APPENDIX D8: EAST SALT LAKE VALLEY

Safety Summary

Tech Memo #1 Safety Analysis

Case Study Project Information Sheets

Case Study Project Location Map

Equity Index Map

EAST SALT LAKE VALLEY SAFETY SUMMARY

East Salt Lake Valley Geographic Focus Area

CSAP OVERVIEW

"A plan to provide local governments the means to make strategic roadway safety improvements"

Wasatch Front Regional Council (WFRC) is preparing a regional Comprehensive Safety Action Plan (CSAP). The CSAP will present a **holistic, well-defined strategy** to **reduce roadway fatalities and serious injuries** in the Wasatch Front region.

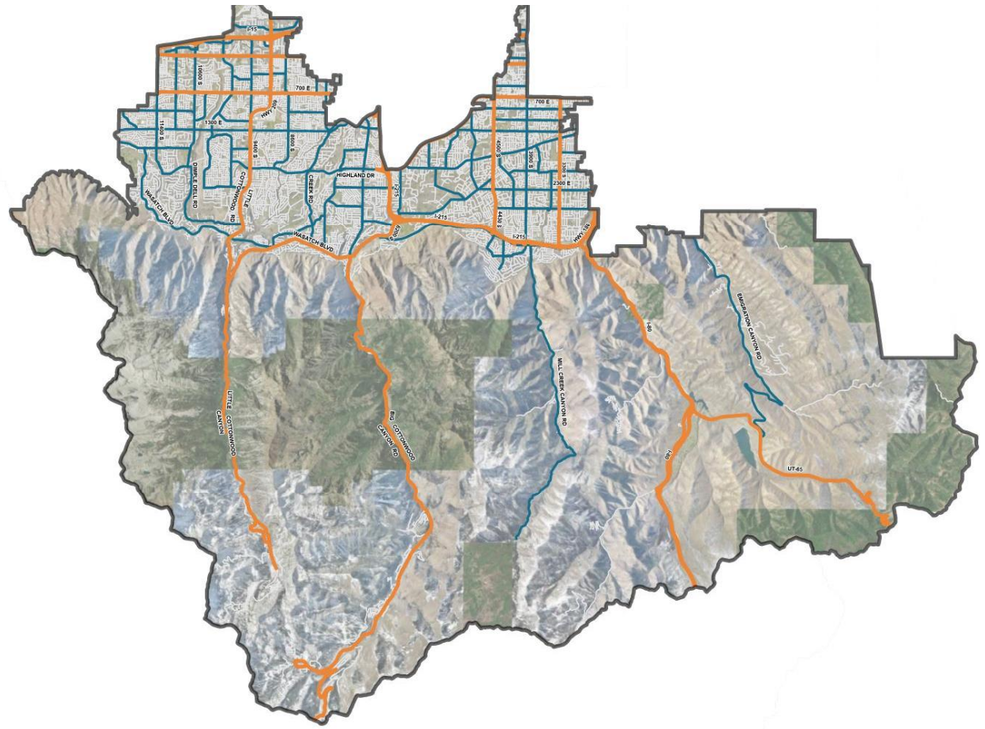
The CSAP will ***analyze*** safety needs, ***identify*** high-risk locations and factors contributing to crashes, and ***prioritize*** strategies to address them.

The CSAP will meet eligibility requirements that allow local jurisdictions to apply for **Implementation Grants** from the United States Department of Transportation (USDOT) Safe Streets and Roads for All (SS4A) discretionary grant program. The grant program was established by the Bipartisan Infrastructure Law (BIL) with $5 billion in appropriated funds, 2022-2026. A Safety Action Plan must include the following elements, as specified by FHWA to satisfy eligibility requirements to apply for an implementation grant:

State Route: Roadways owned, operated, and maintained by UDOT

Federal-Aid Route: Non-UDOT roadways eligible for federal funding – typically minor arterials and collectors

Local Streets: Other non-UDOT / non-Federal Aid roadways, primarily collectors, and residential streets



Self-Certification Checklist

Plan must include the following:

- ❑ Safety Analysis
  - ❑ Existing conditions and historical trends
  - ❑ Crashes by location, severity, and contributing factor
  - ❑ Systemic and specific safety needs
  - ❑ Geospatial identification of higher risk locations
- ❑ Identification of comprehensive set of projects and strategies

...And must complete 4 of the 6 elements to the right:

1. Leadership Commitment
   - ❑ Governing body publicly commit to a zero fatalities and serious injury goal
2. Plan Development
   - ❑ Committee charged with plan development, implementation, and monitoring
3. Development Activities
   - ❑ Engagement with public and relevant stakeholders
4. Equity
   - ❑ Data-driven, inclusive, and representative processes
5. Policies, Plans, Guidelines, and/or Standards
   - ❑ Assessment policies, plans, guidelines, and/or standards
6. Progress
   - ❑ Description on how progress will be measured over time

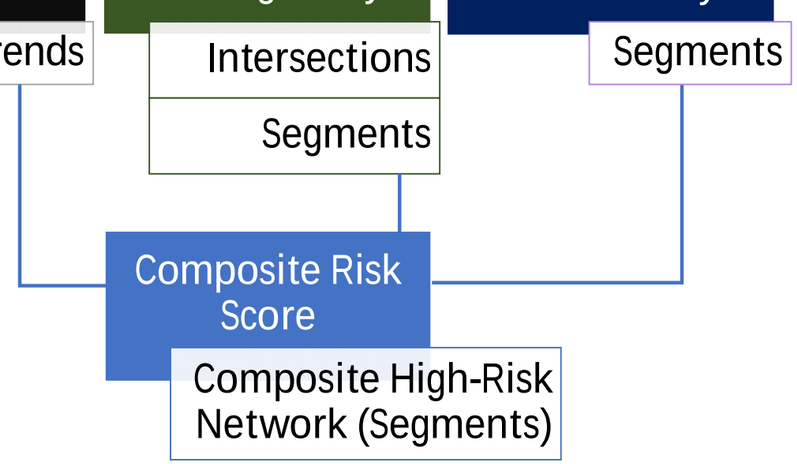
Safe System Approach

Implementing a Safe System Approach requires moving away from traditional safety paradigms.

- ❑ The Safe System approach seeks to prevent death and serious injuries.
- ❑ The Safe System approach designs for human mistakes and limitations.
- ❑ The Safe System approach focuses on speed management and strategies to reduce system kinetic energy.
- ❑ The Safe System approach aims to share responsibility among system users, managers, and others.
- ❑ The Safe System approach proactively identifies and addresses risks

Traditional Approach to Safety	Safe System Approach Paradigm
Prevent crashes	Prevent death and serious injury
Improve human behavior	Design for human mistakes/limitations
Control speeding	Reduce system kinetic energy
Individuals are responsible	Share responsibility
React based on crash history	Proactively identify and address risks

Safety Analysis Methodology



Four unique safety analysis methods inform identification of safety needs. Three of the analysis lead to identification of a Composite High-Risk Network. The analysis can be thought of as a layered approach, each focused on a different safety element. Segments with a score of "4" or "5" are included in the High-Risk Composite Network

Analysis	Composite High Risk Score Element	Value
Historical Crash Analysis	Segment 5-Year Crash Totals ≥ 3 Crashes	1
Network Screening Analysis	Positive CCR Differential	1
High-Risk Network Analysis	Crash Profile Risk Score ≥ 20	1
	usRAP Vehicle Star Rating = 1-2 Stars	1
	usRAP Pedestrian Star Rating = 1-2 Stars	0.5
	usRAP Bicycle Star Rating = 1-2 Stars	0.5
Total Possible Composite Risk Score		**5**

Strategic Highway Safety Plan (SHSP) Emphasis Area Comparison

Based on a comparison of fatal and serious injuries for each Utah SHSP Emphasis area, the following emphasis areas should be considered when developing safety improvement projects specific to the **East Salt Lake Valley** GFA.

- Intersections
- Roadway Departure
- Speed-Related
- Older Driver
- Motorcycle

Intersection, Roadway Departure, and Speed-Related emphasis areas rank highest in terms of number of fatal and serious injuries at the Statewide and WFRC Levels.

In addition to Intersection, Roadway Departure, and Speed-Related emphasis areas within the **East Salt Lake Valley** GFA, Older Driver and Motorcycle are also identified as top emphasis areas.

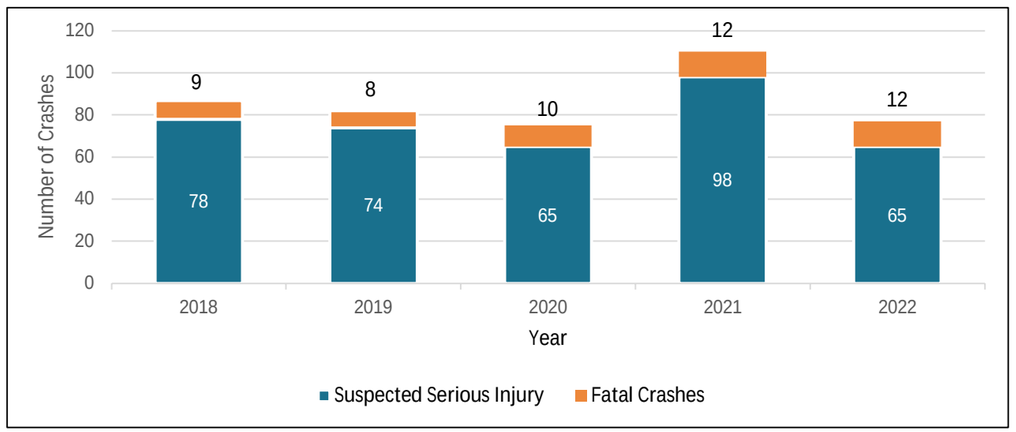
Strategic Highway Safety Plan Emphasis Area Comparison

Category	Utah SHSP Safety Emphasis Area	Statewide Totals		WFRC Totals		East Salt Lake Valley Totals		
		Fatal and Serious Injury	Rank	Fatal and Serious Injury	Rank	Fatal and Serious Injury	Rank	Change in Rank From WFRC
Driver	Teen Driver	1,640	**4**	751	4	69	8	-4
	Older Driver	1,508	6	700	6	98	4	3
	Speed-Related	2,133	**3**	936	3	98	3	0
	Aggressive Driving	555	11	297	10	35	10	0
	Distracted Driving	718	10	286	11	34	11	0
	Impaired Driving	1,184	8	623	8	70	6	2
	No Safety Restraints	1,542	**5**	599	9	58	9	0
Roadway	Intersection	3,567	**1**	2,163	1	212	1	0
	Roadway Departure	2,931	**2**	1,014	2	124	2	0
Special Users	Motorcycle	1,457	7	750	5	94	5	0
	Pedestrian	912	9	636	7	70	6	1
	Bicycle*	280	12	167	12	34	11	1

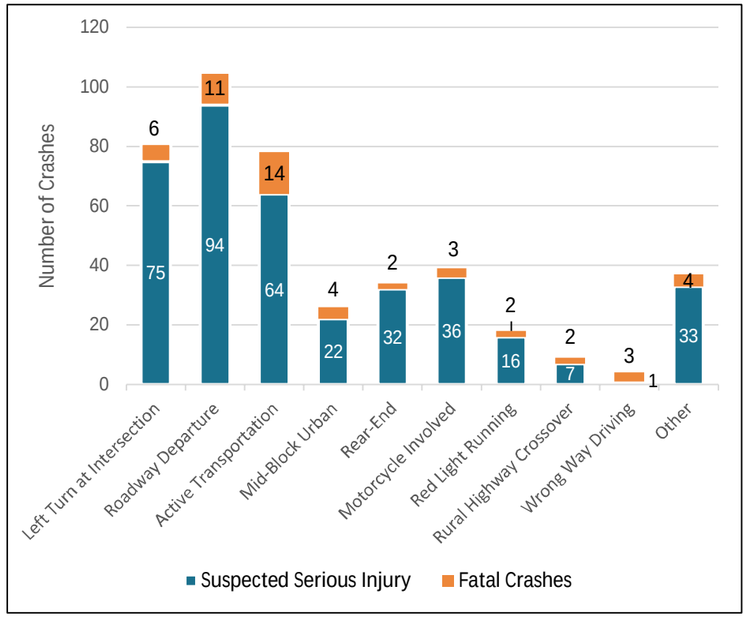
*While Bicycles are not one of the eleven Utah SHSP emphasis areas, they are included as part of the CSAP safety analysis.

5-Year Historical Crash Trends in the East Salt Lake Valley GFA

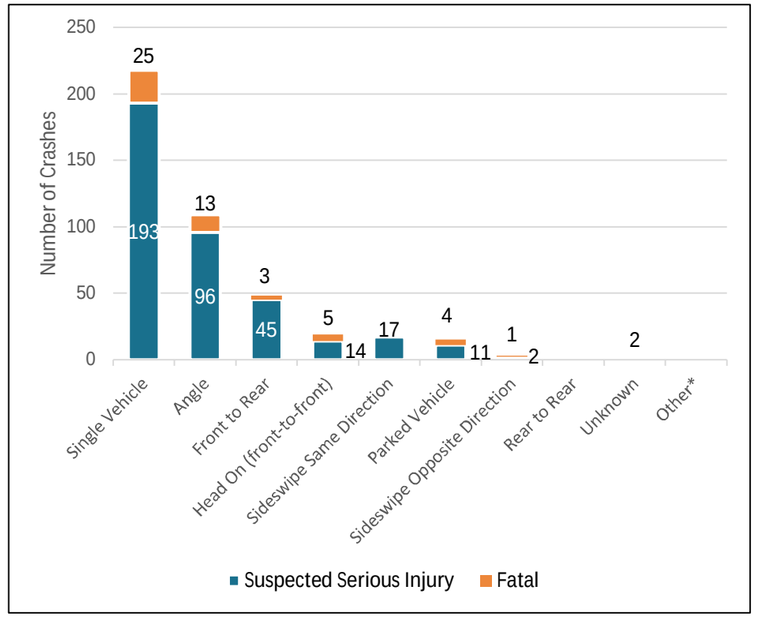
Route Type	State Route		Federal Aid Route		Local Street		Overall Total		% of WFRC
Crash Severity	Crashes		Crashes		Crashes		Crashes		%
	#	%	#	%	#	%	#	%	
Fatal	28	0%	19	0%	4	0%	**51**	**0.2%**	**0.0%**
Suspected Serious Injury	197	2%	156	2%	27	1%	**380**	**1.8%**	**0.2%**
Suspected Minor Injury	944	9%	832	10%	160	7%	**1,936**	**9.1%**	**1.1%**
Possible Injury	2,038	19%	1,427	18%	209	9%	**3,674**	**17.3%**	**2.0%**
No Injury / Property Damage Only	7,545	70%	5,624	70%	2,001	83%	**15,170**	**71.5%**	**8.4%**
Route Total	**10,752**	**100%**	**8,058**	**100%**	**2,401**	**100%**	**21,211**	**100%**	**11.8%**



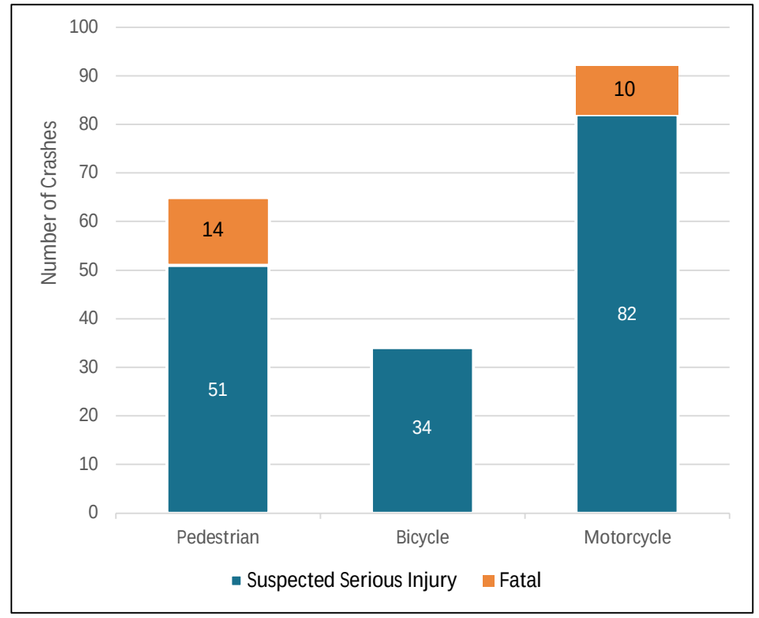
Annual Fatal and Serious Injury Crashes (2018-2022)



Crash Type



Manner of Collision



Active Transportation

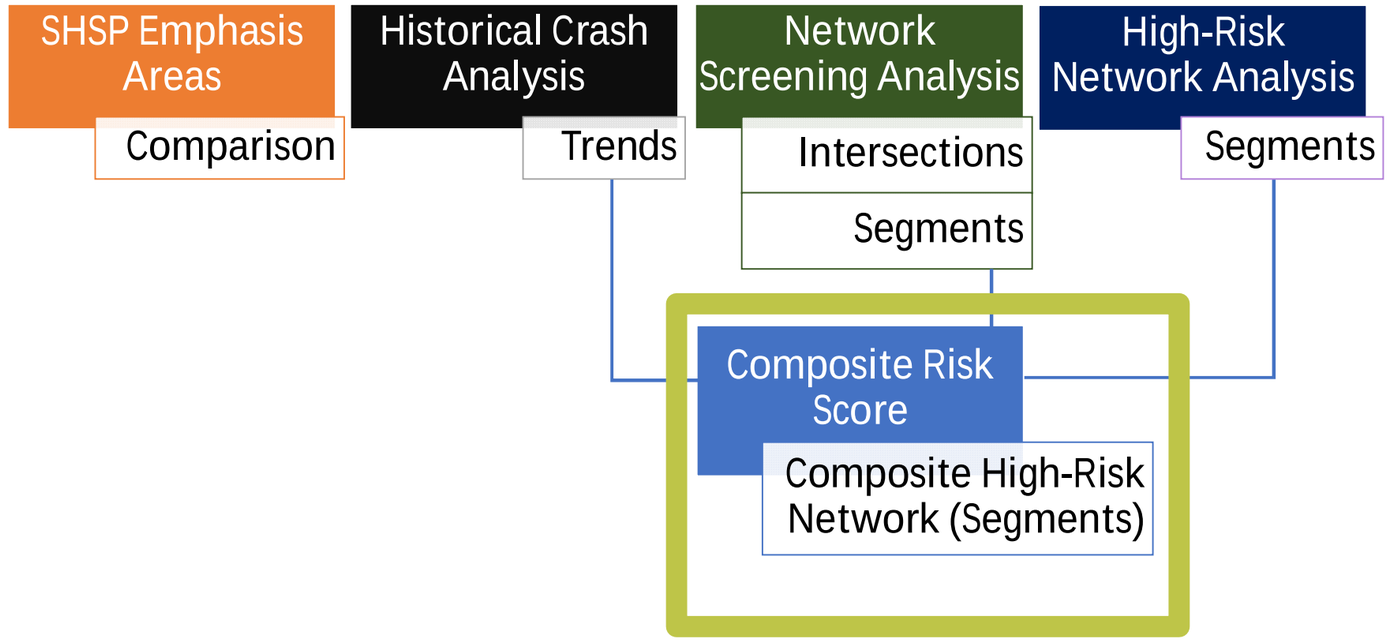
Composite High-Risk Roadway Network

Each of the completed safety analysis methodologies identified segments or intersections that are **candidates for safety improvements** to reduce fatalities and serious injury crashes.

