway 75. Village Way also gets used as a bypass of Elkhorn Road. A policy addressing bypass situations should be adopted.

In order to help promote intermodal travel and reduce congestion, it is recommended that adequate bicycle parking be provided during special events. A policy which requires bicycle parking facilities should be adopted. It is recommended that the City Council work to adopt such a policy.

7.1.7 Community School Crosswalk

Many children cross Dollar Road to the bus shelter located at the Community School Road intersection. The number of those who use public transportation is consistently growing and non-school pedestrians are also increasingly utilizing the crosswalk. Signage at the intersection should be brought to current MUTCD requirements and upgraded with pedestrian-actuated RRFBs to promote safety of children and other pedestrians.

If a problem is further perceived, a school zone speed limit study should be conducted. One possible solution may be flashers that activate during peak times of school traffic, implementing a temporary school zone speed limit.

7.1.8 Trail Creek Bicycle/Pedestrian Path Extension

The separated pathway along Trail Creek Road ends just south of the Boundary Creek Campground, a popular riding destination. This project would continue the separated paved path from the current terminus all the way to the Boundary Creek Campground. Right of way may need to be acquired; ITD should be consulted to determine right of way along Trail Creek Road (Sun Valley Road, SH-75 Spur).

7.1.9 Storm Water Master Plan

A study of storm water drainage facilities is recommended; ROW encroachment by private landscaping is an issue that should be addressed. The study should identify solutions and recommendations to problematic areas. The recommendations of such a study should be incorporated into Capital Improvements.

7.1.10 Pedestrian Crossing Improvements

It is recommended that major crosswalks in Sun Valley be upgraded with rectangular rapid flashing beacons (RRFBs) in compliance with MUTCD guidelines. All pedestrian crossings should have their signs updated as outlined in section 6.5.3 . Upgrading pedestrian crossings would help achieve consistent signage in Sun Valley.

7.1.11 Wayfinding Study

Signage throughout the city is inconsistent and there are unnecessary and illegal signs. A regional wayfinding study could be conducted to determine sign placement and upgrades needed to ensure signage within Sun Valley is consistent and up to current MUTCD and State requirements.

The study should include signage on bicycle/pedestrian pathways as well; stop signs in particular are not consistent on pathways.

7.1.12 Speed Limit Study

Due to the curving nature of roads in the hilly and mountainous terrain of Sun Valley, slower speed limits may be warranted on certain roadways. The TAC identified that slower speeds may be beneficial on certain areas of Elkhorn and Morning Star Roads. It is recommended that speed limit studies be conducted on roads of concern and the recommendations of those studies be followed.

7.2 Routine Annual Roadway Maintenance

This section outlines the annual routine pavement maintenance recommended for Sun Valley.

7.2.1 Crack Sealing and Patching

Crack sealing and patching are routine maintenance actions that help prolong the life and quality of pavement. Crack sealing should always be conducted prior to a chip seal to ensure a good seal of open cracks.

7.2.2 Chip Seal Cycle

The pavement maintenance plan outlines the maintenance recommendations for Sun Valley. The program incorporates a multi-year chip seal cycle. Under the program, the entire street network would ideally receive a chip seal within five years. Roads should receive rehabilitative maintenance (overlay or CRABS) or be reconstructed prior to receiving a chip seal if in poor condition (RSL 0-6). As mentioned previously, cracks in the roads should be sealed before applying a chip seal. For residential streets, ¼ inch chips should be considered to make the pavement surfaces smoother and friendlier to neighborhood activities. On major roadways a ½ inch chip is sufficient.

7.3 Road Rehabilitation and Reconstruction

This section recommends roadways identified by the TAC as being priorities for major rehabilitation above and beyond routine maintenance. Rehabilitation for these roads includes asphalt overlays, reconstruction, and CRABS.

7.3.1 Juniper Road Rehabilitation

Encroaching landscaping interferes with drainage which causes pavement edge cracking and deterioration. The presence of potholes and fatigue cracking indicates structural problems. Reconstruction or CRABS and drainage improvements are necessary.