To provide focused information for jurisdictional decisions regarding **prioritization of safety improvements**, an analysis was performed to identify overlapping segments from each of the analysis methodologies. A **composite score**, from zero to five, was assigned to each State Highway or Federal Aid Route segment in the region. State Route or Federal Aid Route segments with a score of "4" or higher are included in the Composite High-Risk Network. These represent the top 10% of State Route and Federal Aid Route segments for the entire WFRC area.

The Composite High Risk Network map on page 8 includes State Route and Federal Aid Route segments with a score of "4" or higher.

A list of locally-owned and maintained Federal Aid Route segments in the **East Salt Lake Valley** GFA Composite High-Risk Network is included on the next page. Streets operated and maintained by local agencies are an emphasis of the SS4A program.



Analysis	Composite High Risk Score Element	Value
Historical Crash Analysis	Segment 5-Year Crash Totals ≥ 3 Crashes	1
Network Screening Analysis	Positive Local CCR Differential	1
High Risk Network Analysis	Crash Profile Risk Score ≥ 20	1
	usRAP Vehicle Star Rating = 1-2 Stars	1
	usRAP Pedestrian Star Rating = 1-2 Stars	0.5
	usRAP Bicycle Star Rating = 1-2 Stars	0.5
Total Possible Composite Risk Score		**5**

Composite Risk Score
Composite High-Risk Network (Segments)

Composite High-Risk Network (State Route/Federal Aid) and Local Street Risk Network

Facility	Limits	Functional Classification	City	Length (miles)	RISK TYPE: *usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	Crash Profile Risk Score	CCR Differential Analysis	Significant Crashes	Local Street Risk Assessment
State Route											
SR-65	Emigratino Canyon Road to I-80	Major Collector	Unincorporated	2.5	X	X	X		X	X	
SR-171	700 East to I-215	Other Principle Arterial	Millcreek	4.0	X	X	X	X	X	X	
SR-266	700 East to I-215	Other Principle Arterial	Holladay	3.5	X	X	X	X	X	X	
SR-190	Wasatch Boulevard to Guardsman Pass	Minor Arterial	Brighton, Unincorporated	15.0	X	X	X	X	X	X	
Little Cotton Wood (SR-210)	Russel Park Road to Snowbird Center D	Other Principle Arterial	Cottonwood Heights, Uninc	8.0	X	X	X	X		X	
SR-209	Main Street to Wasatch Boulevard	Other Principle Arterial	Sandy	7.0	X	X	X	X	X	X	
700 East (SR-71)	7800 South to 11400 South	Other Principle Arterial	Sandy	4.5	X	X	X	X		X	
State Street (US-89)	Princeton Drive to 11400 South	Other Principle Arterial	Sandy	4.0	X	X	X	X		X	
Federal Aid Routes											
Highland Dr	Hudson Ave to Van Winkle Expy	Minor Arterial	Millcreek, Holladay	4.8	X	X	X	X		X	
1300 E	3205 S to 3340 S	Minor Arterial	Millcreek, Holladay	0.2	X	X	X		X	X	
2300 E	3395 S to Phylden Dr	Minor Arterial	Millcreek, Holladay	2.0	X	X		X	X	X	
3900 S	700 E to Woodline Dr	Minor Arterial	Millcreek	1.5	X	X	X	X		X	
Lincoln Ln	Lynne Ln to Camille St	Minor Collector	Holladay	0.7	X	X	X	X		X	
1300 E	Pondoray Cir	Minor Arterial	Millcreek	0.1	X	X	X		X	X	
Holladay Blvd	Murray Holladay Rd to Le Jardin Pl	Minor Arterial	Holladay	1.5	X	X	X	X		X	
Murray Holladay Rd	Highland Cir to Highland Dr	Minor Arterial	Millcreek	0.1	X	X		X	X	X	

State Route and Federal Aid segments in the **East Salt Lake Valley GFA** Composite High-Risk Network are listed at left. Each of these segments received a composite risk score of "4" or higher. These segments provide a focus for local jurisdictions or for coordination with UDOT. Each of these segments are shown on the map on page 8.

Composite Risk Score

Composite High-Risk Network (Segments)

Composite High-Risk Network (State Route/Federal Aid) and Local Street Risk Network, Cont'd

Facility	Limits	Functional Classification	City	Length (miles)	RISK TYPE: *usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	Crash Profile Risk Score	CCR Differential Analysis	Significant Crashes	Local Street Risk Assessment
Federal Aid Routes											
Fort Union Blvd	Union Park Ave to Promenade Dr	Minor Arterial	Cottonwood Heights	2.5	X	X	X	X		X	
Fort Union Blvd	Racquet Club Dr to Wasatch Blvd	Minor Arterial	Cottonwood Heights	0.1	X	X	X	X	X	X	
Highland Dr	700 S to 7200 S	Other Principal Arterial	Cottonwoods Heights	0.3	X	X	X		X	X	
Bengal Blvd	Butler Hills Dr to 2300 E	Minor Arterial	Cottonwoods Heights	0.1	X	X	X		X	X	
Sego Lily Dr	Kills Ln to Kristin Dr	Minor Arterial	Cottonwoods Heights	0.1	X	X	X		X	X	
Sandy Pkwy	9120 S to Universal Cir	Minor Arterial	Sandy	0.1	X	X		X	X	X	
10600 S	I-15 to 2000 E	Minor Arterial	Sandy	3.5	X	X	X	X		X	
11000 S	Heather Ridge Dr to Sady Ln	Major Collector	Sandy	0.1	X	X	X		X	X	
11400 S	700 E to Sandy Creek Dr	Minor Arterial	Sandy	0.2	X	X	X		X	X	
Local Streets											Local Street Risk Assessment
900 East	3100 South to 3500 South	Major Collector	Millcreek	0.7							X
Sandy Parkway	SR-209 to 700 West	Major Collector	Sandy	0.9							X
Alta Canyon Drive	Highland Drive to Willow Creek Drive	Local	Sandy	1.0							X
Riverside Drive	SR-209 to 9600 South	Local	Sandy	0.9							X
900 East	3700 South to 4000 South	Major Collector	Millcreek	0.6							X
Monroe Street	8755 South to 9000 South	Local	Sandy	0.3							X
Jupiter Drive	Wasatch Boulevard to 4100 South	Minor Collector	Millcreek	0.4							X
300 East	9800 South to 8400 South	Minor Collector	Sandy	1.8							X
1100 East	3200 South to SR-266	Minor Collector	Millcreek	1.8							X
9400 South	Riverside Drive to I-15	Local	Sandy	0.8							X

The Local Street Risk Assessment considered factors such as locations of crashes, proximity to schools, and hard-braking.

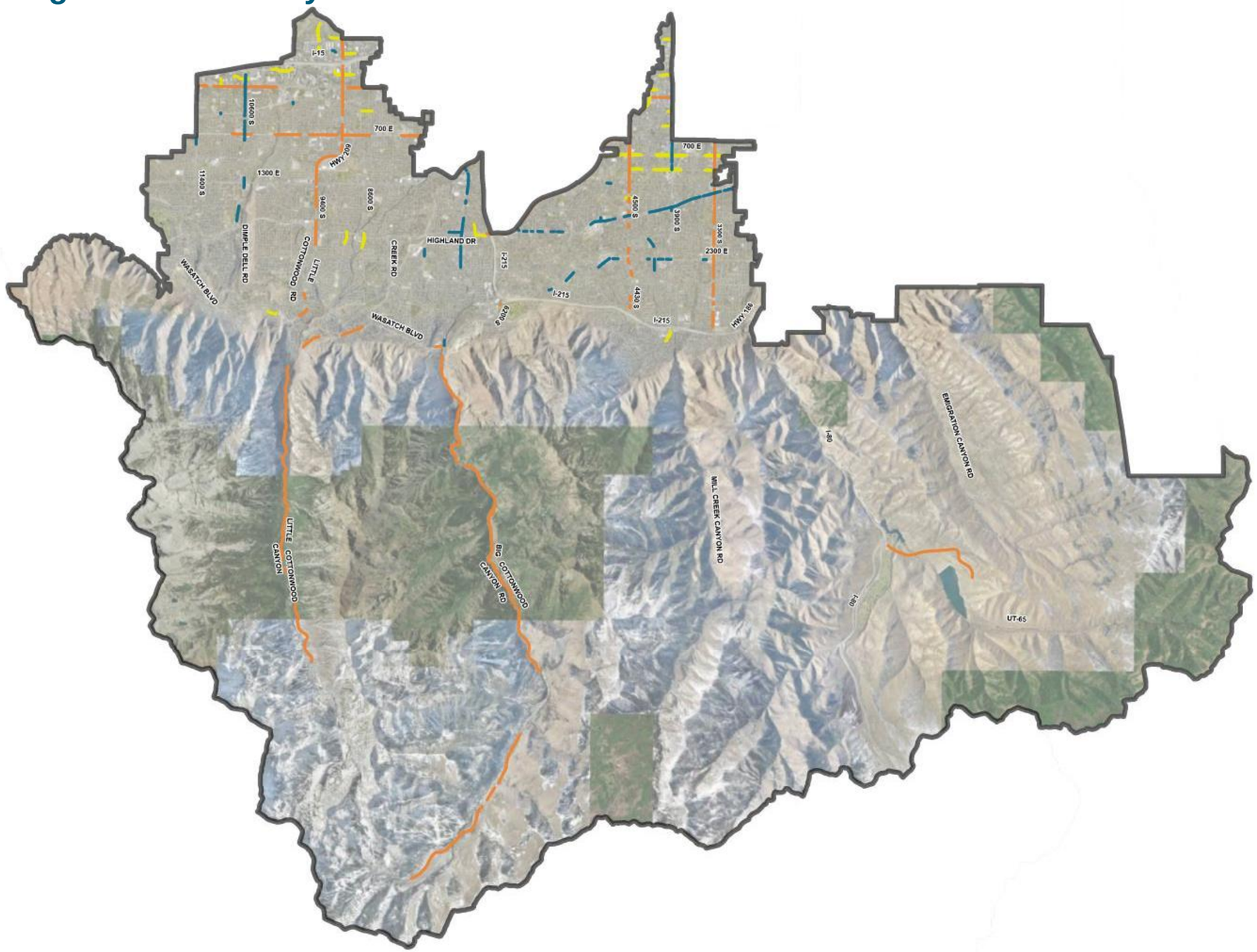
Federal Aid segments in the **East Salt Lake Valley GFA** Composite High-Risk Network are listed at left. Each of these segments received a composite risk score of "4" or higher. These segments provide a focus for local jurisdictions or for coordination with UDOT. Each of these segments are shown on the map on page 8.

Local Streets are also listed at left. These segments were identified through a separate analysis that considered factors such as crash location, proximity to schools, and hard braking.

Composite Risk Score

Composite High-Risk Network (Segments)

Composite High-Risk Roadway Network



Miles
0 1 2 3 5

N

Legend

GFA Boundary

Composite High-Risk Network

- State Routes
- Federal Aid Routes
- Local Streets

East Salt Lake Valley
Wasatch Front Regional Council Area

Composite Risk Score

Composite High-Risk Network (Segments)

Network Screening - Intersections

Network Screening is one of the inputs to the Composite High Risk Roadway Network. Network screening is based on Critical Crash Rate Differential analysis as documented in the Highway Safety Manual. This analysis identified intersections where historical crash rates exceed those which can be expected for similar facilities**.**

A list of the top 10 intersections on State Routes, Federal Aid Routes, and Local (Non-Federal Aid) Streets in the **East Salt Lake Valley** GFA are listed at right, along with their associated number of crashes.

For each intersection, the Critical Crash Rate (CCR) Differential and Equivalent Property Damage Only (EDPO) value is listed. These intersections represent those with the highest potential for safety improvements and can be considered as project candidate locations.

Signalized and unsignalized intersections in the **East Salt Lake Valley** GFA with a positive Critical Crash Rate Differential (rate exceeds expected rate) are mapped on page 10.

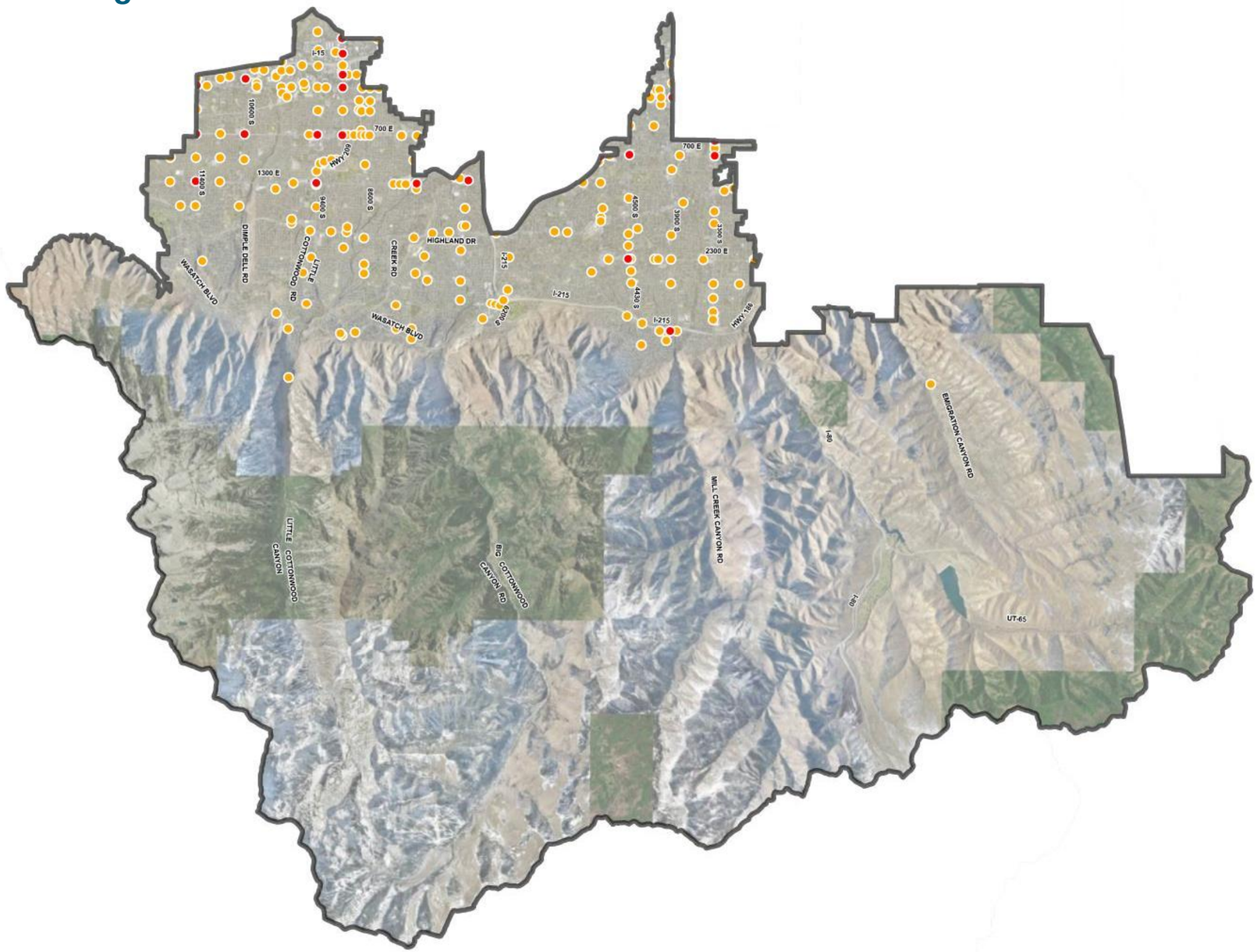
Intersection	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	Angle	Front to Rear	Head On	Parked Vehicle	Single Vehicle	Rear to Rear	Rear to Side	Sideswipe (Same Direction)	Sideswipe (opposite Direction)	Other/Unknown	Pedestrian	Bicycle	Motorcycle
Signalized Intersections																						
State St & 3900 S	Millcreek	182	0.8	1524	0	3	32	37	110	106	41	10	6	3	0	0	1	15	0	2	0	5
Monroe St & 9000 S	Sandy	141	0.6	957	0	1	15	39	86	60	61	1	0	1	0	0	2	16	0	0	0	2
700 E & 3300 S	Millcreek	149	0.5	1665	1	1	13	25	109	66	54	3	9	0	0	0	1	13	3	4	1	2
Wasatch Blvd & 3900 S	Millcreek	48	0.5	423	0	2	6	6	34	23	16	1	3	0	0	0	1	4	0	0	1	0
State St & 9000 S	Sandy	160	0.3	1182	0	3	15	41	101	33	87	0	14	2	0	0	0	23	1	3	2	2
1300 E & 11400 S	Sandy	68	0.3	653	0	2	10	18	38	39	21	3	2	1	0	0	1	1	0	0	0	1
900 E & 4500 S	Millcreek	113	0.3	969	0	4	15	16	78	53	42	4	7	0	0	1	1	5	0	3	1	5
Sandy Pkwy & 9000 S	Sandy	118	0.2	851	0	1	15	31	71	37	62	2	1	0	0	0	0	16	0	1	1	2
900 E & Vanwinkle Expy	Millcreek	98	0.2	539	0	0	11	20	67	26	52	6	2	0	0	0	1	9	2	0	0	0
1300 E & 9400 S	Sandy	103	0.1	604	0	1	7	25	70	15	71	2	7	0	0	0	0	8	0	2	1	0
Unsignalized Intersections																						
Monroe St & Freedom Ave	Sandy	9	4.3	41	0	0	1	1	7	4	2	0	1	0	0	0	0	2	0	1	0	0
Quarry Bend Dr & 9375 S	Sandy	4	3.6	14	0	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0
Quarry Bend Dr & 9070 S	Sandy	4	3.6	35	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0
Centennial Pkwy & 10070 S	Sandy	6	2.1	69	0	0	2	2	2	6	0	0	0	0	0	0	0	0	0	0	0	0
Alpen Cir & Escalade Ave	Cottonwood	3	1.9	3	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0
Auto Mall Dr & 11000 S	Sandy	5	1.5	15	0	0	0	1	4	4	1	0	0	0	0	0	0	0	0	0	0	0
150 E & Pioneer Ave	Sandy	7	1.5	39	0	0	1	1	5	7	0	0	0	0	0	0	0	0	0	0	0	0
Greenfield Way & Clover Dale Rd	Cottonwood	3	1.3	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
Quarry Bend Dr & 9070 S	Sandy	7	1.3	28	0	0	0	2	5	7	0	0	0	0	0	0	0	0	0	0	0	0
200 E & Hill Ave	Millcreek	3	1.2	3	0	0	0	0	3	1	1	0	1	0	0	0	0	0	0	0	0	0

1. Equivalent Property Damage Only Crashes

= 90 - 100% probability that crash type is over-represented
= 80 - 90% probability that crash type is over-represented
= 70 - 80% probability that crash type is over-represented

Network Screening Analysis
Intersections
Segments

Network Screening - Intersections



Miles
0 1 2 3 5

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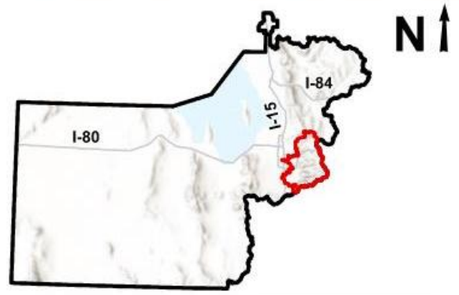
Legend

GFA Boundary

Critical Crash Rate Differential (> 0.0)

- Signalized
- Unsignalized

East Salt Lake Valley
Wasatch Front Regional Council Area



Network Screening Analysis
- Intersections
- Segments

Supporting Information

High-Risk Roadway Segments (Federal Aid Routes)

Facility	Limits	City	RISK TYPE: *usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Federal Aid Routes									
Emigration Canyon Road	West GFA Extents to Pioneer Ridge Road	Emigration Canyon	X						
Emigration Canyon Road	Margarethe Lane to SR-65	Emigration Canyon	X						
Mill Creek Canyon Road	NF-020 to Upper Big Water TH	Emigration Canyon	X						
Richmond Street/1300 East	Lavon Drive to North GFA Extents	Millcreek	X	X	X				
Highland Drive	Van Winkle Expressway to North GFA Extent	Millcreek	X	X	X				
Imperial Street	3300 South to North GFA Extents	South Salt Lake	X	X	X				
2000 East	3300 South to North GFA Extents	Millcreek	X	X	X				
2300 East	Claybourne Avenue to 2700 South	Millcreek	X	X	X				
2700 East	3600 South to 3210 South	Millcreek			X				
2300 East	3380 South to North GFA Extents	Millcreek	X						
2300 East	Delia Drive to 3380 South	Millcreek	X	X	X				
2300 East	Sky Pines Court to Delia Drive	Millcreek	X	X					
2300 East	Murray Holladay Road to Sky Pines Court	Holladay	X	X	X				
Holladay Blvd	County Road to Murray Holladay Road	Holladay	X	X	X				
Holladay Blvd	6200 South to County Road	Holladay	X	X					
Siggard Drive	Highland Drive to 2000 East	Holladay		X	X				
Wasatch Blvd	Bernada Drive to 3300 South	Holladay	X						

A list of Federal Aid segments in the **East Salt Lake Valley GFA** identified from each of the safety analysis methods is listed in the table at left. An “x” is placed to identify the analysis that flagged the segment:

- **usRAP** Star Ratings (Vehicle, Bicycle, Pedestrian)
- **Crash Profile** Risk Score
- **Network Screening,** applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period)

The maps on page 19 through 23 depict each of these segments identified by the respective analysis.

Composite Risk Score

High-Risk Network

High-Risk Roadway Segments (Federal Aid Routes), Cont'd

			RISK TYPE						
Facility	Limits	City	*usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Federal Aid Routes									
Wasatch Blvd	Juniper Way to Bernada Drive	Holladay	X	X					
Wasatch Blvd	6200 South to Juniper Way	Holladay	X						
1300 East	Van Winkle Expressway to College Street	Millcreek	X	X	X				
1300 East	College Street to Park Crest Circle	Millcreek	X	X					
3900 South	West GFA Extents to 1100 East	Millcreek	X	X	X				
3900 South	1100 East to Highland Drive	Millcreek	X	X					
3900 South	Highland Drive to I-215	Holladay	X	X	X				
900 East	Van Winkle Expressway to 3580 South	Millcreek	X						
Lincoln Lane	Highland Drive to 2700 East	Holladay	X	X	X				
2700 East	4500 South to Delsa Drive	Holladay			X				
Murray Holiday Road	Highland Drive to 2300 East	Holladay	X	X					
6200 South	Highland Drive to Field Rose Drive	Holladay	X						
6200 South	Field Rose Drive to Holladay Blvd	Holladay	X	X					
6200 South	Holladay Blvd to I-215	Holladay	X						
Union Park Avenue	1300 East to I-15	Midvale	X						
Union Park Avenue	Forbusch Lane to 1300 East	Midvale	X	X					
1300 East	8125 South to Forbusch Lane	Sandy	X						

A list of Federal Aid segments in the **East Salt Lake Valley GFA** identified from each of the safety analysis methods is listed in the table at left. An "x" is placed to identify the analysis that flagged the segment:

- **usRAP** Star Ratings (Vehicle, Bicycle, Pedestrian)
- **Crash Profile** Risk Score
- **Network Screening,** applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period)

The maps on page 19 through 23 depict each of these segments identified by the respective analysis.

Composite Risk Score

High-Risk Network

High-Risk Roadway Segments (Federal Aid Routes), Cont'd

Facility	Limits	City	RISK TYPE: *usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Federal Aid Routes									
1300 East	8255 South to 8125 South	Sandy	X	X					
Forbush Lane/7755 South	West GFA Extents to Canterwood Lane	Midvale	X	X					
Fort Union Blvd/7000 South	West GFA Extents to Wasatch Blvd	Midvale, Cottonwood H	X	X	X				
1300 East	Union Park Avenue to I-215	Midvale	X						
1700 East	Parkridge Drive to 7000 South	Cottonwood Heights			X				
Parkridge Drive	1700 East to Highland Drive	Cottonwood Heights			X				
Bengal Blvd	Highland Drive to Wasatch Blvd	Cottonwood Heights	X	X	X				
Highland Drive	Bengal Blvd to I-215	Cottonwood Heights	X	X	X				
Highland Drive	Johnstone Drive to Bengal Blvd	Cottonwood Heights	X	X					
Highland Drive	9400 South to Johnstone Drive	Cottonwood Heights	X						
Highland Drive	9800 South to 9400 South	Sandy	X	X					
2300 East	Bengal Blvd to 6200 South	Cottonwood Heights	X	X	X				
2700 East	Bengal Blvd to 7000 South	Cottonwood Heights			X				
3500 East	Wasatch Blvd to Bengal Blvd	Sandy	X	X	X				
Creek Road	Telford Way to 3500 East	Cottonwood Heights	X	X	X				
Danish Road	Wasatch Blvd to Bengal Blvd	Cottonwood Heights	X		X				
Wasatch Blvd	Little Cottonwood Road (South) to Little Cot	Cottonwood Heights	X	X					

A list of Federal Aid segments in the **East Salt Lake Valley GFA** identified from each of the safety analysis methods is listed in the table at left. An "x" is placed to identify the analysis that flagged the segment:

- **usRAP** Star Ratings (Vehicle, Bicycle, Pedestrian)
- **Crash Profile** Risk Score
- **Network Screening,** applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period)

The maps on page 19 through 23 depict each of these segments identified by the respective analysis.

Composite Risk Score

High-Risk Network

High-Risk Roadway Segments (Federal Aid Routes), Cont'd

Facility	Limits	City	RISK TYPE: *usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Federal Aid Routes									
8600 South	State Street to 550 East	Sandy			X				
500 West	South GFA Extents to 9120 South	Sandy	X	X					
225 West/Monroe Street	10000 South to 9000 South	Sandy	X	X					
240 West	Mall Ring Road to 10000 South	Sandy	X						
9400 South	Center Street to 9400 South	Sandy	X						
10000 South	West GFA Extents to State Street	Sandy	X	X	X				
Sego Lily Drive	State Street to Tonya Drive	Sandy	X	X	X				
Sego Lily Drive	Tonya Drive to Poppy Lane	Sandy	X	X					
Sego Lily Drive	Poppy Lane to Hoast Lane	Sandy	X						
Sego Lily Drive	Firelight Way to 2165 East	Sandy	X						
Sego Lily Drive	2165 East to Vilas Drive	Sandy	X	X					
Larkspur Drive	700 East to Violet Drive	Sandy		X	X				
10600 South	I-15 to 1300 East	Sandy	X	X	X				
10720 South	1300 East to 2000 East	Sandy	X	X	X				
11000 South	Auto Mall Drive to Vista Way	Sandy	X	X	X				
11000 South	Vista Way to Hawkwood Drive	Sandy	X	X					
11000 South	Hawkwood Drive to 1300 East	Sandy	X		X				

A list of Federal Aid segments in the **East Salt Lake Valley GFA** identified from each of the safety analysis methods is listed in the table at left. An "x" is placed to identify the analysis that flagged the segment:

- **usRAP** Star Ratings (Vehicle, Bicycle, Pedestrian)
- **Crash Profile** Risk Score
- **Network Screening,** applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period)

The maps on page 19 through 23 depict each of these segments identified by the respective analysis.

Composite Risk Score

High-Risk Network

High-Risk Roadway Segments (Federal Aid Routes), Cont'd

Facility	Limits	City	RISK TYPE: *usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Federal Aid Routes									
11400 South	I-15 to 11340 South	Sandy	X	X	X				
11340 South/11270 South	11400 South to High Mesa Drive	Sandy	X		X				
High Mesa Drive	11270 South to 10720 South	Sandy			X				
Wasatch Blvd	1700 East to Pepperwood Drive	Sandy	X	X					
Wasatch Blvd	Pepperwood Drive to Little Bell Canyon Roa	Sandy	X						
1700 East	South GFA Extents 10720 South	Sandy	X						
Hidden Valley Drive	1000 East to 1300 East	Sandy			X				
1300 East	South GFA Extents to Sego Lily Drive	Sandy	X	X					
Wasatch Boulevard	Heughs Canyon Way to 4431 South	Sandy				X			
9400 South	255 West to SR-209	Sandy				X			
Sandy Parkway / 500 West	South GFA Extents to North GFA Extents	Sandy				X			
7000 South / Fort Union Boulev	Union Park Avenue to Wasatch Boulevard	Cottonwood Heights				X			
7800 South	415 East to Creek Road	Sandy				X			
Murray Holliday Road	Highland Drive to Holladay Boulevard	Holladay				X			
Holladay Boulevard	6200 South to 4500 South	Holladay				X			
3900 South	500 West to Highland Drive	Millcreek				X			
Wasatch Boulevard	Little Cottonwood Road to Danish Road	Cottonwood Heights				X			

A list of Federal Aid segments in the **East Salt Lake Valley GFA** identified from each of the safety analysis methods is listed in the table at left. An "x" is placed to identify the analysis that flagged the segment:

- **usRAP** Star Ratings (Vehicle, Bicycle, Pedestrian)
- **Crash Profile** Risk Score
- **Network Screening,** applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period)

The maps on page 19 through 23 depict each of these segments identified by the respective analysis.

Composite Risk Score

High-Risk Network

High-Risk Roadway Segments (Federal Aid Routes), Cont'd

			RISK TYPE						
Facility	Limits	City	*usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Federal Aid Routes									
10600 South	465 East to Crocus Street	Sandy				X			
Highland Drive	South GFA Extents to North GFA Extents	Holladay				X			
Emigration Canyon Road	West GFA Extents to SR-65	Emigration Canyon				X			
Mill Creek Canyon Road	Scout Hollow River to Soldier Fork River	Millcreek				X			
Imperial Street	3300 South to North GFA Extents	Millcreek				X			
Lincoln Lane	Highland Drive to 2700 East	Millcreek				X			
Millcreek Canyon Rd	NF-018 to NF-020	Unincorporated					X	X	
Millcreek Canyon Rd	Fir Crest to Big Water Gulch	Unincorporated					X	X	
Jupiter Dr	Pluto Way to Juno Cir	Millcreek					X	X	
8000 S	615 E to 700 E	Sandy					X	X	
Millcreek Canyon Rd	Nf-020 to Maple Cove	Unincorporated					X	X	
Auto Mall Dr	State St to 11000 S	Sandy					X	X	
Auto Mall Dr	Holiday Park Dr to 10600 S	Sandy					X	X	
2700 E	Hillside Ln to Evergreen Ave	Millcreek					X	X	
1100 E	3900 S to 3745 S	Millcreek					X	X	
Oakview Dr	Diana Way to Fortuna Way	Millcreek					X	X	

A list of Federal Aid segments in the **East Salt Lake Valley GFA** identified from each of the safety analysis methods is listed in the table at left. An "x" is placed to identify the analysis that flagged the segment:

- **usRAP** Star Ratings (Vehicle, Bicycle, Pedestrian)
- **Crash Profile** Risk Score
- **Network Screening,** applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period)

The maps on page 19 through 23 depict each of these segments identified by the respective analysis.

Composite Risk Score

High-Risk Network

Network Screening – Segments (Local Streets)

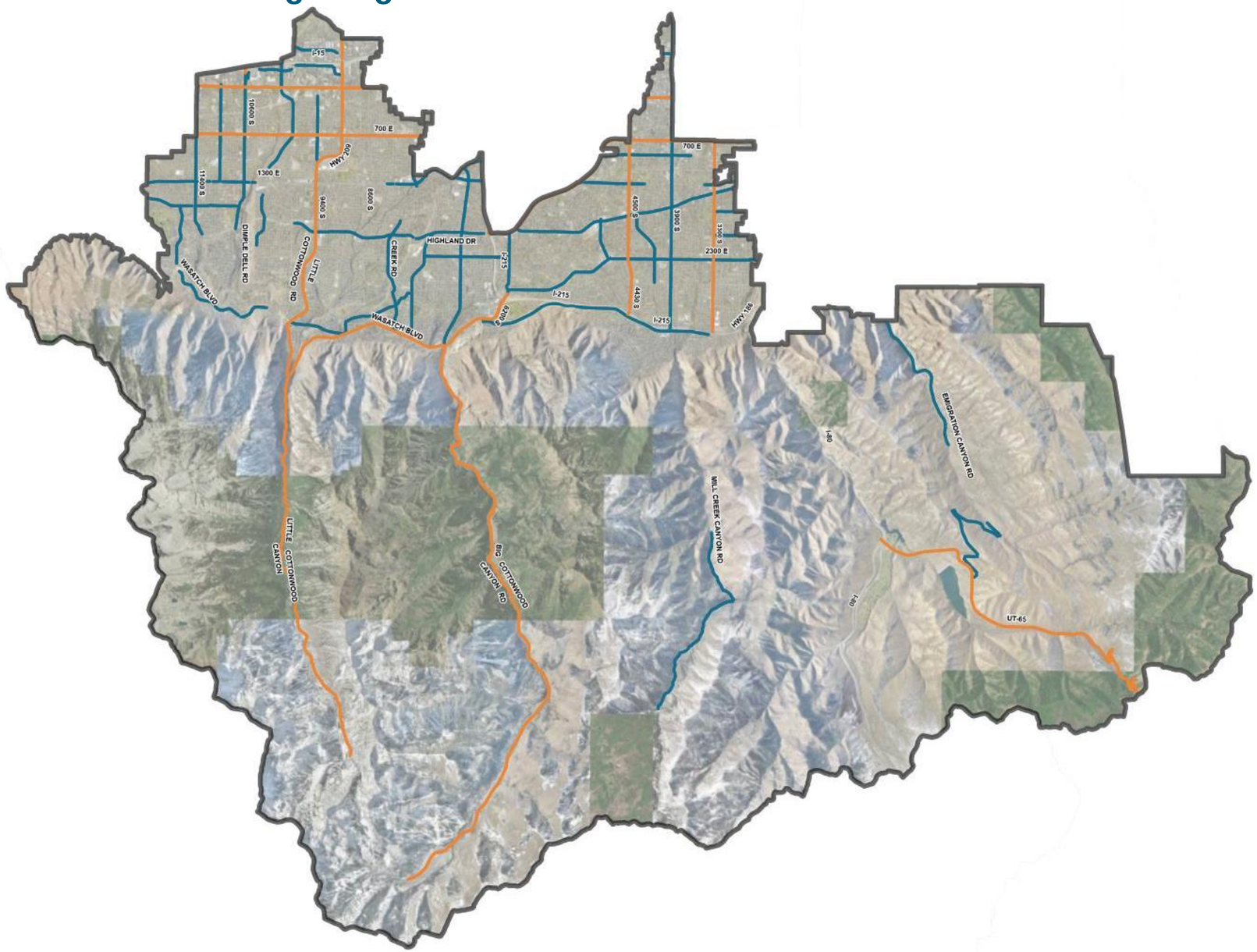
			RISK TYPE						
Facility	Limits	City	*usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Local Streets									
Oak Grove Dr	Rockhampton Dr to High Mountain Dr	Sandy					X	X	
Sunnyvale Apartments	3940 S	Millcreek					X	X	
775 E	3900 S to 3805 S	Millcreek					X	X	
Civic Center Dr	240 W to Evening Star Way	Sandy					X	X	
Snake Creek Rd	Brighton Lp to Mary Lake Ln	Brighton					X	X	
Wasatch Resort Rd	Little Cottonwood to Power Plant Rd	Unincorporated					X	X	
4100 S	430 E to 465 E	Millcreek					X	X	
Vista Way	Cresent Vista Ln to 11000 S	Sandy					X	X	
The Falls Apartment Complex	Falls at Hunters Pointe to The Falls Apartm	Sandy					X	X	
Beetdigger Blvd	State St to Sego Lily Dr	Sandy					X	X	

A list of Local Street segments in the **East Salt Lake Valley GFA** identified from Network Screening, applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period), is shown at left.

Composite Risk Score

High-Risk Network

usRAP Pedestrian Star Rating - Segments



Miles
0 1 2 3 5

N

Legend

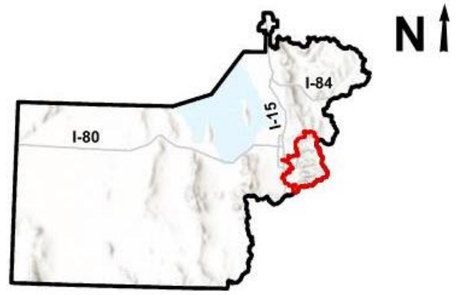
GFA Boundary

Pedestrian Star Rating (1-2)

State Routes

Federal Aid Routes

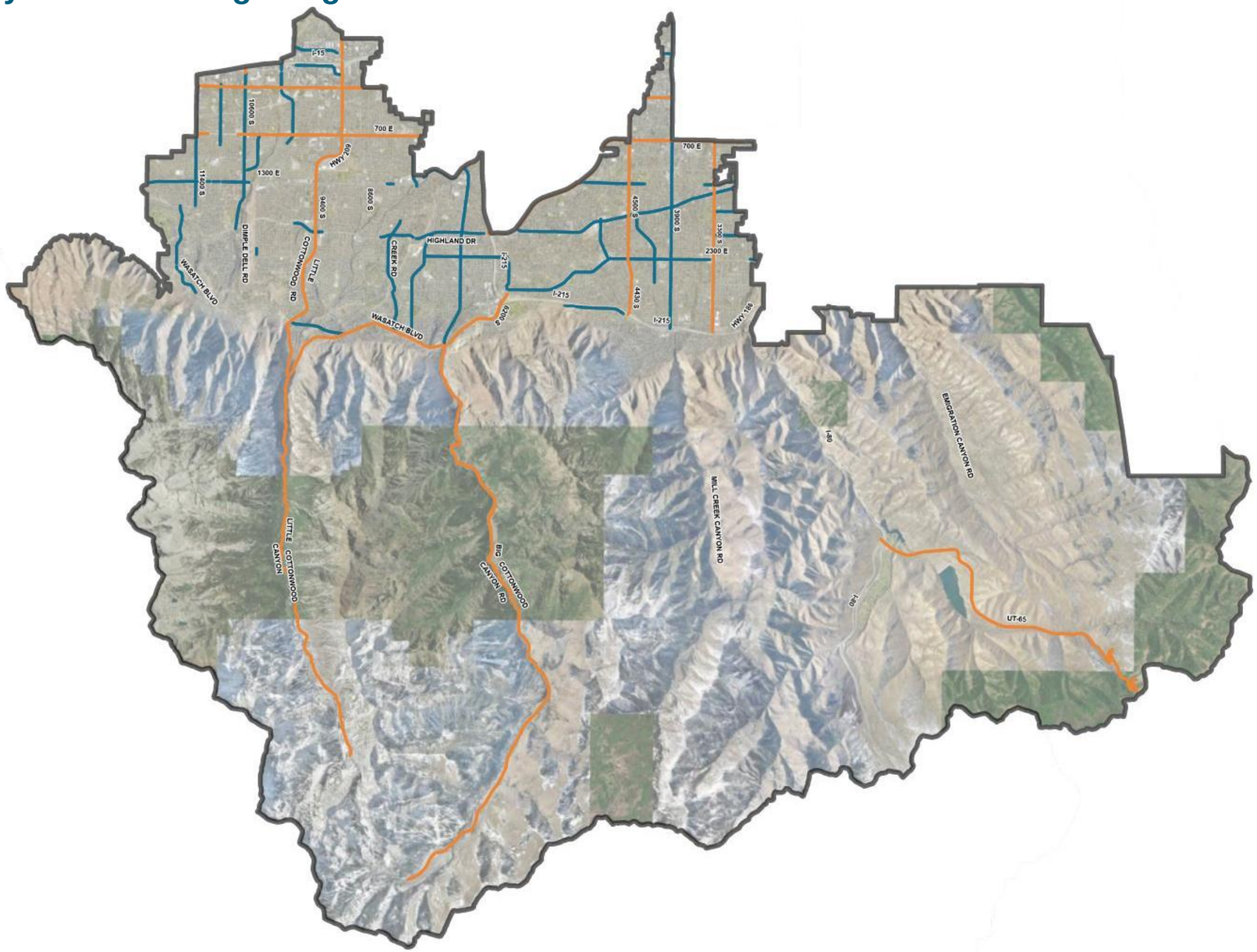
East Salt Lake Valley
Wasatch Front Regional Council Area