7.3.2 Independence Creek Road Reconstruction and Fire Improvements

Independence Creek Road is in poor condition. Condition surveys revealed extensive transverse, longitudinal, edge, and alligator cracking. Severe rutting is also present. CRABS or reconstruction is necessary. Drainage and shoulder improvements are recommended to facilitate proper drainage. The street is not up to city fire standards. Fire trucks are not able to turnaround. It is recommended the road be reconstructed in compliance with current City, State and Federal specifications regarding design and fire codes.

7.3.3 Elkhorn Road Rehabilitation

Elkhorn Road (Segment D) around the Village area is currently in fair condition but in need of rehabilitation. It serves as a primary road for Sun Valley and was given a high priority in regards to road projects. Transverse, longitudinal, and edge cracking are present as well as minor rutting. The recommended treatment is a thin overlay or CRABS with drainage improvements. Drainage improvement options should be studied in the Storm Water Master Plan. The road is still a fair candidate

for a chip seal which would help preserve its condition for a few more years; all segments (A-E) of Elkhorn Road are scheduled for chip seal in 2015.

7.3.4 Prospector Road

Prospector Road is in poor condition. Extensive fatigue (alligator) and other cracking are present; such could be indicative of a poor base structure. The condition requires reconstruction or CRABS rehabilitation to correct deficiencies.

7.3.5 Other Road Rehabilitation and Reconstruction Projects

Table 14 on the following page represents additional roads requiring major rehabilitation or reconstruction that were identified in the pavement survey and input from the TAC and city personnel. These projects are coordinated with the Pavement Management Plan and timing coincides with a geographic zones. Refer to Section 7.5.2 .

Table 14 - Road Rehabilitation and Reconstruction Projects

Street	Maintenance Action
Baldy View Lane	CRABS
Big Wells Rd	CRABS
Bitterroot Road	CRABS
Blue Bell St	Sectional reconstruction and drainage improvements
Blue Grouse Road	CRABS
Defiance St	CRABS
Fairway Loop	CRABS
Fireweed Dr	CRABS
Hardrock Ln	CRABS
Horseshoe Rd	CRABS
Independence Creek Road	CRABS
Juniper Rd A	Thin Hot Mix Overlay (<2 in.)
Juniper Rd B	Thin Hot Mix Overlay (<2 in.)
Juniper Rd C	CRABS
Keystone St	CRABS
Lupine St	Reconstruction
May Leaf St	CRABS and sectional reconstruction
Parker Gulch Rd	CRABS
Proctor Mountain Rd	Rotomill & Overlay (<2 in)
Saddle Ln	CRABS
Silverweed Way	CRABS

Street	Maintenance Action
Skyline Dr	CRABS
Skyline Spur	CRABS
Snowbrush Ln	CRABS
Thistle St	CRABS
Wedeln Ln	CRABS

7.4 Prioritization

To help Sun Valley prioritize the CIP list, a criterion weighting system was developed based on transportation needs and goals outlined by the TAC. There are ten rating criteria, each given a weighting factor and scoring criterion. The weighting factor is a value of 1 to 5 which is multiplied by a project's score, a value from zero to ten. The product of the weighting factor and project score is the final priority score.

The rating criteria are as follows:

Safety: Is there an imminent threat to the safety of the public or property?

Maintenance and Surface Condition: Is the project or action needed to maintain existing operations or service levels? Ordinary maintenance is not included as part of this criterion. This criterion is related maintaining a current service level through improvement of a capital asset. Maintaining a level of service indicates an ability to stay abreast of growth. Improvements may be major expenditures that would prevent damage to critical property or disruption of service to the community.

Economic Impact: What are the economic effects of the project or action? Does it benefit the economy? Does the project or action enhance the City of Sun Valley as a resort community? This criterion is intended to focus on projects that will provide a better visitor experience. What effects would it have in terms of development? Facilitate or hinder future development? What effect on existing development?

Traffic Considerations (Volume, Road Use, Access, etc.): What is the reported traffic volume for the road/path in consideration? What is the functional classification and primary use of the road/path in consideration? What are the effects of the project or action in terms of access?

Multi-Jurisdictional Opportunity: What is the potential for multi-jurisdictional cooperation for the project or action? What are the potential effects on funding and costs by working with another agency?

Recreational Value: What effects on recreation will the project or action cause?

Regulation: Does a local, state, or federal law or regulation require the project or action?

Difficulty of Project: What administrative and managerial challenges does the project or action entail, and to what degree?

Planned Activity: Is the project or action a goal, objective, or action item identified in the Comprehensive Plan, Council Priorities, or Transportation Plan?

Cost: What is an estimated cost for the project or action?

The weighting and scoring system for criteria is shown in Table 15

Table 15 - CIP Prioritization System

Rating Criterion	Criterion Weighting Factor	Scoring Criteria
Safety	5	0-10; 0 for minimal safety concerns to 10 for high safety concerns based on relative crash experience and conflicts between pedestrian and bicycle modes
Maintenance & Surface Condition	5	1-10; RSL 20 = 0, RSL 6 or below = 10
Economic Impact	4	1-10; minimal impact - 1-3, moderate impact - 4-6, high impact - 7-10
Traffic Considerations (Volume, Road Use, Access)	4	0-10; 1-3 for low traffic volumes (0-100 ADT), 4-7 for moderate traffic volumes (100-500 ADT), 8-10 for high traffic volumes (500-1500+ ADT)
Multi-Jurisdictional Opportunity	3	0-10; 0 = only City, 5 = 2 agencies, 10 = many (3+) agencies
Recreational Value	3	1-10, 1-3 for low recreational use, 4-7 for mid recreational use, and 8-10 for high recreational use
Regulation	3	0-10; not required - 0, other - 5, required - 10
Difficulty of Project	2	0-10; 0 - most difficult, 10 - easy
Planned Activity	2	0-10; 0 - none, 1-3 - minimal, 4-6 - moderate, 7-10 - high
Cost	1	0-10; 1 per $200,000; 0 = over $2 million, 10 = low cost

After the various projects had been identified, Keller Associates developed an initial project ranking based on engineering analysis and known goals of Sun Valley. This prioritization was presented to the TAC and discussed during the fourth TAC meeting. Following the meeting, adjustments were made by Keller personnel and then distributed to TAC members for further revision. A three-week deadline was set for revisions. Comments and revisions from TAC members were incorporated into the final project prioritization.

Projects are presented in their final prioritization in the following Section 7.5 .

7.5 Capital Improvement and Maintenance Plans

This section presents the prioritized Capital Improvement Plan and Pavement Management Plan. These plans represent the culmination of this study.

7.5.1 Capital Improvement Plan

Table 16 shows the final ranking of capital improvement projects and planning level cost estimates.

Table 16 - Capital Improvement List

Rank	Capital Improvements	Priority Score	Cost Estimate
1	Dollar Mountain Lodge / Elkhorn Road Improvements	204	$ 200,000
2	Dollar and Sun Valley Road Intersection Improvements	198	$ 500,000
3	Elkhorn/Dollar/Fairway; City Hall Intersection Improvements	175	$ 500,000
4	Traffic Sign Upgrades	173	$ 30,000
5	Elkhorn and SH-75 Intersection Improvements	168	$ 50,000
6	Policy Statements - ROW, Sight Distance, and Bypass	168	$ -
7	Trail Creek Bike/Ped Path Extension	154	$ 280,000
8	Community School Crosswalk	154	$ 10,000
9	Bus Stop Shelters and Signage	151	$ 50,000
10	Storm Water Master Plan	149	$ 50,000
11	Pedestrian Crossing Upgrades	138	$ 5,000
12	Wayfinding Study	136	$ 30,000
13	Speed Limit Study	126	$ 10,000
Routine Annual Roadway Maintenance			
14	Crack Sealing and Patching	NA	
15	Chip Seal Cycle	NA	
Road Rehabilitation and Reconstruction			
16	Elkhorn Road – D Segment	142	$ 720,000
17	Independence Creek Road	127	$ 410,000
18	Juniper Road	124	$ 970,000
19	Prospector Road	119	$ 310,000

7.5.2 Pavement Management Plan

To effectively implement and carry out the management a pavement network, the road and path networks are broken into five geographic zones (Figure 39 and Figure 40). All pavements in a particular zone should be treated in a year, determined on a rotating basis. With such a model, and assuming all work in a given zone is completed in the assigned year, the entire pavement network would receive a seal coat or be rehabilitated within five years. A seal coat cycle could be implemented as it would be assumed pavements have been rehabilitated or reconstructed to very good condition.