High-Risk Network Analysis

State Route and Federal Aid Segments	Local Street Segments

usRAP Bicycle Star Rating - Segments



Miles
0 1 2 3 5

N

Legend

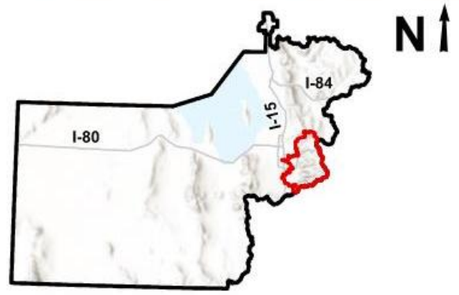
GFA Boundary

Bicycle Star Rating (1-2)

State Routes

Federal Aid Routes

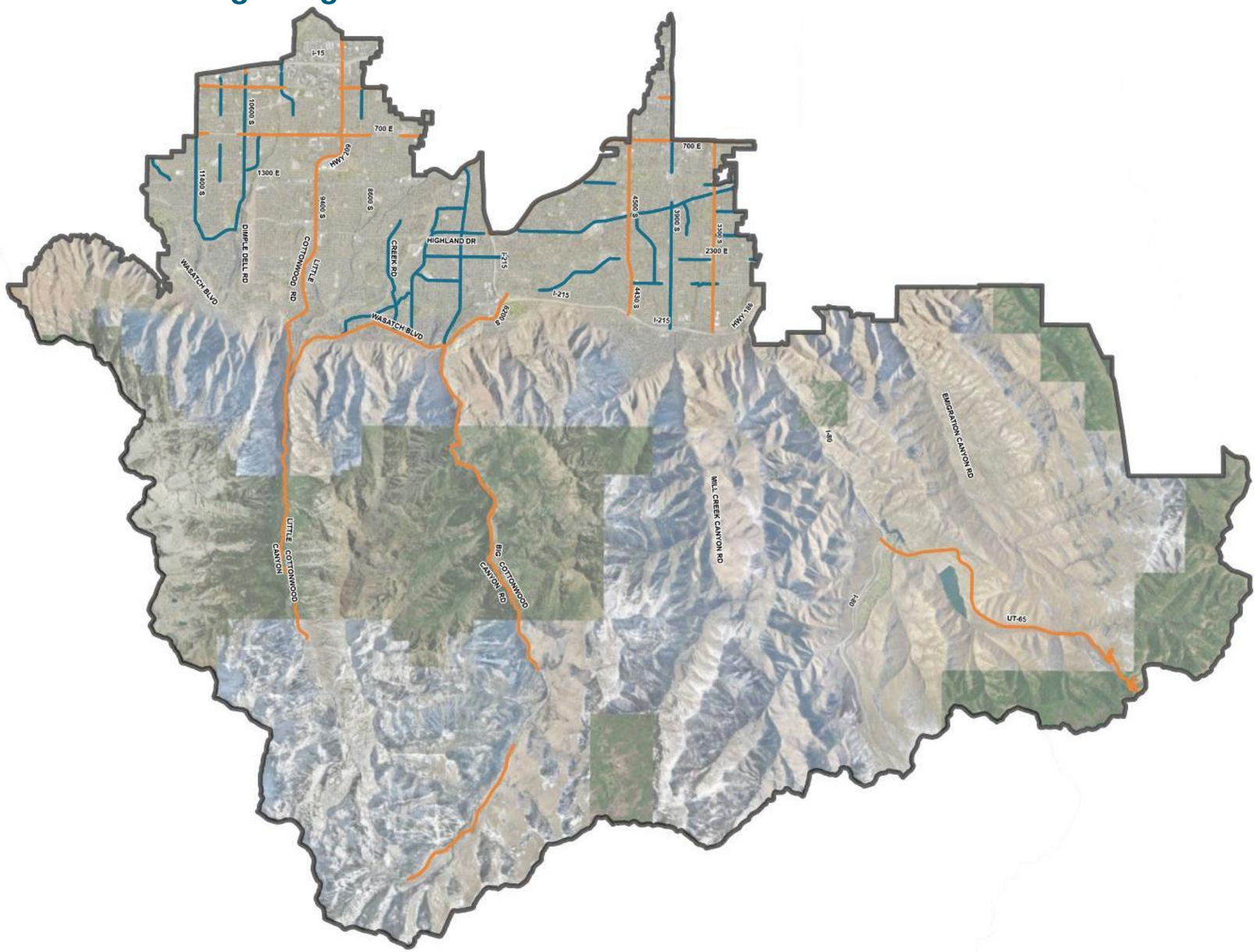
East Salt Lake Valley
Wasatch Front Regional Council Area



High-Risk Network Analysis

State Route and Federal Aid Segments	Local Street Segments

usRAP Vehicle Star Rating - Segments



Miles
0 1 2 3 5

N

Legend

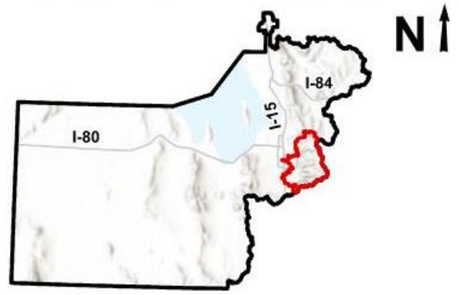
GFA Boundary

Vehicle Star Rating (1-2)

State Routes

Federal Aid Routes

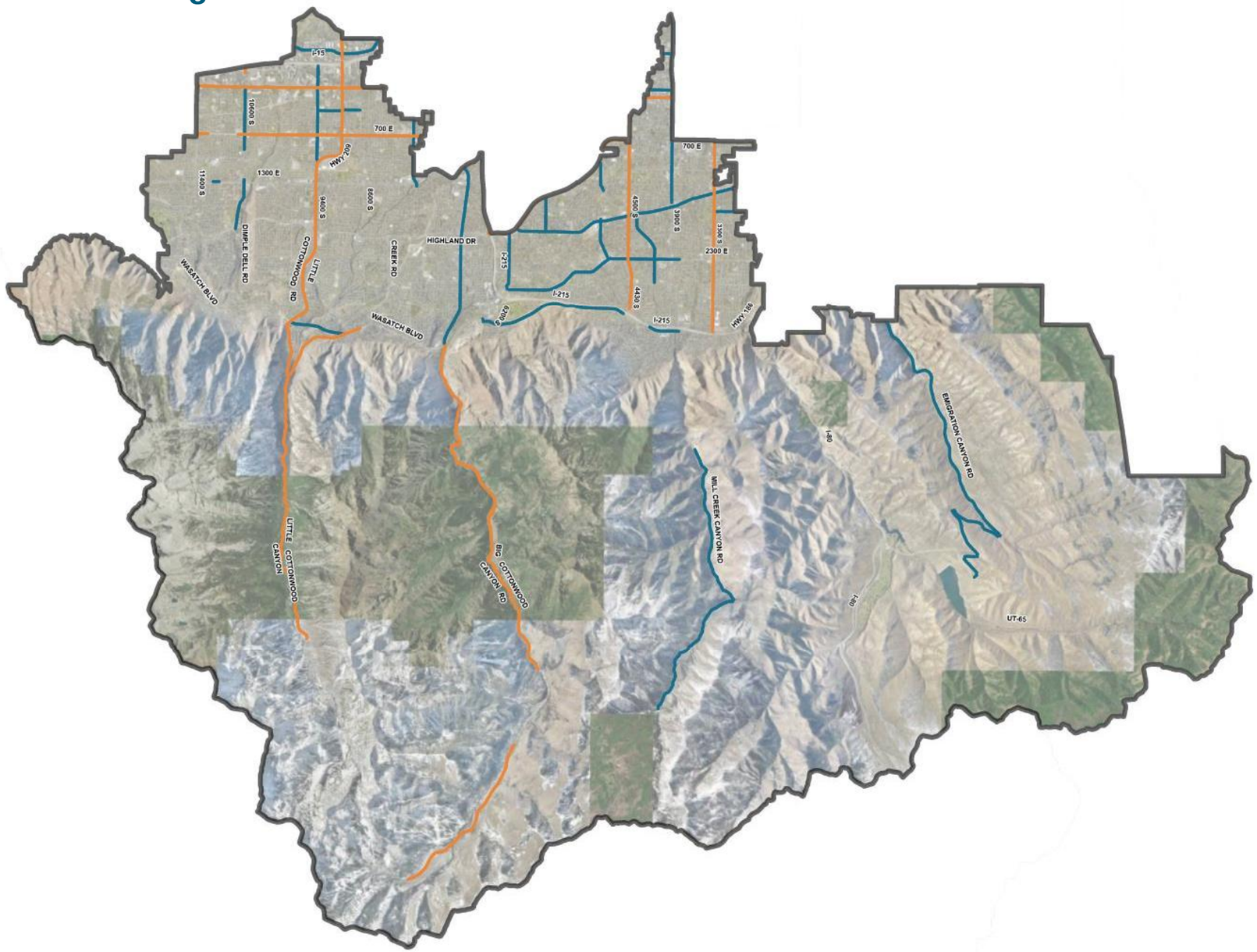
East Salt Lake Valley
Wasatch Front Regional Council Area



High-Risk Network Analysis

State Route and Federal Aid Segments	Local Street Segments

Crash Profile Risk - Segments



Miles
0 1 2 3 5

N

Legend

GFA Boundary

Crash Profile Risk (> 20)

State Routes

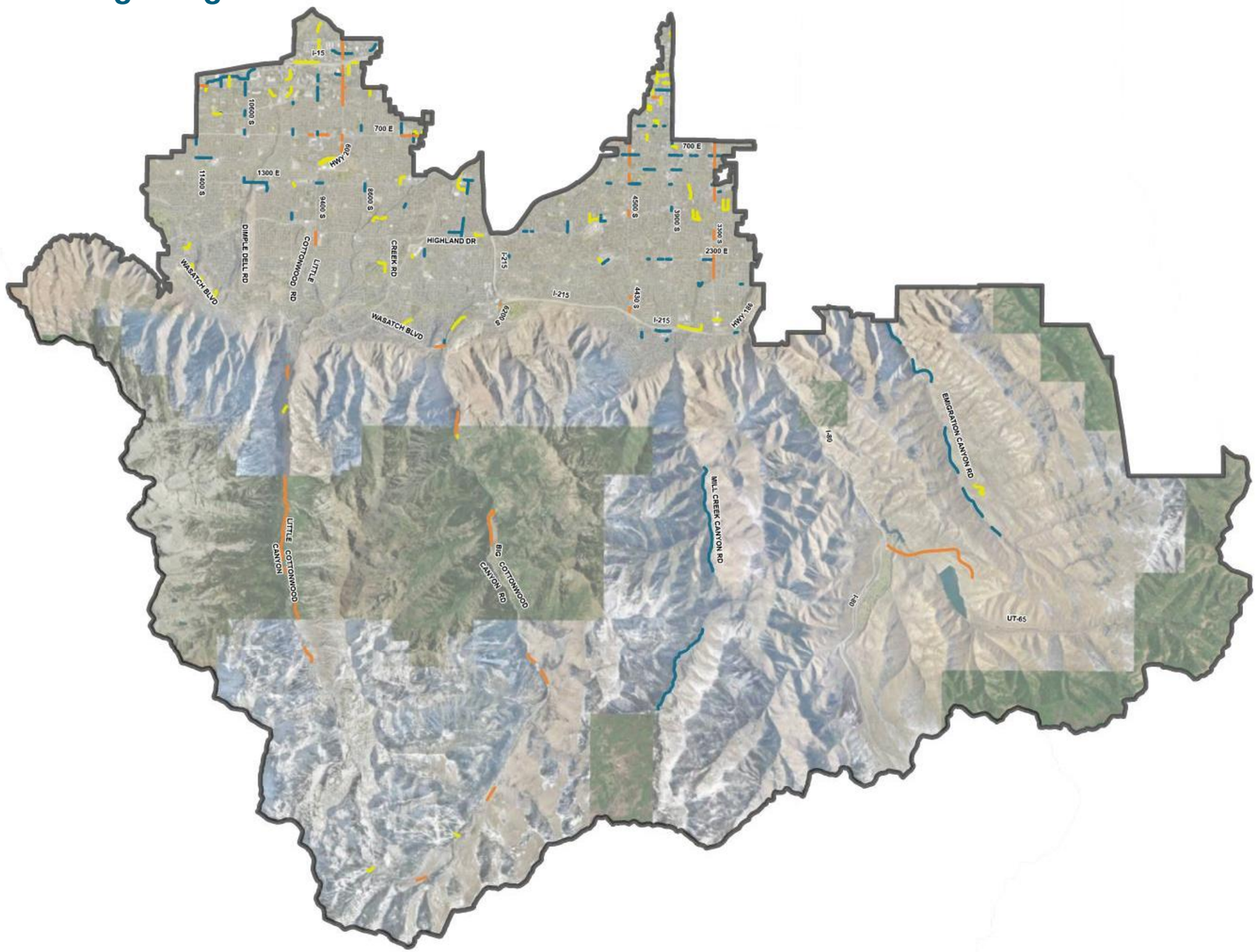
Federal Aid Routes

East Salt Lake Valley
Wasatch Front Regional Council Area

High-Risk Network Analysis

State Route and Federal Aid Segments	Local Street Segments

Network Screening - Segments



Miles
0 1 2 3 5

N

Legend

GFA Boundary

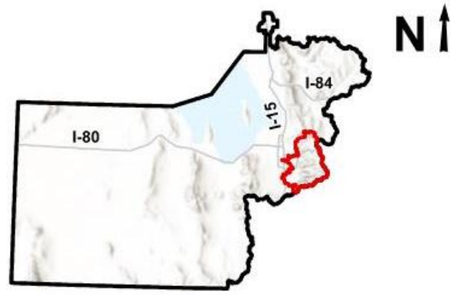
Critical Crash Rate Differential (> 0.0)

State Routes

Federal Aid Routes

Local Streets

East Salt Lake Valley
Wasatch Front Regional Council Area



High-Risk Network Analysis

State Route and Federal Aid Segments	Local Street Segments

EAST SALT LAKE VALLEY TECH MEMO #1
SAFETY ANALYSIS

TECHNICAL MEMORANDUM #1

APPENDIX A9 - EAST SALT LAKE VALLEY GEOGRAPHIC FOCUS AREA ANALYSIS

September 2023

Statutory Notice

23 U.S.C. § 409: US Code - Section 409: Discovery and admission as evidence of certain reports and surveys

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway- highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

File name: Appendix A9 - East Salt Lake Valley GFA - Safety Analysis

Table of Contents

List of Figures

List of Tables

1. Introduction

Appendix A9 summarizes the safety analysis performed for the East Salt Lake Valley Geographic Focus Area (GFA) for the Wasatch Front Area Comprehensive Safety Action Plan (CSAP).

The analysis of available safety related data informs identification of a potential project locations that may be further considered in the development of safety related projects and project types.

1.1. Safety Analysis

The following safety analysis methodologies were completed for the East Salt Lake Valley GFA:

- Strategic Highway Safety Plan (SHSP) Emphasis Area Analysis
- Historical Crash Analysis
- Crash and Network Screening Analysis
- Roadway Characteristic Risk Analysis
  - Crash Profile Risk Assessment
  - usRAP Risk Factors Analysis
  - Local Street Risk Assessment

An overview on the methodologies used to perform these safety analyses are described in Technical Memorandum #1: Safety Analysis Results Summary. **Appendix A9** summarizes the results of the analyses for the East Salt Lake Valley GFA.

1.2. Appendix Organization

This Appendix is organized into the following sections:

- **Section 1** - Introduction
- **Section 2** - East Salt Lake Valley GFA Study Area and Roadway Network.
- **Section 3** - Strategic Highway Safety Plan (SHSP) Emphasis Area Analysis.
- **Section 4** - Historical Crash Analysis
- **Section 5** - Crash and Network Screening Analysis based on Highway Safety Manual (HSM).
- **Section 6** - Roadway Characteristic Risk Analysis
- **Section 7** - Common Risk Characteristics and Composite High-Risk Roadway Network

2. Study Area

The CSAP study area includes each jurisdiction within the WFRC area. To organize the large number of jurisdictions within the WFRC area into manageable analysis areas, jurisdictions are organized into Geographic Focus Areas (GFA). The East Salt Lake Valley GFA (**Figure 2.1**) is located entirely within Salt Lake County and includes the following agencies and jurisdictions:

- Sandy
- White City
- Cottonwood Heights
- Holladay
- Millcreek
- Alta
- Brighton
- Emigration Canyon

The safety analyses presented in this Technical Memorandum are specific to the South Box Elder & North Weber Counties GFA.

Figure 2.2 highlights the roadway network within the East Salt Lake Valley GFA study area. Roadways within the study area are divided into the following three categories:

- State Routes: UDOT-maintained roads
- Federal Aid Routes: Jurisdiction-maintained roads eligible for federal funding
- Local Streets: Local Jurisdiction-maintained roads that are not Federal Aid routes.

NOTE ON CRASH DATA ANALYSIS: All crash data presented in this Technical Memorandum are specific to the East Salt Lake Valley, for the years 2018-2022. Crash data was obtained from the Utah Department of Transportation.