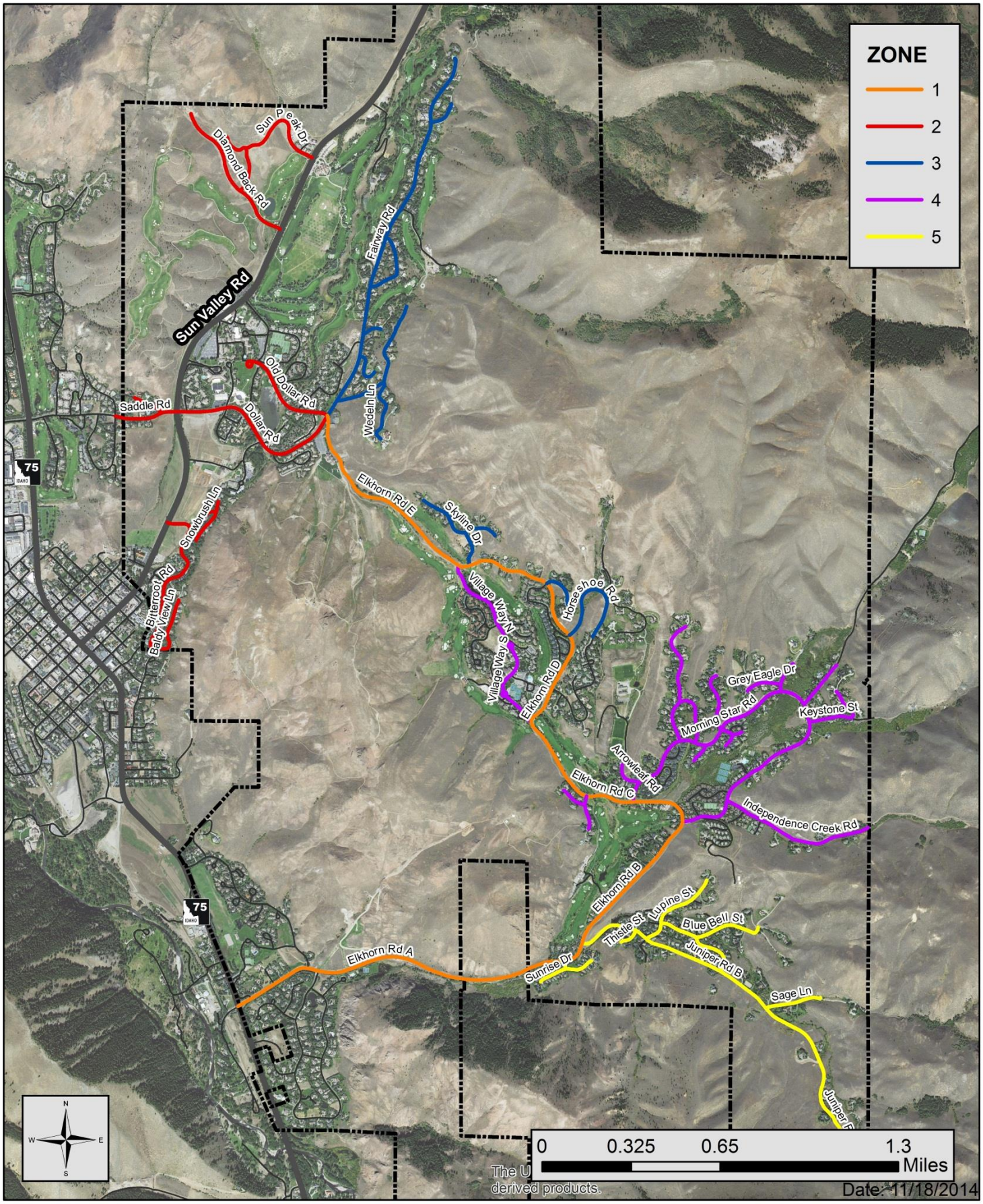


Figure 39 - Pavement Management Zones

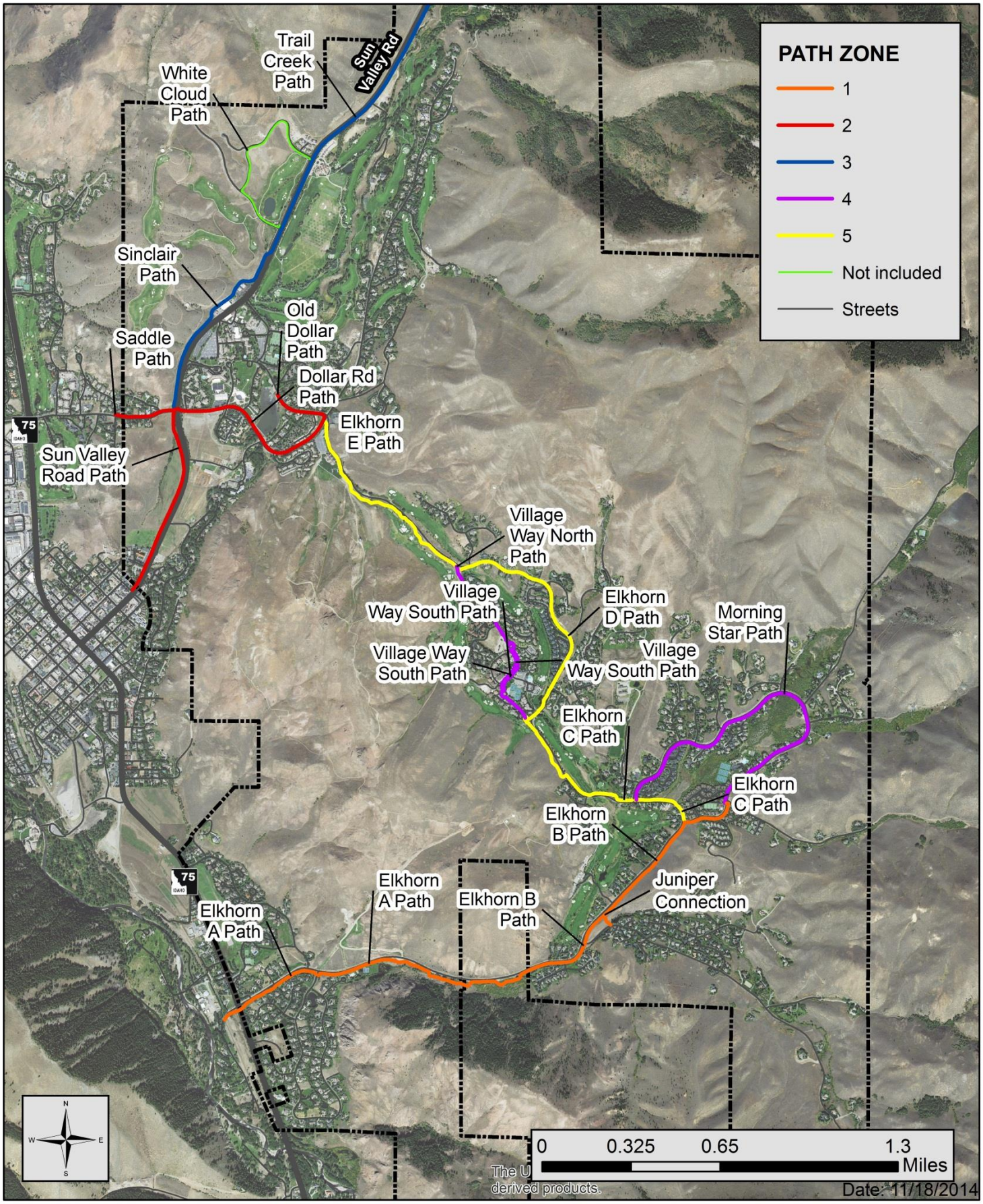


Figure 40 - Pathway Management Zones

CHAPTER 8 FUNDING

Many sources of project funding are available to Sun Valley. These funding opportunities vary by type of project, project size, and local match. Available funding sources are detailed below.