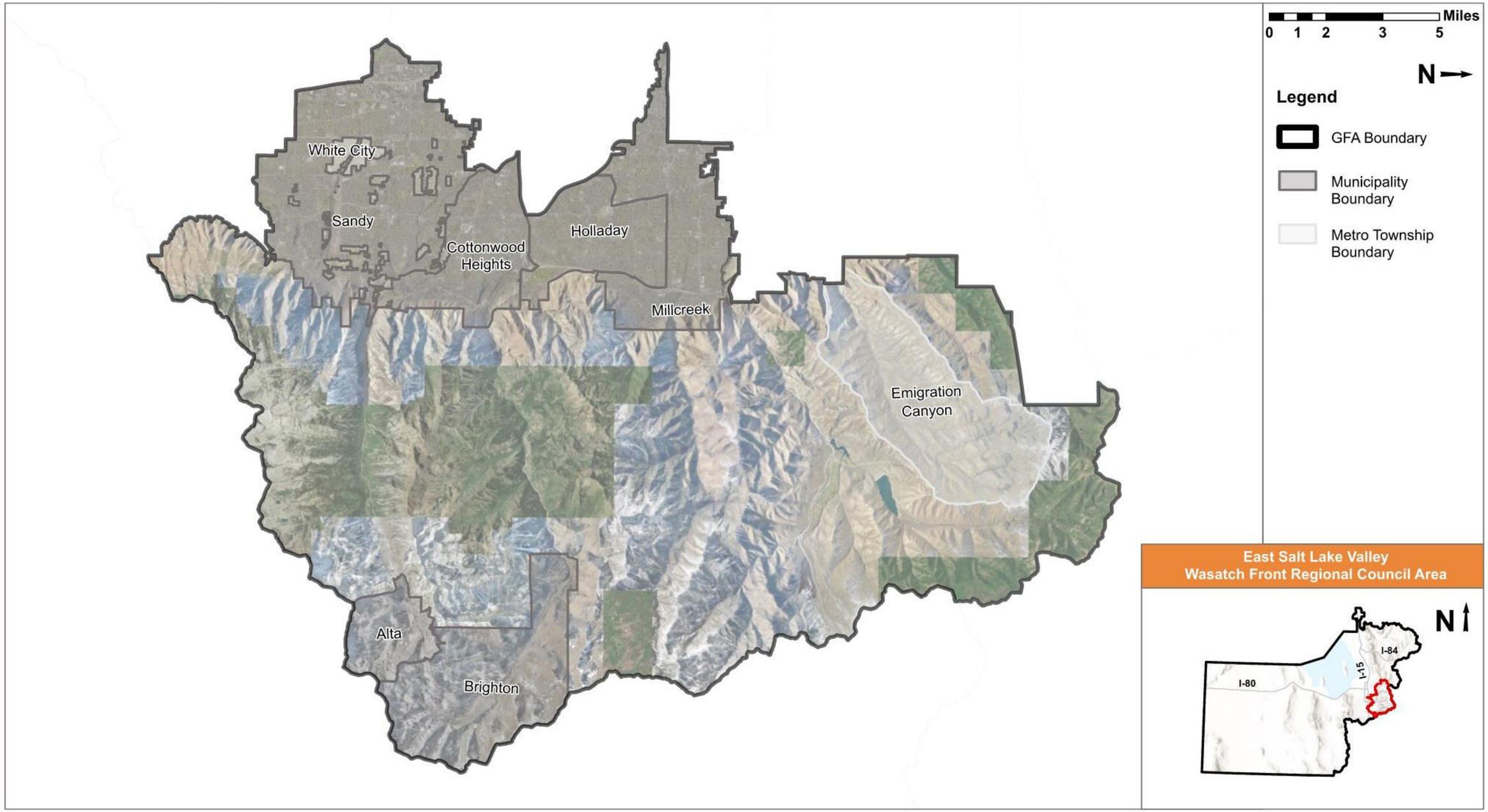


Figure 2.1 – East Salt Lake Valley GFA Study Area

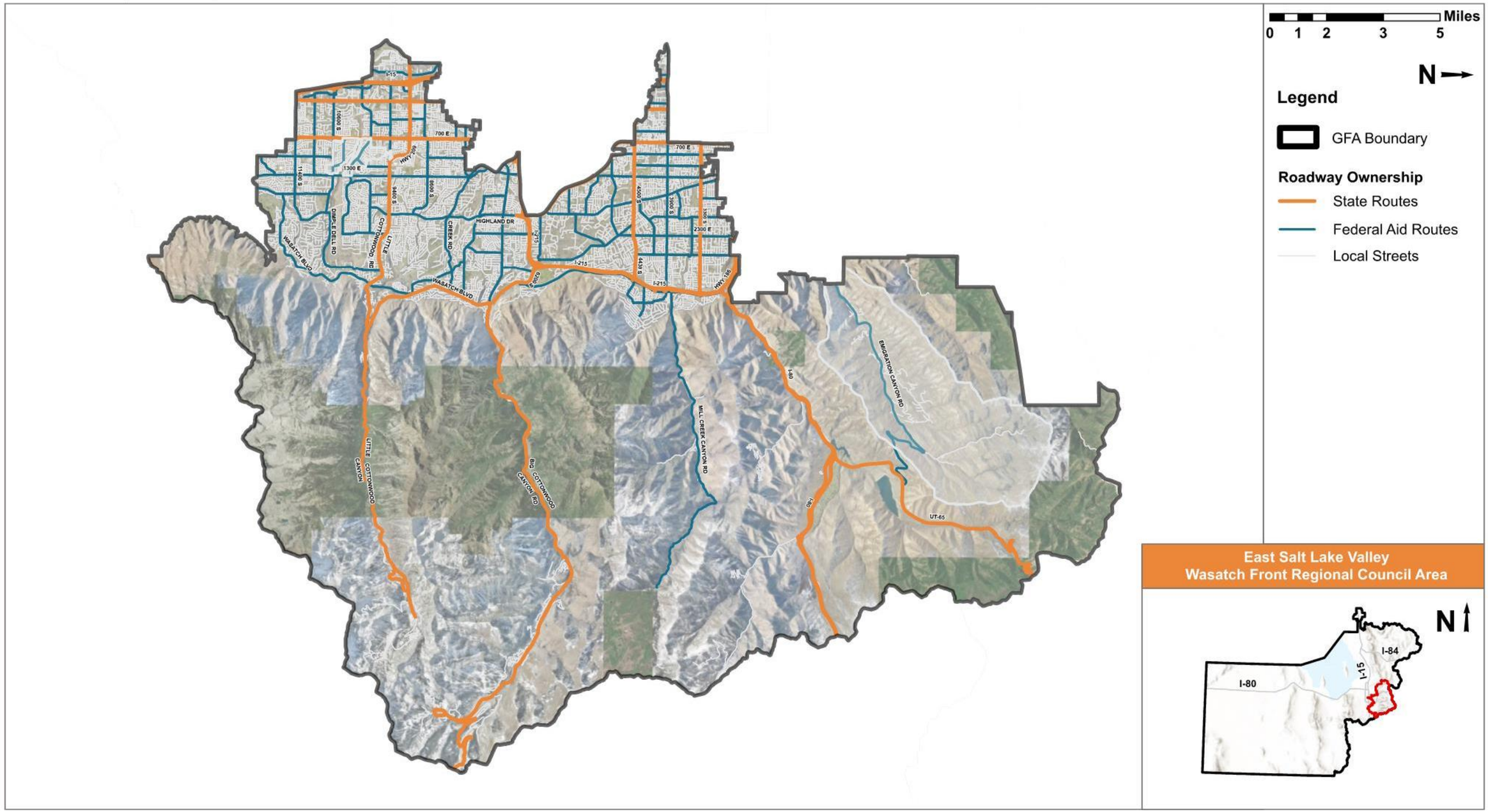


Figure 2.2 – East Salt Lake Valley GFA Roadway Network

3. SHSP Emphasis Area Analysis

The SHSP emphasis area analysis ranks the frequency of fatal and serious injury crashes in East Salt Lake Valley GFA for each of the eleven Utah SHSP emphasis areas. The rankings of the emphasis areas are compared for the East Salt Lake Valley GFA, statewide (all public roads statewide), and the WFRC study area totals. Each reported crash can have more than one emphasis area identified. The results of the SHSP emphasis area analysis are displayed in **Table 3.1**. The top five ranked emphasis areas are highlighted in the table with the top five for the East Salt Lake Valley GFA listed below:

- Intersections
- Roadway Departure
- Speed-Related
- Older Driver
- Motorcycle

Table 3.1 – SHSP Emphasis Areas Analysis

Category	Utah SHSP Safety Emphasis Area	Statewide Totals		WFRC Totals		East Salt Lake Valley Totals		
		Fatal and Serious Injury	Rank	Fatal and Serious Injury	Rank	Fatal and Serious Injury	Rank	Change in Rank From WFRC
Driver	Teen Driver	1,640	**4**	751	4	69	8	-4
	Older Driver	1,508	6	700	6	98	4	3
	Speed-Related	2,133	**3**	936	3	98	3	0
	Aggressive Driving	555	11	297	10	35	10	0
	Distracted Driving	718	10	286	11	34	11	0
	Impaired Driving	1,184	8	623	8	70	6	2
	No Safety Restraints	1,542	**5**	599	9	58	9	0
Roadway	Intersection	3,567	**1**	2,163	1	212	1	0
	Roadway Departure	2,931	**2**	1,014	2	124	2	0
Special Users	Motorcycle	1,457	7	750	5	94	5	0
	Pedestrian	912	9	636	7	70	6	1
	Bicycle*	280	12	167	12	34	11	1

**Bicyclists aren't one of the eleven Utah SHSP emphasis areas but was included as part of the CSAP safety analysis.*

4. Historical Crash Analysis

A historical crash data analysis was conducted for the most recent complete 5-year period from 2018 to 2022. This historical crash analysis is primarily focused on fatal and serious injury crashes.

4.1. Overall Crashes

Table 4.1 provides an overview of overall crashes by severity and roadway ownership within the East Salt Lake Valley GFA.

Table 4.1 – Crashes by Severity by Roadway Ownership

Route Type	State Route		Federal Aid Route		Local Street		Overall Total		% of WFRC
Crash Severity	Crashes		Crashes		Crashes		Crashes		%
	#	%	#	%	#	%	#	%	
Fatal	28	0%	19	0%	4	0%	**51**	**0.2%**	**0.0%**
Suspected Serious Injury	197	2%	156	2%	27	1%	**380**	**1.8%**	**0.2%**
Suspected Minor Injury	944	9%	832	10%	160	7%	**1,936**	**9.1%**	**1.1%**
Possible Injury	2,038	19%	1,427	18%	209	9%	**3,674**	**17.3%**	**2.0%**
No Injury / Property Damage Only	7,545	70%	5,624	70%	2,001	83%	**15,170**	**71.5%**	**8.4%**
Route Total	**10,752**	**100%**	**8,058**	**100%**	**2,401**	**100%**	**21,211**	**100%**	**11.8%**

4.2. Fatal and Serious Injury Crashes by Year

Figure 4.1 through **Figure 4.5** provide an overview of fatal and serious injury crashes by year and roadway ownership for the East Salt Lake Valley GFA. The data shows the following:

- Fatal crashes have slightly increased during the most recent 5-year period (2018-2022), from 9 in 2018 to 12 in 2022
- Serious injury crashes have decreased during the most recent 5-year period (2018-2022), with exception to spike in 2021

4.3. Fatal and Serious Injury Crashes by Location

Error! Reference source not found. shows the locations of the fatal and serious injury crashes within the East Salt Lake Valley GFA. Crashes are largely focused on State Routes.

Error! Reference source not found. is a density map of fatal and serious injury crashes within the East Salt Lake Valley GFA.

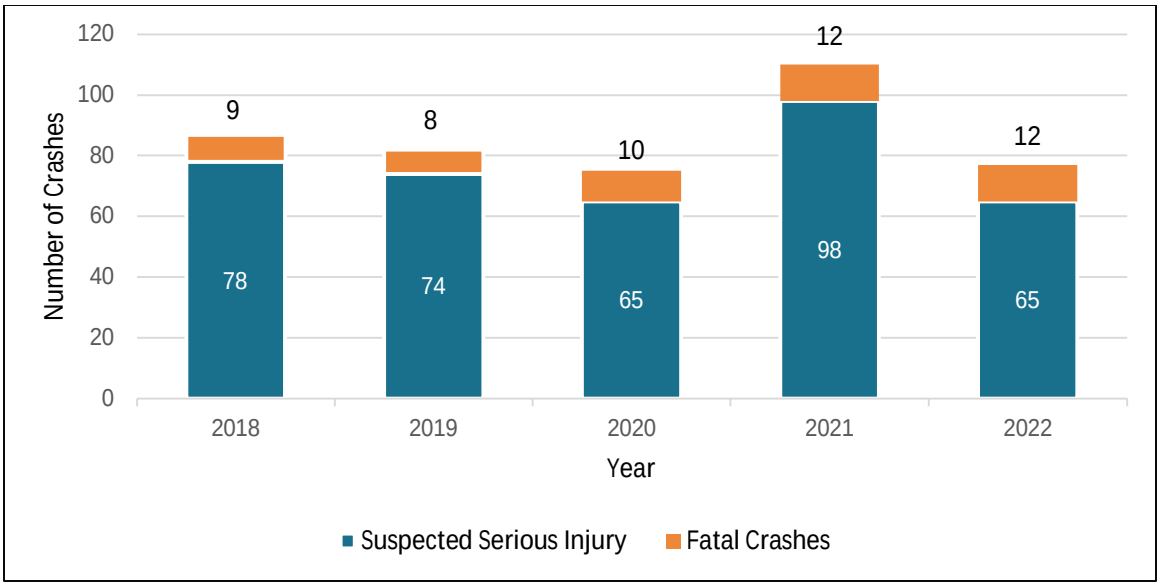


Figure 4.1 – Fatal and Serious Injury Crashes by Year

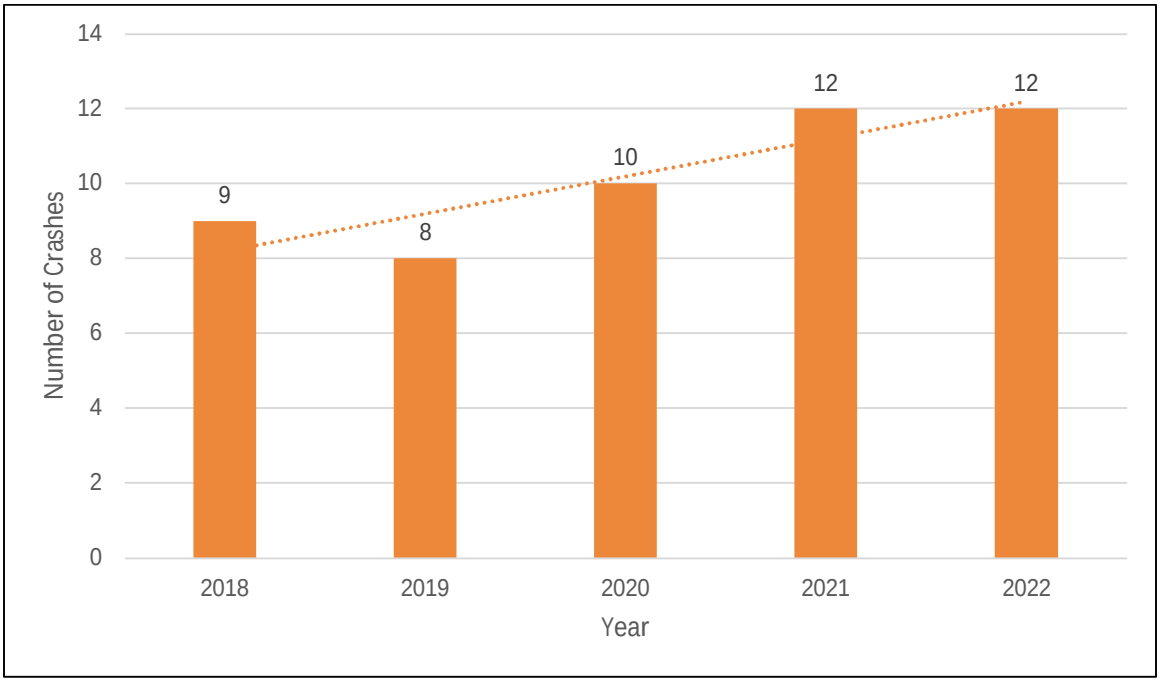


Figure 4.2 – Fatal Crashes by Year

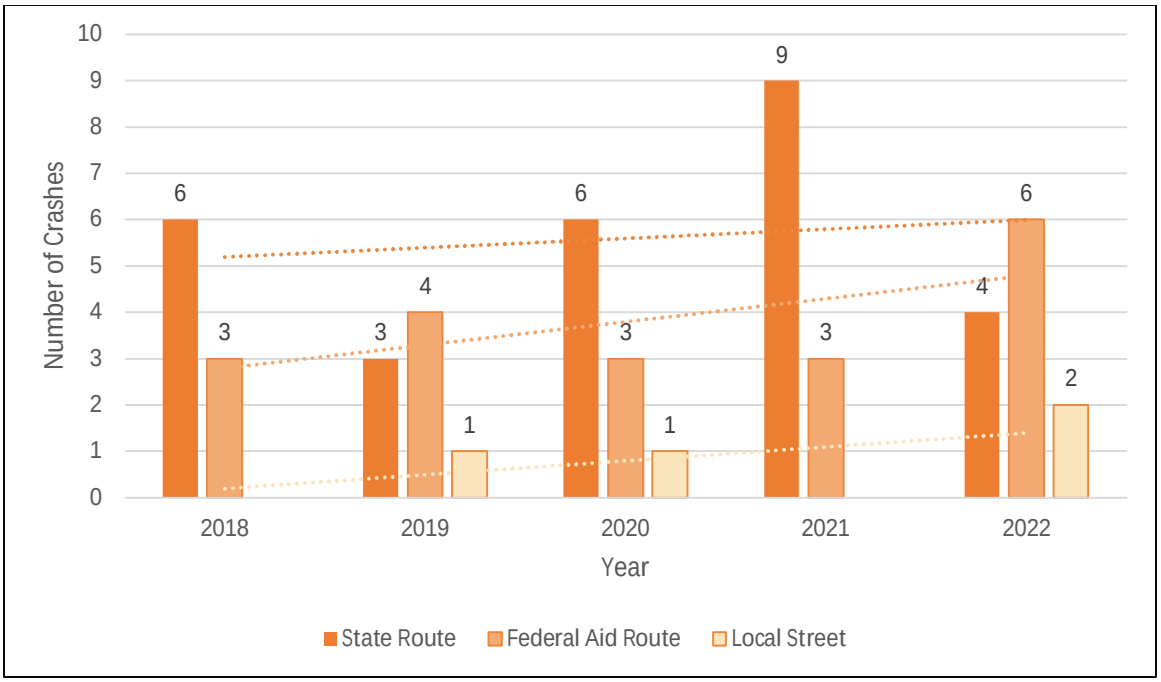


Figure 4.3 – Annual Fatal Crashes by Roadway Ownership

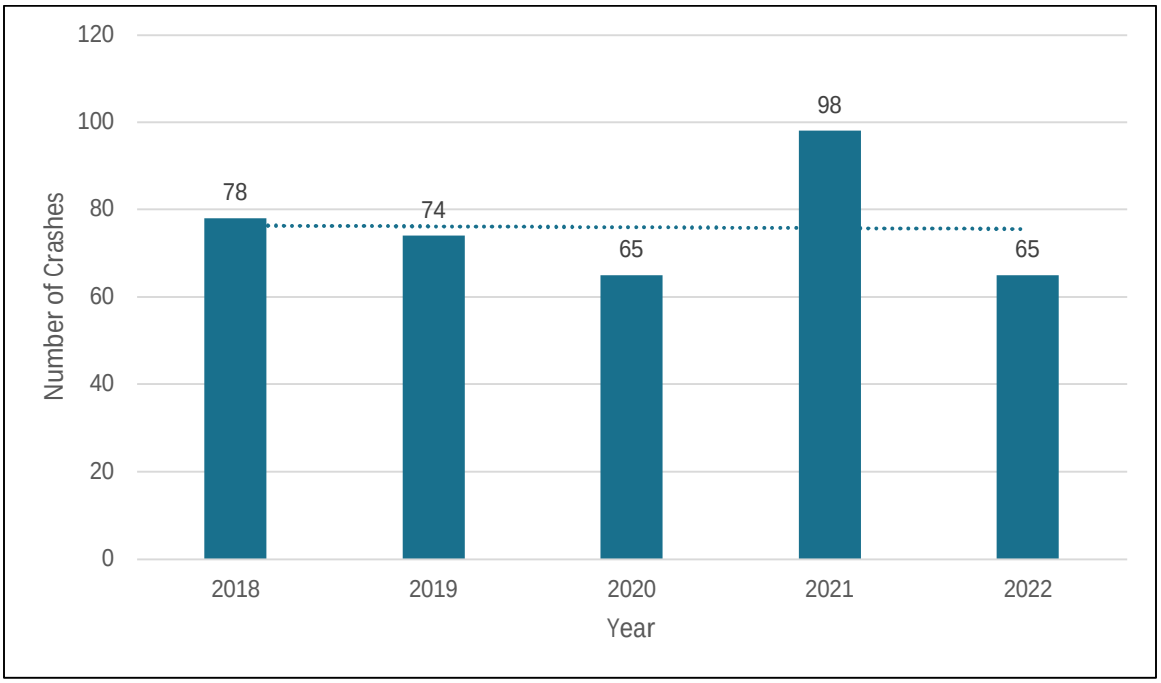


Figure 4.4 – Serious Injury Crashes by Year

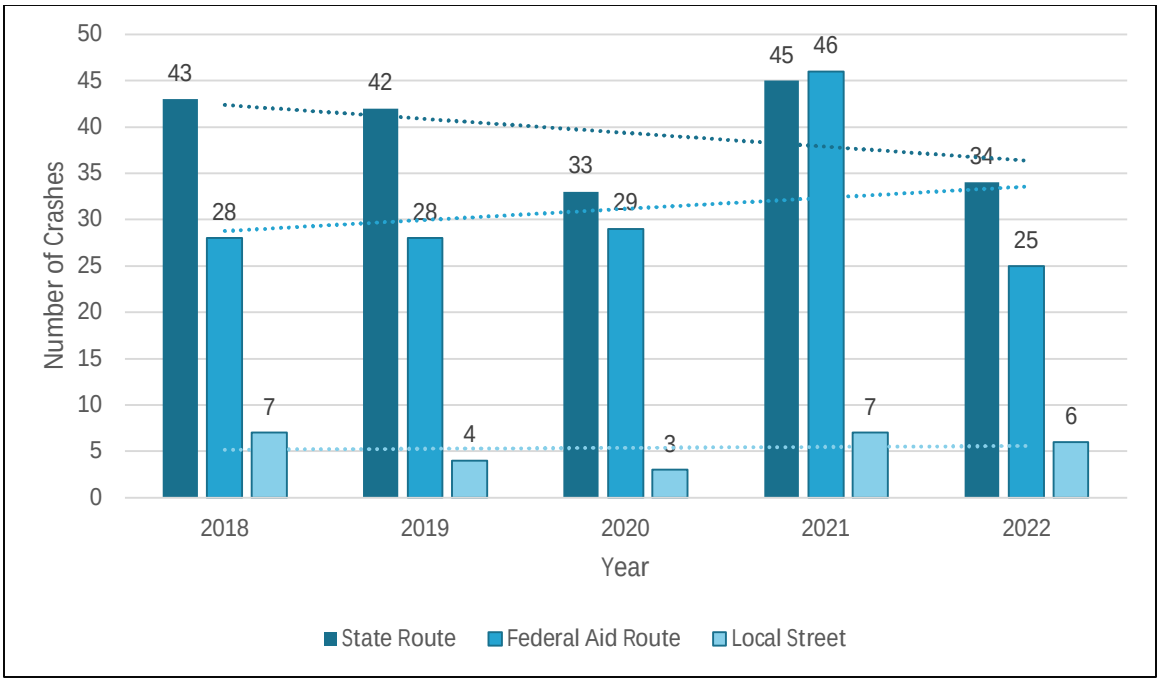


Figure 4.5 – Annual Serious Injury Crashes by Roadway Ownership

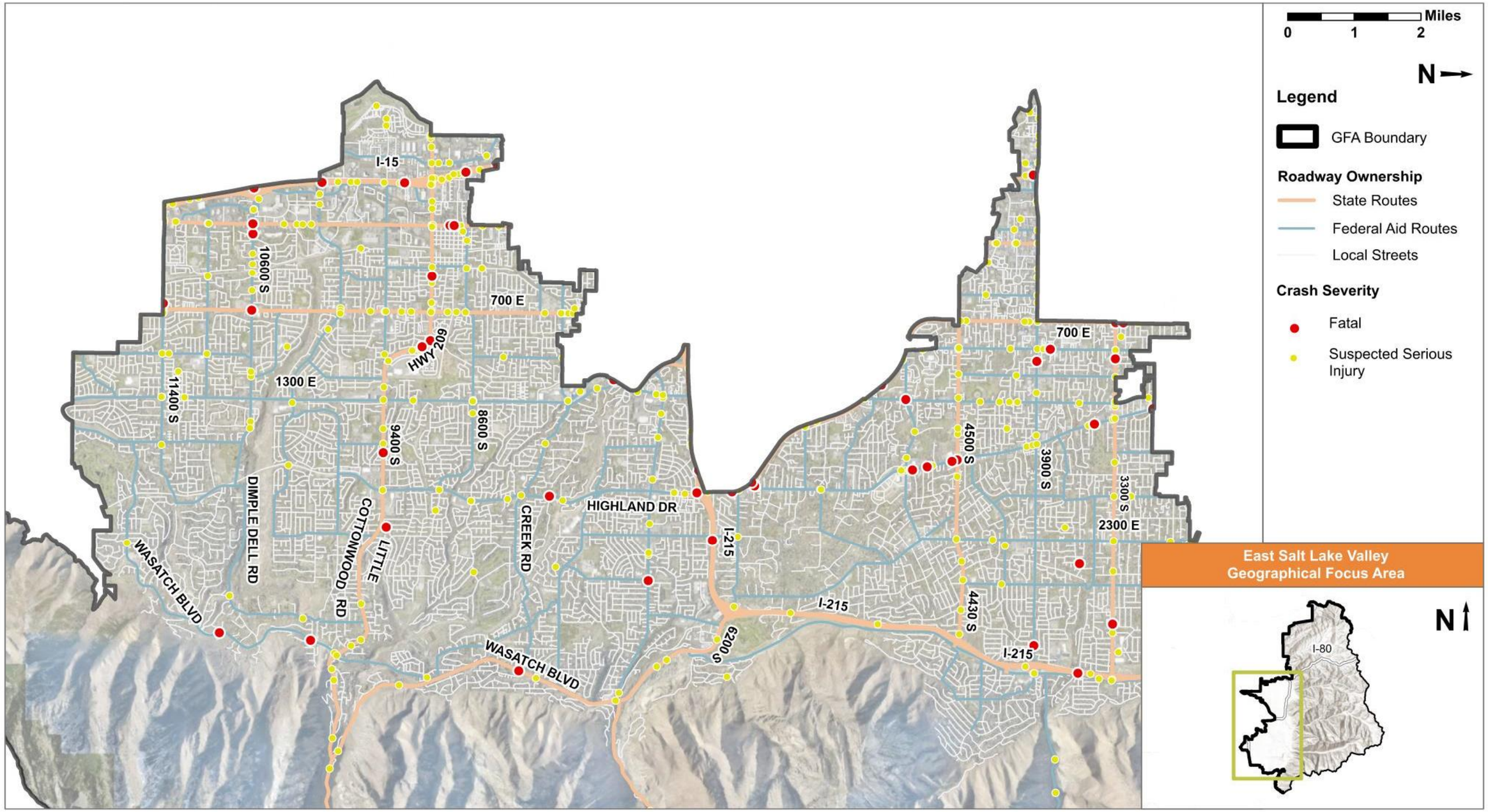


Figure 4.6 – Fatal and Serious Injury Crashes

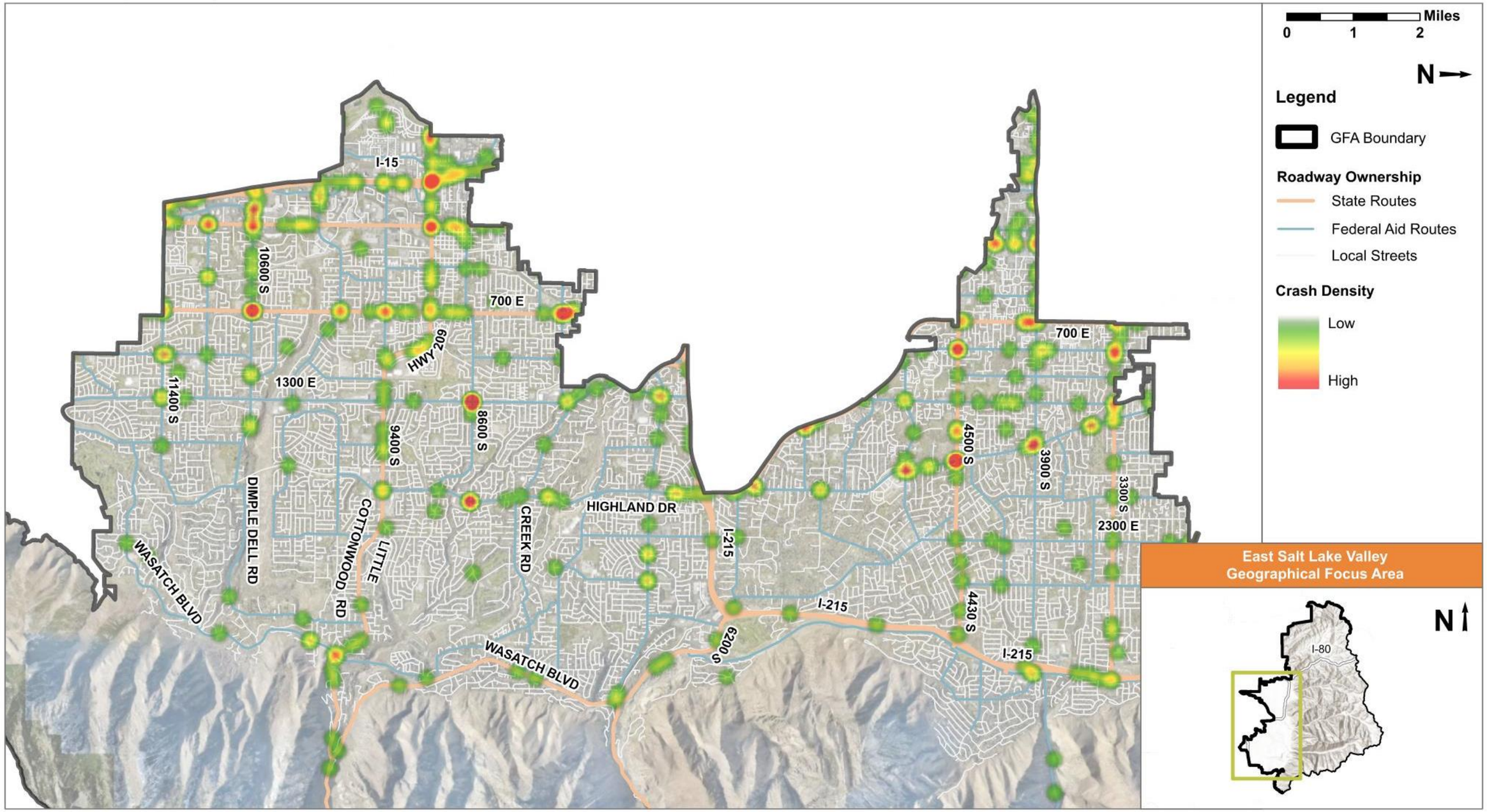


Figure 4.7 – Fatal and Serious Injury Crash Density

4.4. Fatal and Serious Injury Crashes by Crash Type

Figure 4.8 through **Figure 4.10** provide an overview of fatal and serious injury crashes by crash type and roadway ownership for the East Salt Lake Valley GFA. The data shows the following:

- Roadway departure crash type has the highest number of total fatal and serious injuries with 105 crashes
- Active Transportation has the highest number of fatal crashes (14)
  - Half of the Active Transportation fatal crashes occurred on State Routes, with the other half on Federal Aid routes and Local Routes

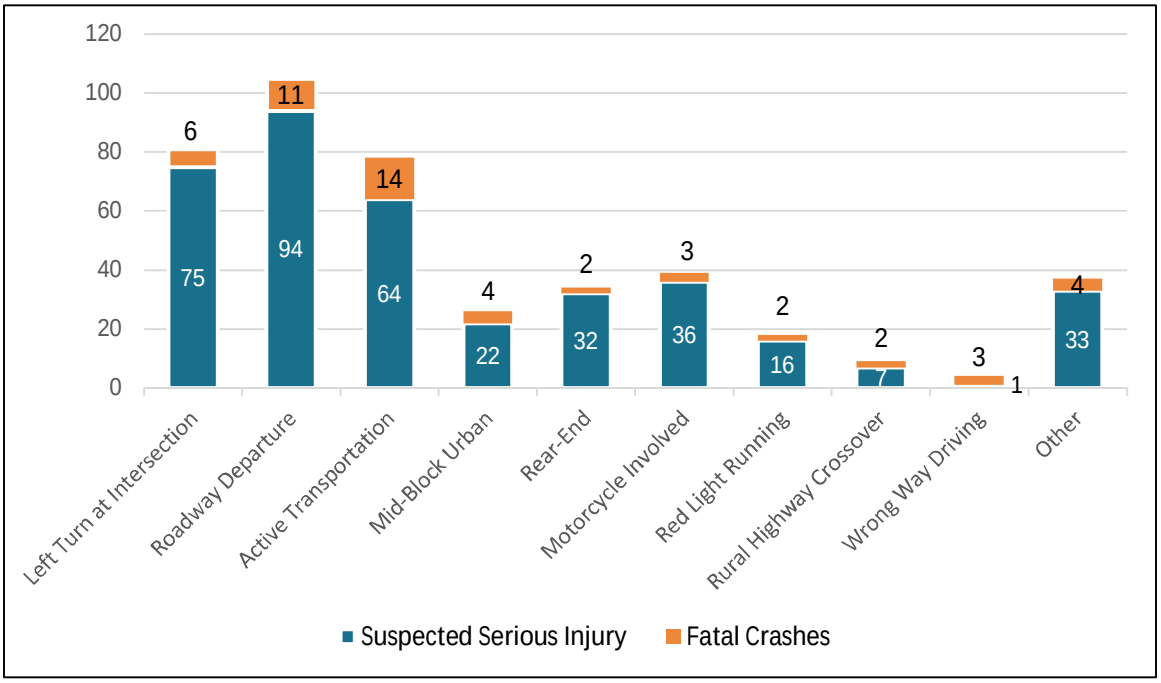


Figure 4.8 – Fatal and Serious Injury Crashes by Crash Type

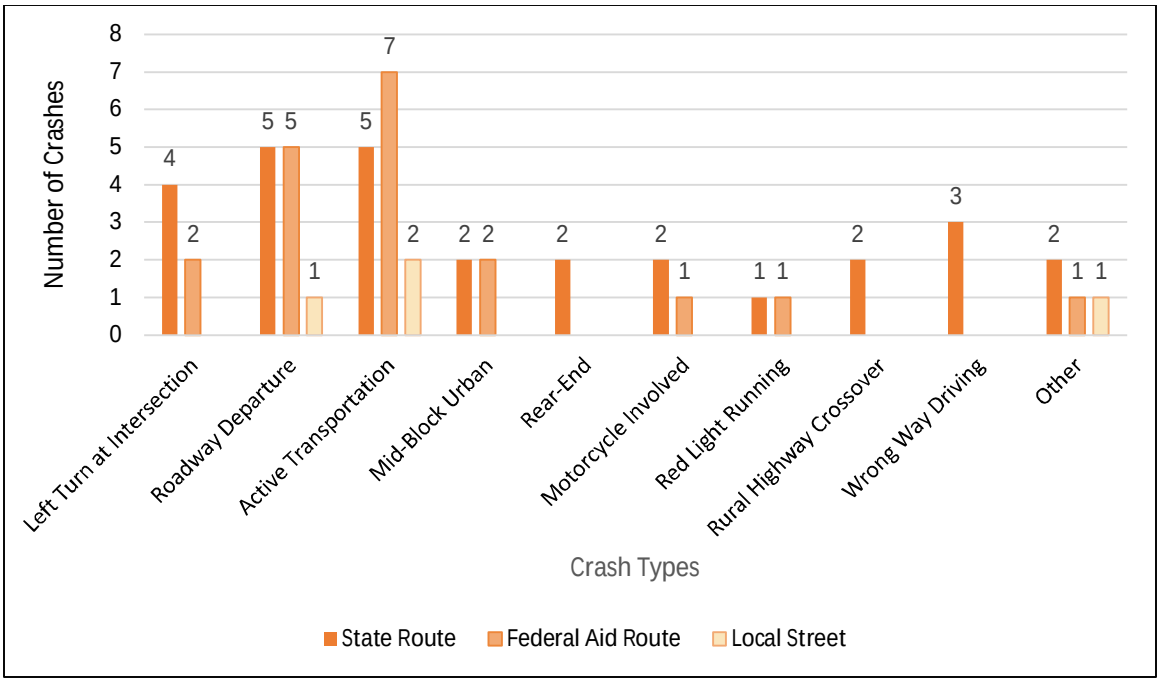


Figure 4.9 – Fatal Crashes by Crash Type and Roadway Ownership

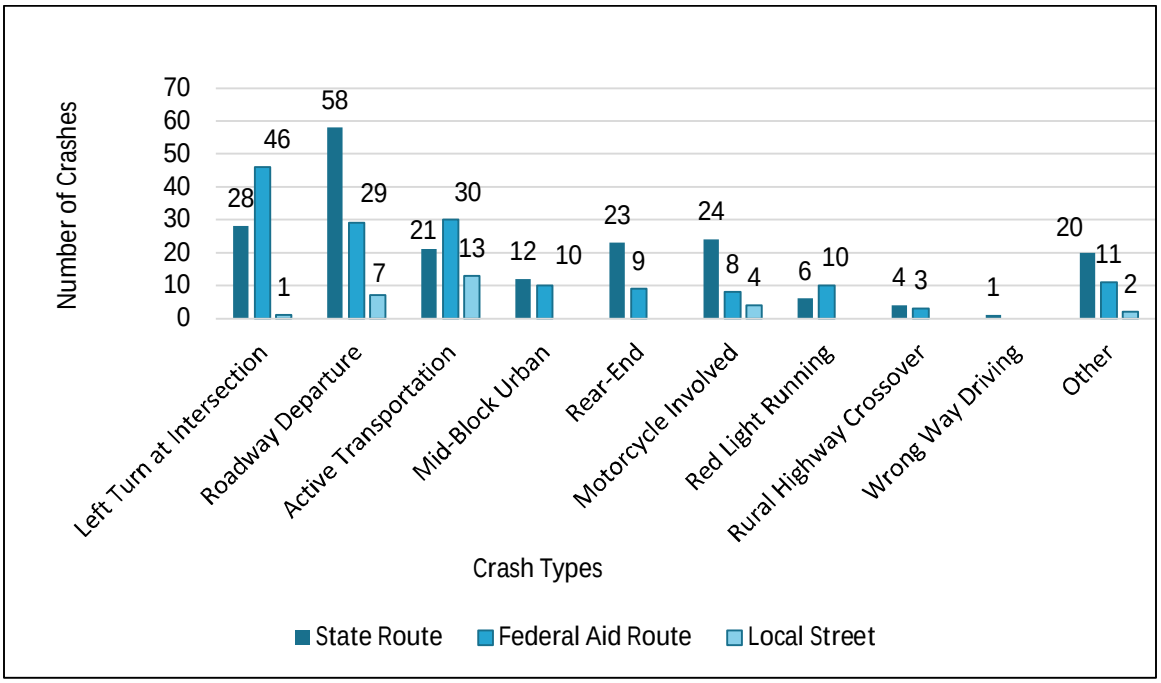


Figure 4.10 – Serious Injury Crashes by Crash Type and Roadway Ownership

4.5. Fatal and Serious Injury Vulnerable User Crashes

Figure 4.11 through **Figure 4.13** provide an overview of fatal and serious injury crashes by vulnerable road user and roadway ownership for the East Salt Lake Valley GFA. The data shows the following:

- Pedestrian fatal crashes accounted for all the active transportation crashes; there were no bicycle fatal crashes during the 5-yer period
- There were 10 motorcycle fatal crashes

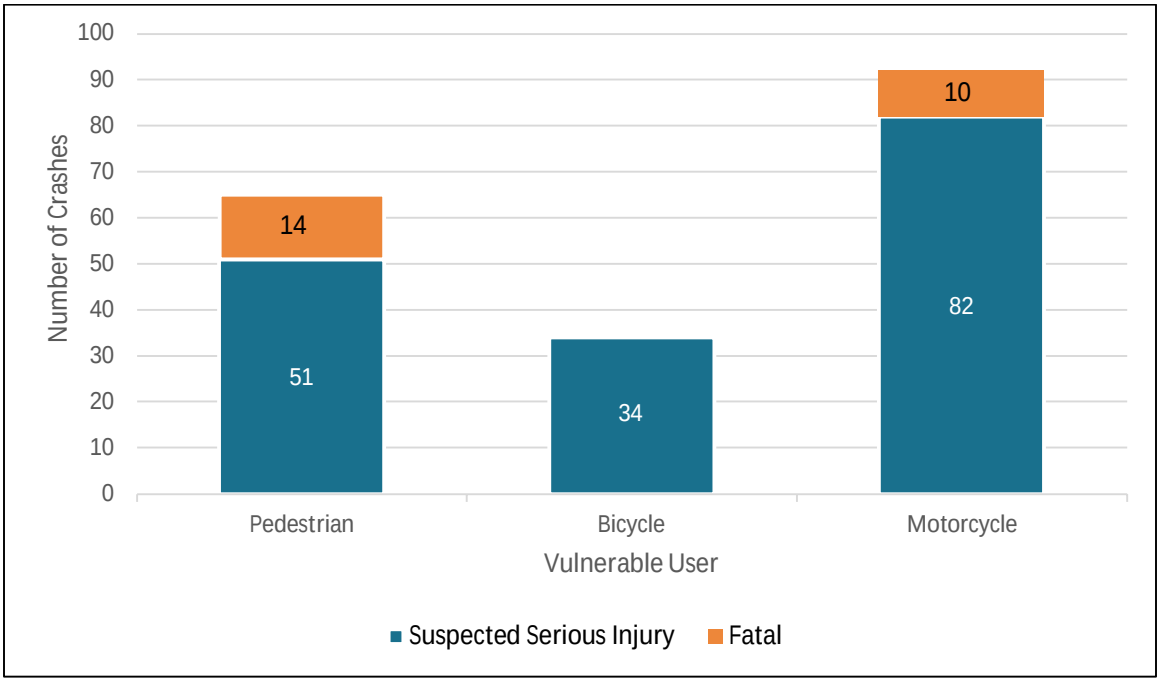


Figure 4.11 – Fatal and Serious Injury Crashes by Vulnerable User

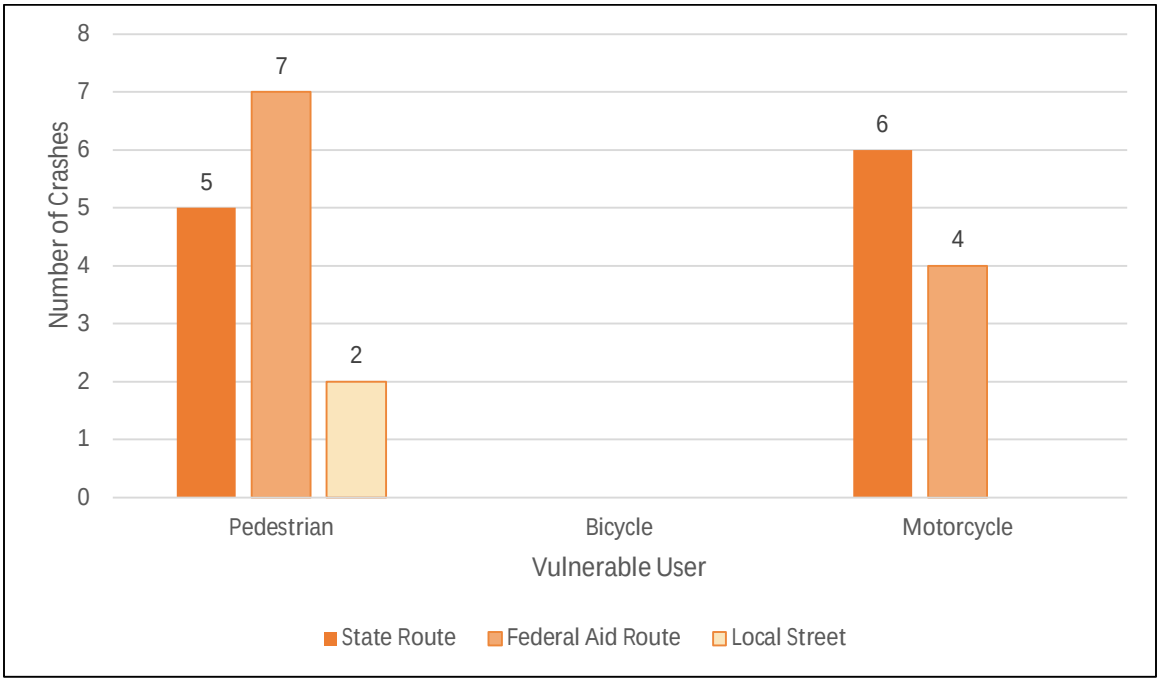


Figure 4.12 – Fatal Crashes by Vulnerable User and Roadway Ownership

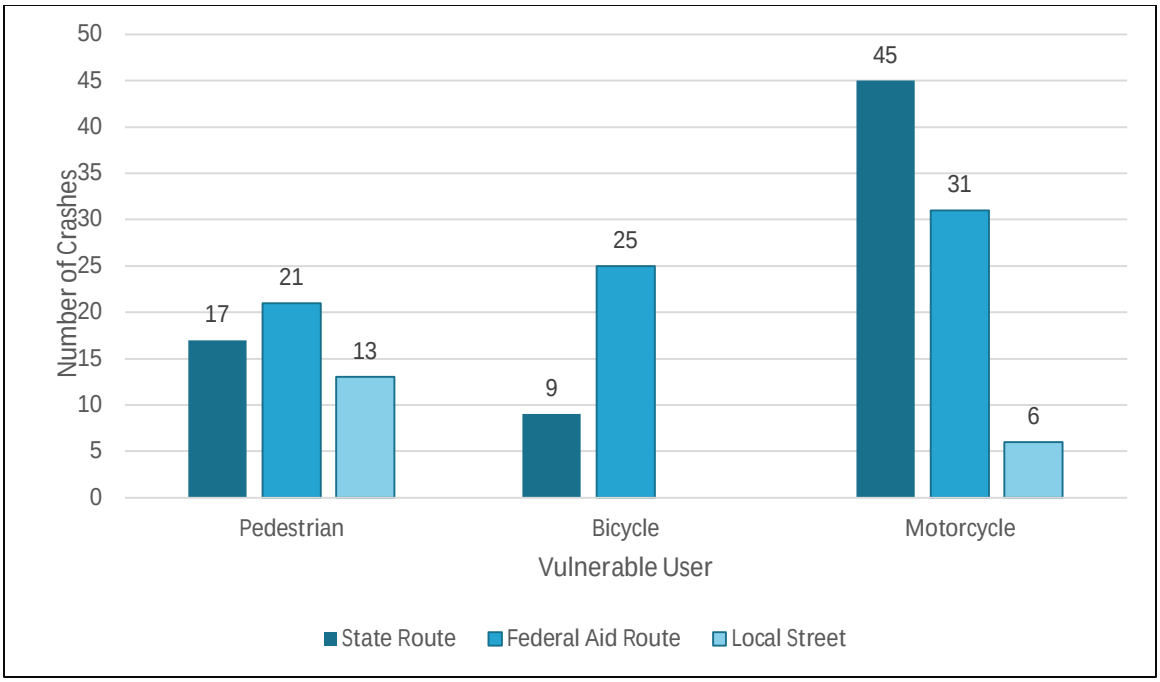


Figure 4.13 – Serious Injury Crashes by Vulnerable User and Roadway Ownership

4.6. Fatal and Serious Injury Crashes by Manner of Collision

Figure 4.14 through **Figure 4.16** provide an overview of fatal and serious injury crashes by manner of collision and roadway ownership for the East Salt Lake Valley GFA. The data shows the following:

- Single vehicle crashes have the highest number of total fatal and serious injuries with 218 crashes

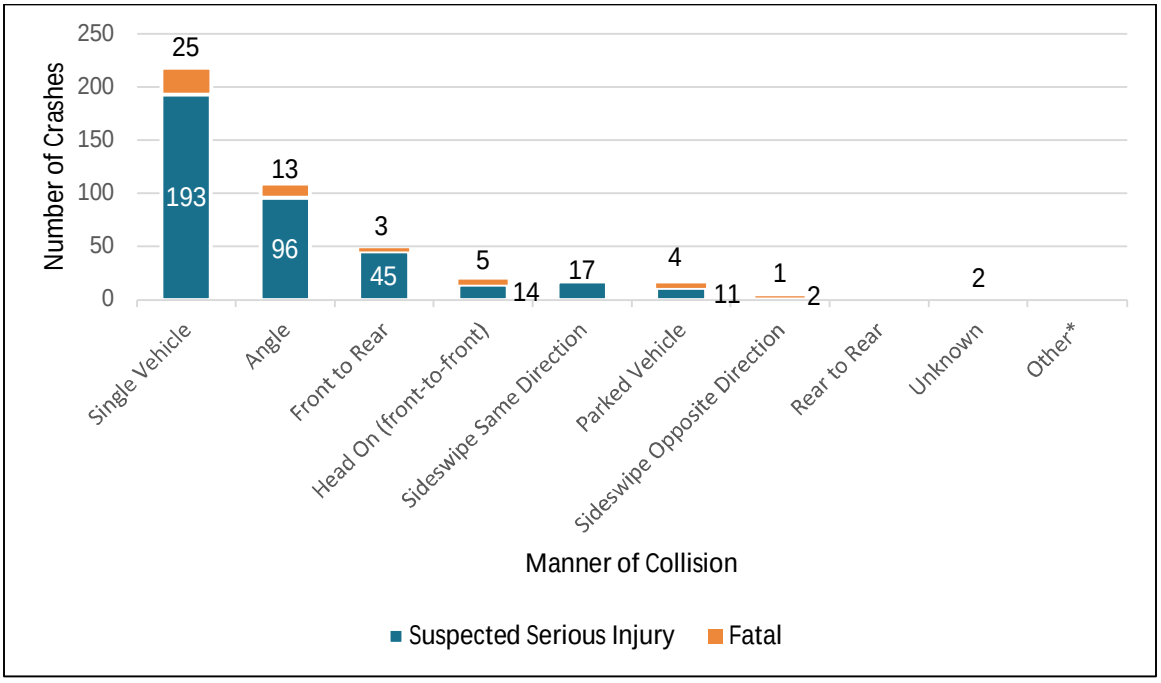


Figure 4.14 – Fatal and Serious Injury Crashes by Manner of Collision

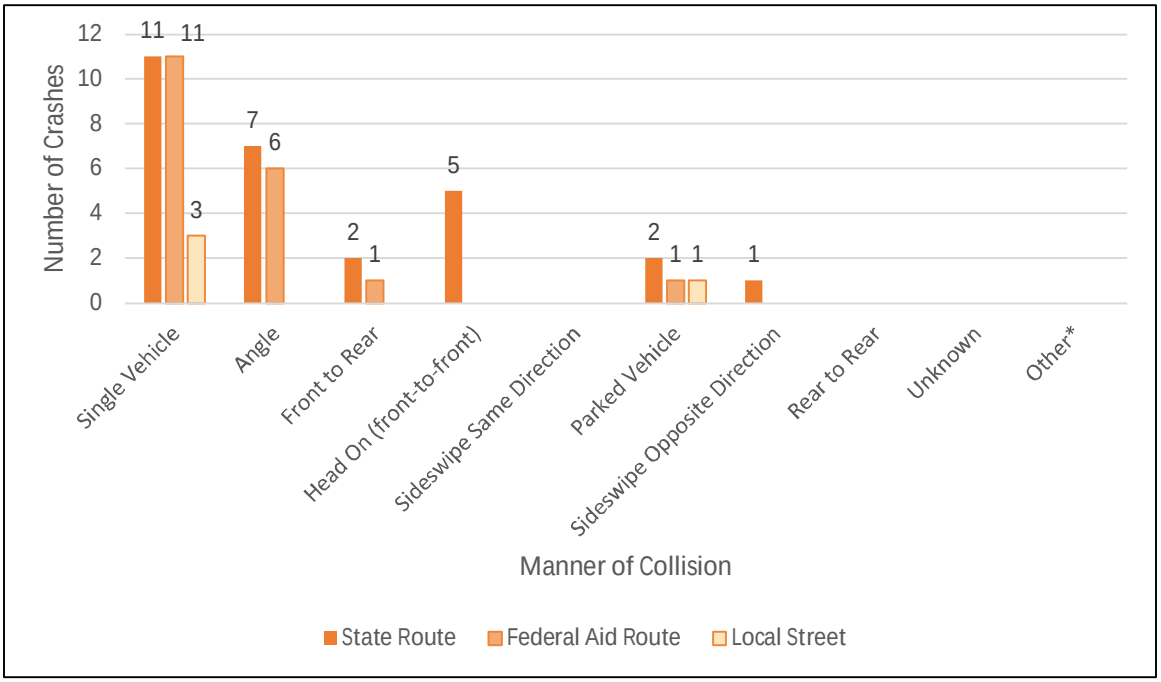


Figure 4.15 – Fatal Crashes by Manner of Collision and Roadway Ownership

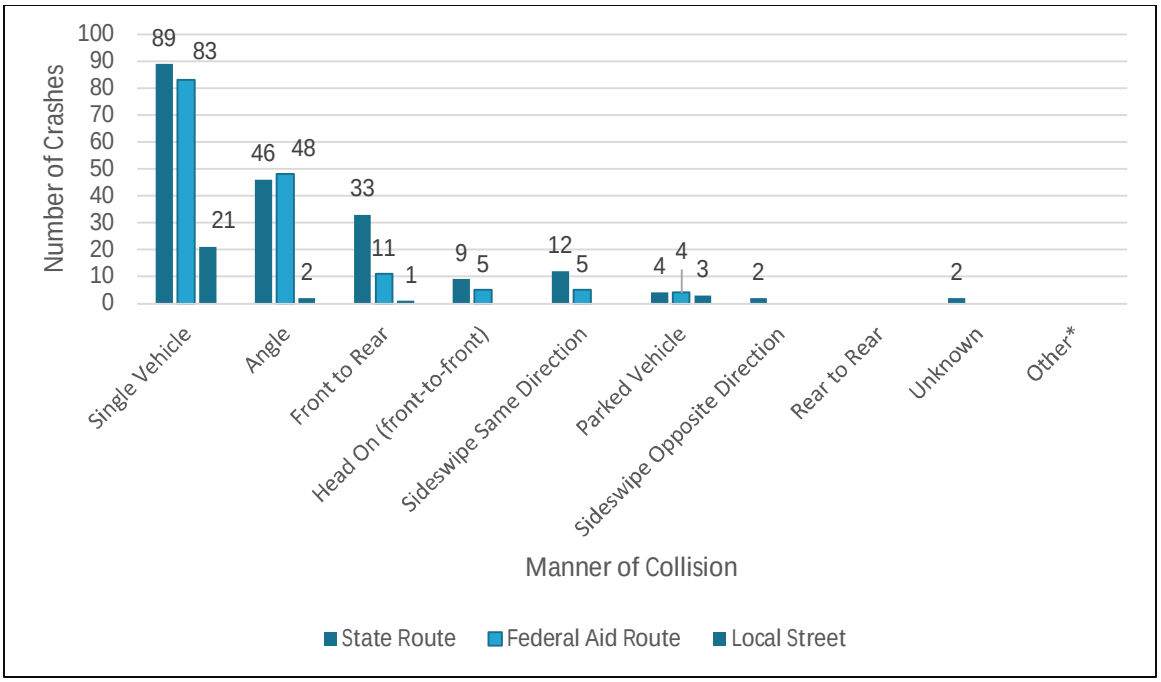


Figure 4.16 – Serious Injury Crashes by Manner of Collision and Roadway Ownership

4.7. Fatal and Serious Injury Intersection Crashes

Figure 4.17 through **Figure 4.19** provide an overview of fatal and serious injury crashes by intersection and roadway ownership for the East Salt Lake Valley GFA. The data shows the following:

- 57% of crashes were Not Intersection Involved and 43% as Intersection Involved
- 20 Not Intersection Involved fatal crashes occurred on State Routes, and 10 on Federal Aid Routes