Local Funding

- Idaho Users Revenue Fund
- Vehicle Registration Fees
- Impact Fees

State and Federal Funding

- Local Rural Highway Investment Program (LRHIP)
- Surface Transportation Program (STP)
- Local Highway Safety Improvement Program (LHSIP)
- Federal Bridge Program
- Federal Lands Access Program (FLAP)
- Community Choices for Idaho (CC4I)
  - Safe Routes to School (SR2S)
  - Recreational Trails
  - Congestion Mitigation & Air Quality Improvement (CMAQ)
  - Scenic Byways
  - Enhancement Program

8.1 Local Funding

The most prevalent forms of funding for local (county and city) roadway needs are as follows:

8.1.1 Idaho Users Revenue Fund

This is the primary source for ongoing roadway maintenance and rehabilitation. The funds are collected by the state in the form of motor fuel taxes and license fees. It is distributed annually to all governmental units responsible for roadway maintenance based on a formula that considers population and number of roadway miles in the jurisdiction.

8.1.2 Vehicle Registration Fees

The Idaho Code allows counties to raise revenue by increasing vehicle-licensing fees. Section 49-207 of the Idaho Code states that “the voters of any county may authorize the board of county commissioners to adopt an ordinance by majority vote of the board of county commissioners to implement and collect motor vehicle registration fee not to exceed two (2) times the amount established in section 49-402”. Section 49-402 stipulates state licensing fees for all vehicles less than 8,000 pounds gross vehicle weight.

8.1.3 Impact Fees

The number of county and city jurisdictions that are imposing impact fees on development is increasing. To do so, it is necessary to determine the ultimate (build-out) improvement needs, the proportion related to new development, and a fee schedule based on a rational connection between development-induced needs and fees. This can be an important source of revenue. However, rarely does this source of revenue pay for the full cost of constructing the roadway system and fees are usually not applicable for maintenance functions. Furthermore it is only effective in areas experiencing sustained growth. Consequently, it may not be a viable option for Sun Valley at this time.

8.1.4 Property Taxes

Property taxes are the primary means by which local governments raise money to provide services. They are also perhaps the most politically unpopular method. It is increasingly clear that all forms of funding (state and local) will need to be increased as roadway needs continue to grow.

8.1.5 Sales Tax

A sales tax option to fund public transportation is common in resort communities. Such a tax typically helps take some of the financial burden off of the local full-time population with the assumption that resort-drawn tourists and out-of-towners contribute to local sales.

8.2 State and Federal Funding

Much of the information on state and federal funding presented below is available on the Local Highway Technical Assistance Council's (LHTAC's) website. State and federal funding programs are being updated constantly, so check their website at http://www.lhtac.org for the latest information.

8.2.1 Local Rural Highway Investment Program (LRHIP)

The Local Rural Highway Investment Program (LRHIP) is financed through an exchange of STP-Rural funds by LHTAC with the Idaho Transportation Department at $0.61 per $1.00 up to a maximum of $2.8 million in state funds. The program has four categories of grants: Transportation Planning Grants ($50,000 max), Sign Grants ($30,000 max), Construction Grants ($100,000 max), and Federal-Aid Match Grants ($100,000 max). Through these grants, the program provides funding for road paving, drainage structure replacement, signage upgrades, transportation planning, reconstructing roadways, and most other types of construction on any public road. Matching funds are encouraged but not required. If the project is $50,000 or more, the work must be contracted out or used exclusively for the purchase of materials.

Each September LHTAC makes the application available to all Local Highway Jurisdictions NOT located within a city of over 5,000 in population. The applications are typically due by early December. The applications are ranked by the members of the LHTAC board and the results made available after the March Council meeting each year. Effective July 2012, all jurisdictions who are awarded a construction grant are put on a one-year hiatus from applying for construction grants. This allows LHTAC to award these grants to more jurisdictions throughout the state.

LHTAC reserves $200,000 of this fund annually to help with emergency type projects. Up to $100,000 can be applied for to help with an emergency. If you have an emergency and you need additional information on the LRHIP Program, visit the LHTAC website at www.lhtac.org.

8.2.2 Surface Transportation Program (STP)

Surface Transportation Program (STP) Local Rural funds are allocated for projects in rural areas, and in cities with populations below 5,000. They may be used for new construction, reconstruction or rehabilitation of roadways functionally classified with FHWA as **major collectors** or **arterials** with a small percentage allowed for **minor collectors**. STP funds can also be used for activities such as transportation planning and corridor studies. The local match requirement is 7.34 percent. The Idaho Transportation Board has designated approximately $10 million annually for the Program. The funds are awarded through the Local Federal-aid Incentive Program administered by LHTAC.

Eligible projects are identified, prioritized, and requested by the Local Highway Jurisdictions through a formal biennial project application process November through February. Project proposals are reviewed and ranked by LHTAC and a prioritized list of projects, based on funding, is then presented to the Idaho Transportation Board, for inclusion in the draft Statewide Transportation Improvement Program (STIP) in June.

8.2.3 Local Highway Safety Improvement Program (LHSIP)

Beginning in 2014, the Idaho Transportation Improvement Program (ITIP) has approximately $4 million available for the Local Highway Safety Improvement Program (LHSIP). This money is the Local Highway Jurisdictions' (LHJ) portion of the state's Highway Safety Improvement funds. Funds are for projects to improve the safety at single site locations or for utilizing a systemic approach in multiple locations. The local or state match requirement is 7.34 percent.

Funds are distributed based on ITD District and an analysis of highway miles, vehicle-miles traveled, and 5-year crash data (specifically fatalities and serious injury crashes). Eligible jurisdictions are notified in writing by LHTAC staff and receive applications and project identification instructions. Projects are ranked according to individual cost-benefit ratios. Projects are funded first based on their cost-benefit ratio within their ITD District, and then by their overall cost-benefit ratio throughout the state.

Final project selection is by the Idaho Transportation Board.

8.2.4 Federal Bridge Program

The bridge program provides funds for the replacement or rehabilitation of bridges. LHTAC continues to take applications for Bridge Replacement Projects on the local highway system. In order to qualify for Bridge Replacement funds, it must meet all four of the following criteria:

- Must be in the National Bridge Inventory (NBI) Database, which requires that the bridge be longer than 20 feet and that it must be on a public road.

- The bridge must have a sufficiency rating of less than 50. This is the number shown on the Annual Bridge Inspection Reports.
- The bridge must be classified as either structurally deficient or functional obsolete or both.
- If the sufficiency rating is less than 75, bridge funds may be used for rehabilitation.

The Idaho Transportation Board makes 35 percent of the Bridge funds available to use on local (non-state highway) bridges. Presently, there is approximately $5 million in the "On-System" Program and $3.8 million in the "Off-System" Program with a 7.34 percent local match.

8.2.5 Federal Lands Access Program (FLAP)

The Federal Lands Access Program (FLAP) was created by the "Moving Ahead for Progress in the 21st Century Act" (MAP-21) to improve access to federal lands. The program is administered by the Federal Highway Administration (FHWA), Western Federal Lands Highway division. It is directed towards public highways, roads, bridges, trails, and transit systems that are under state, county, town, township, tribal, municipal, or local government jurisdiction or maintenance, and provide access to federal lands.

The goal of the Access Program is to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The Access Program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators. The program is designed to provide flexibility for a wide range of transportation projects.

See their website for the most current eligible project types and program status:
http://www.wfl.fhwa.dot.gov/programs/flap/

8.2.6 Community Choices for Idaho (CC4I)

The Idaho Transportation Department's Division of Transportation Performance (ITD-TP) administers a variety of programs funded through the Federal Highways Administration (FHWA), including the Transportation Alternatives Program (TAP), which is used to fund Community Choices for Idaho (CC4I). The purpose of CC4I is to advance ITD's strategic goals of Mobility, Safety, and Economic Opportunity while maximizing the use of federal funds. The program will (1) provide an annual mechanism to solicit locally identified projects and deliver a process to identify potential funding and leveraging of federal funding opportunities, and (2) enhance ITD's ability to leverage funding sources for sponsored projects, including the Transportation Alternatives Program funding source.

CC4I is to serve as an umbrella mechanism for administering many of the traditional state and federal Transportation Alternatives Program funding programs administered by ITD, including Safe Routes to School, Idaho ADA Compliance Program, Recreational Trails, Scenic Byways, Congestion Mitigation & Air Quality Improvement, and the Enhancement Program. Many of these programs are currently unfunded; but if they become funded, they will be included in the CC4I funding program. As this program is newly created and still transforming, check the ITD website for up-to-date details about program eligibility and requirements: http://itd.idaho.gov/transportation-performance/cci/