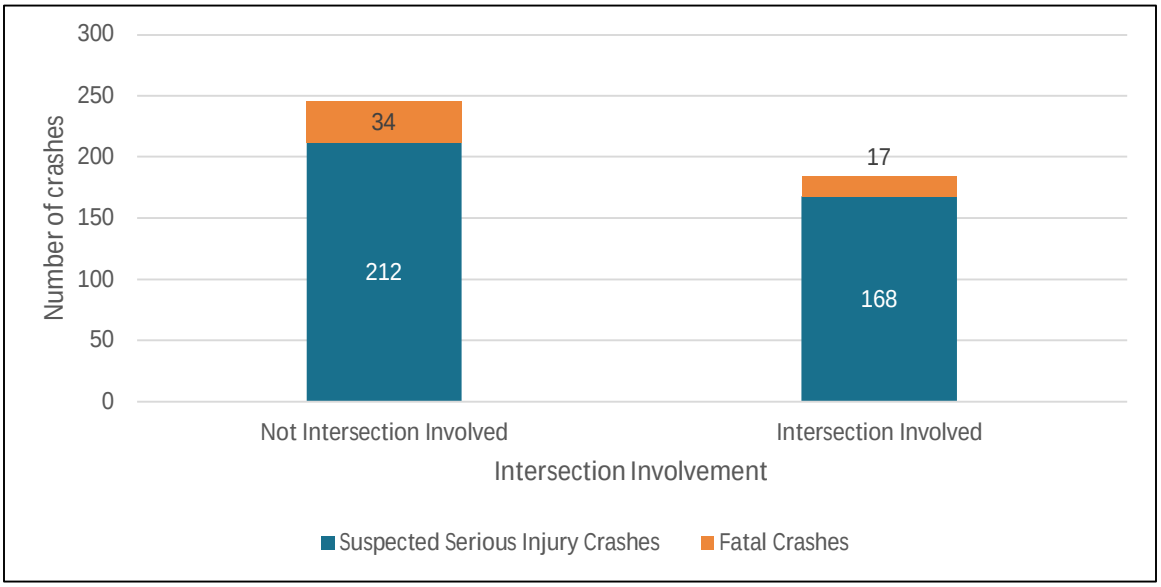


Figure 4.17 – Fatal and Serious Injury Crashes by Intersection

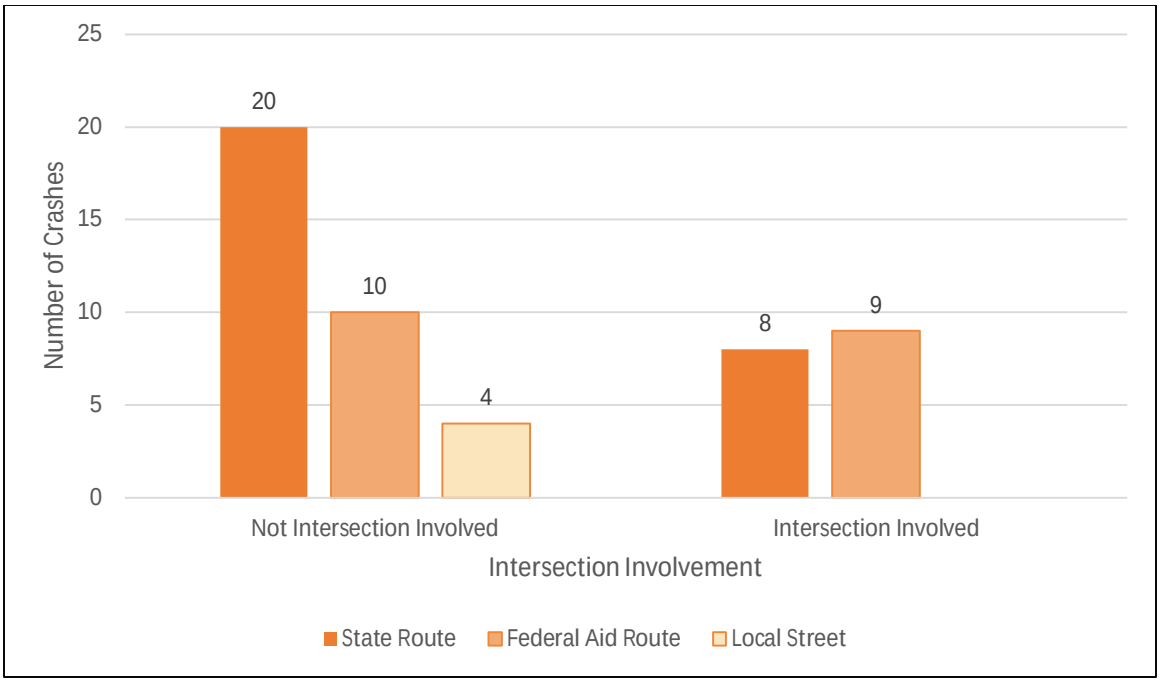


Figure 4.18 – Fatal Crashes by Intersection and Roadway Ownership

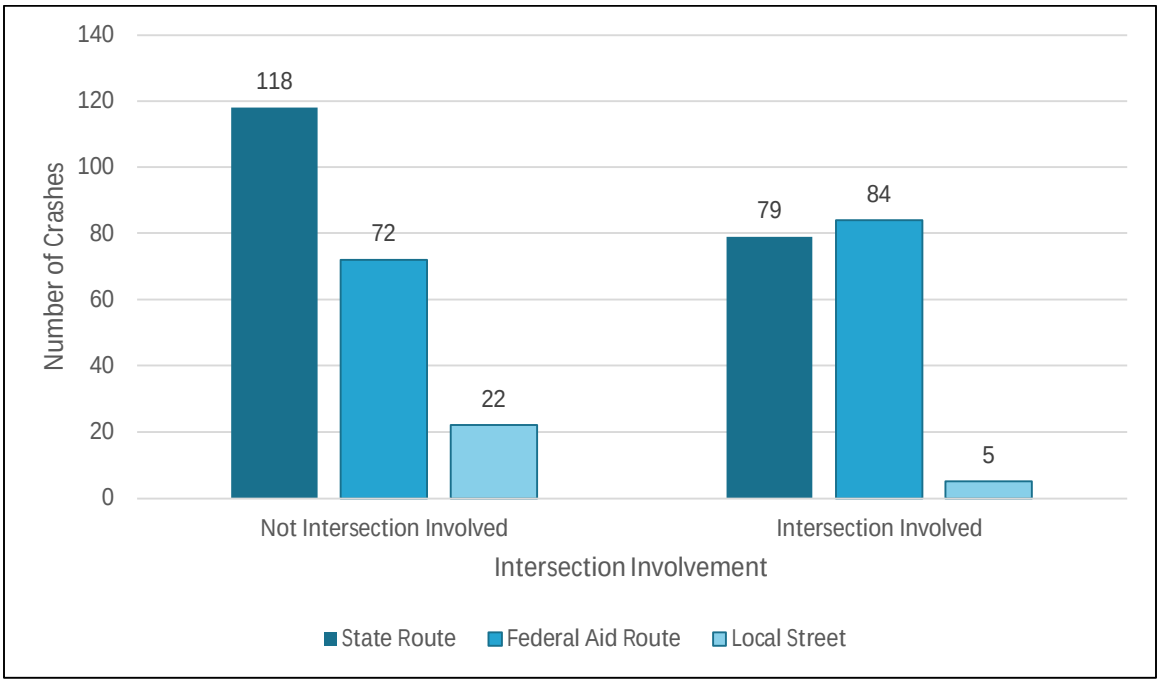


Figure 4.19 – Serious Injury Crashes by Intersection and Roadway Ownership

4.8. Fatal and Serious Injury Crashes by Functional Class

Figure 4.20 through **Figure 4.22** provide an overview of fatal and serious injury crashes by functional class and roadway ownership for the East Salt Lake Valley GFA. The data shows the following:

- Principal Arterials and Minor Arterials accounted for the highest frequency of serious injury and fatal crashes
- Most Principal Arterial crashes were on State Routes, while most Minor Arterial are on Federal Aid routes

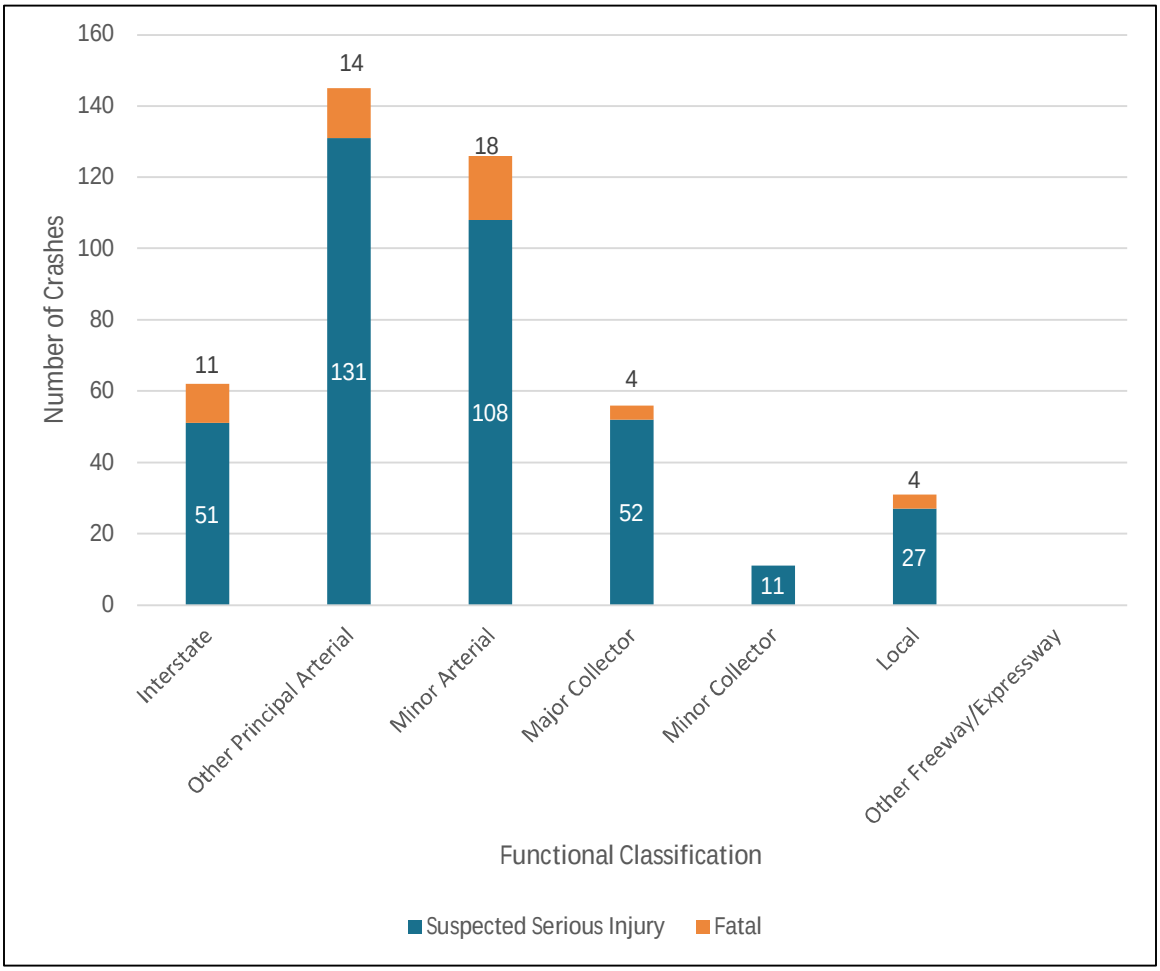


Figure 4.20 – Fatal and Serious Injury Crashes by Functional Class

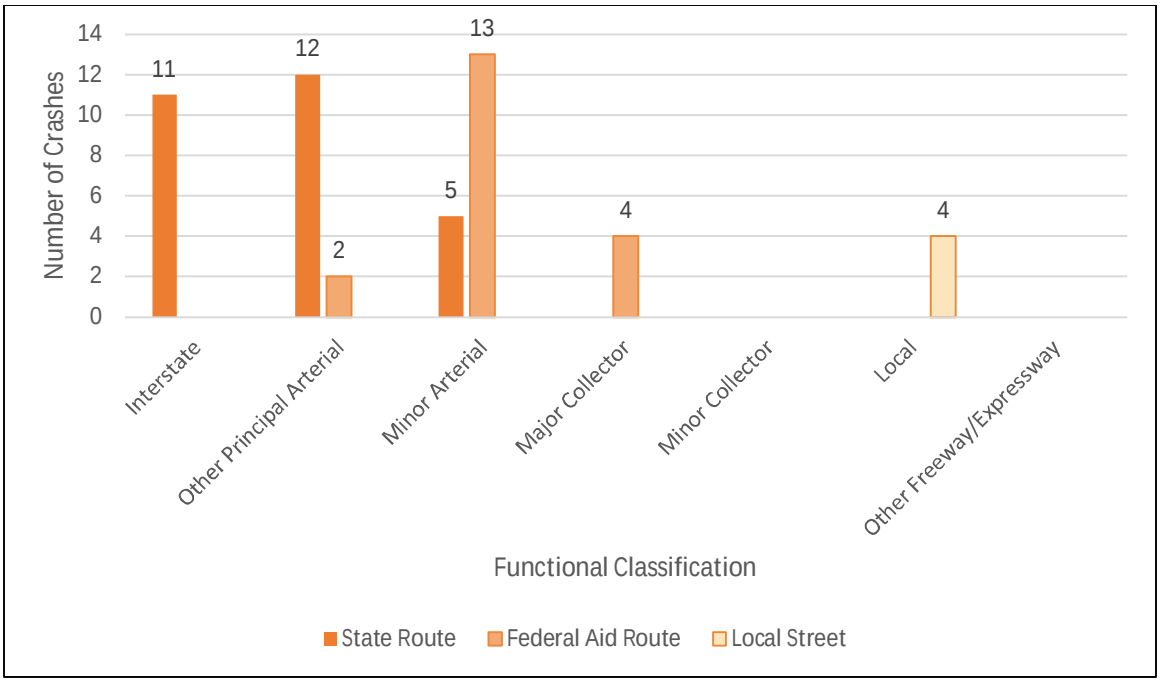


Figure 4.21 – Fatal Injury Crashes by Functional Class and Roadway Ownership

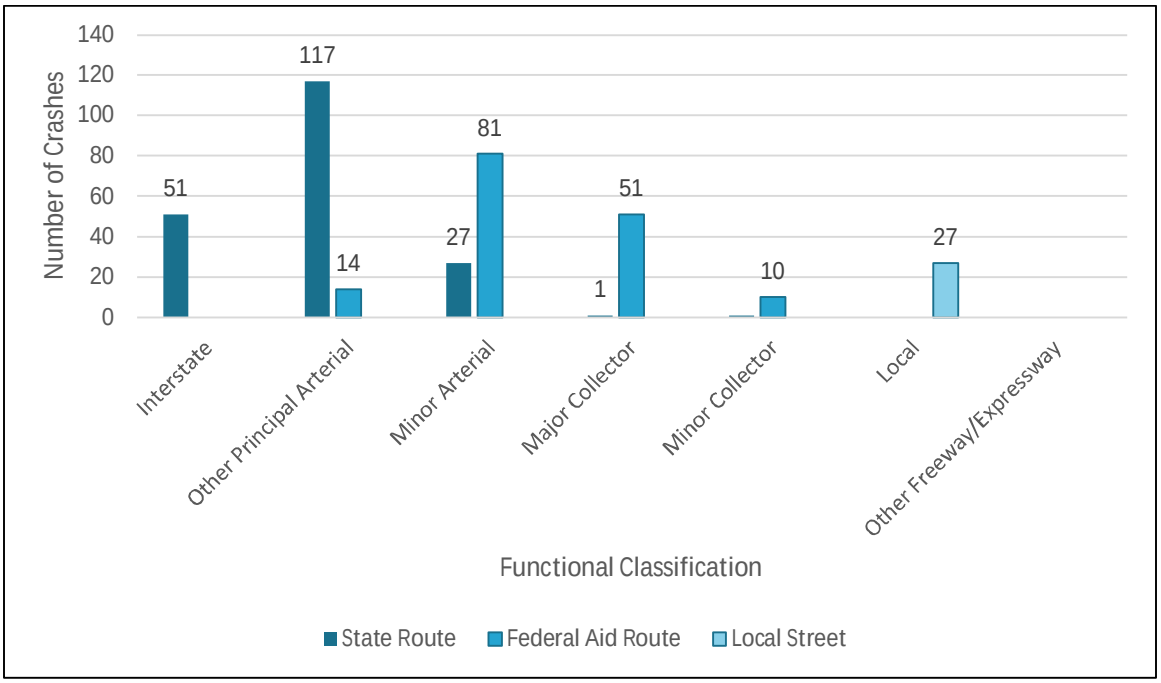


Figure 4.22 – Serious Injury Crashes by Functional Class and Roadway Ownership

4.9. Fatal and Serious Injury Crash Trees Diagrams

Fatal and serious injury crash tree diagrams were generated for the East Salt Lake Valley GFA. These crash tree diagrams are presented in **Figure 4.25** through **Figure 4.24**.

The crash trees are limited to the top 3 categories for crash type and manner of collision. Each crash tree diagram displays the total fatal and serious injury crashes (T), fatal crashes (K), and serious injury crashes (A).

The data shows the following:

- State Routes recorded the highest number of crashes (52%), with Federal Aid at 40% and Local Routes at 7%
- Intersection-related crashes exceed that of non-intersection on State Routes and Federal Aid routes; on Local Streets, non-intersection related crashes exceed intersection-related crashes
- Of the intersection related, Left Turn at intersection was prominent on State Routes and Federal Aid routes

CRASH TYPE

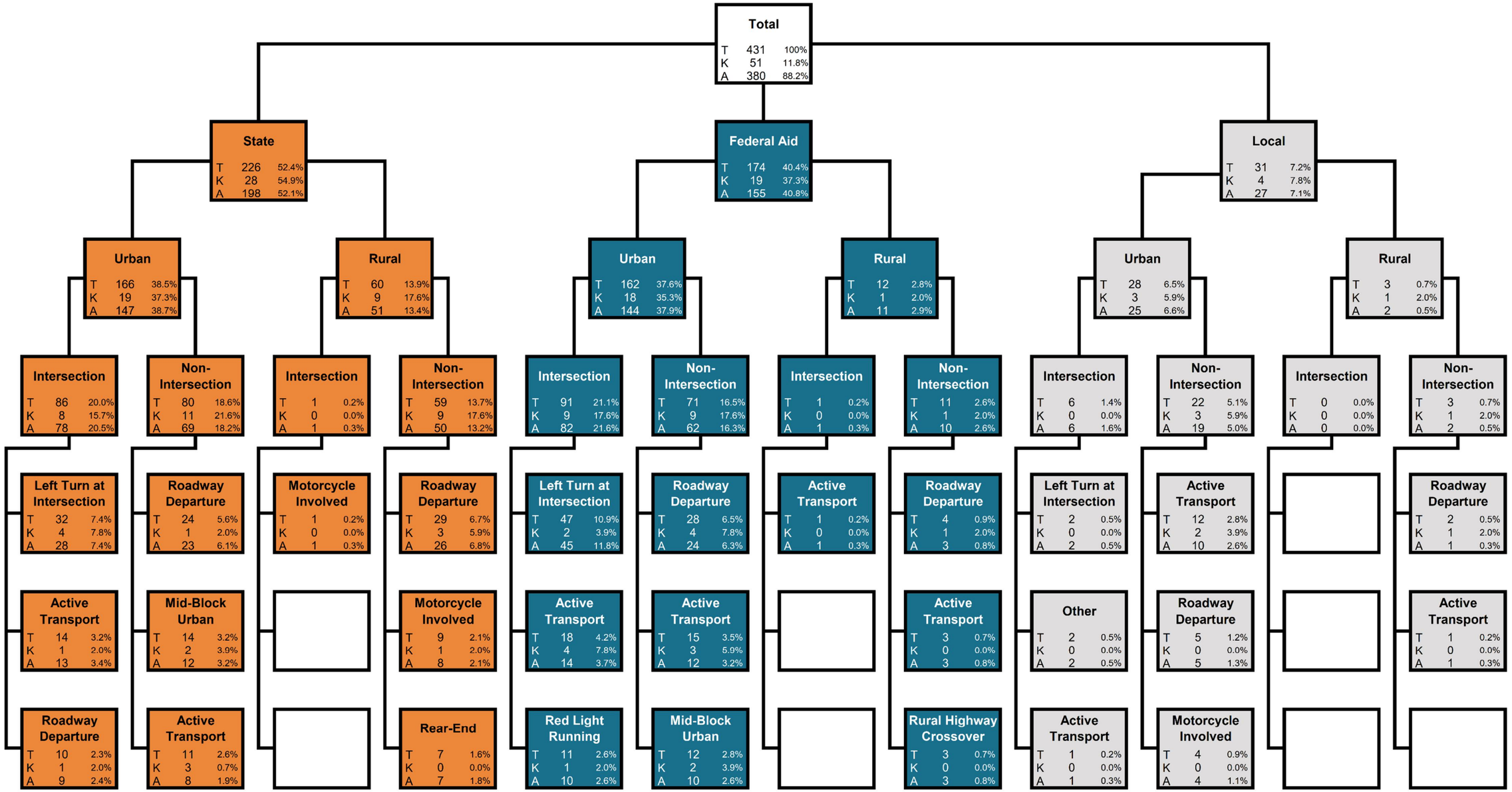


Figure 4.23 – Fatal and Serious Injury Crash Tree Diagram (Crash Type)

MANNER OF COLLISION

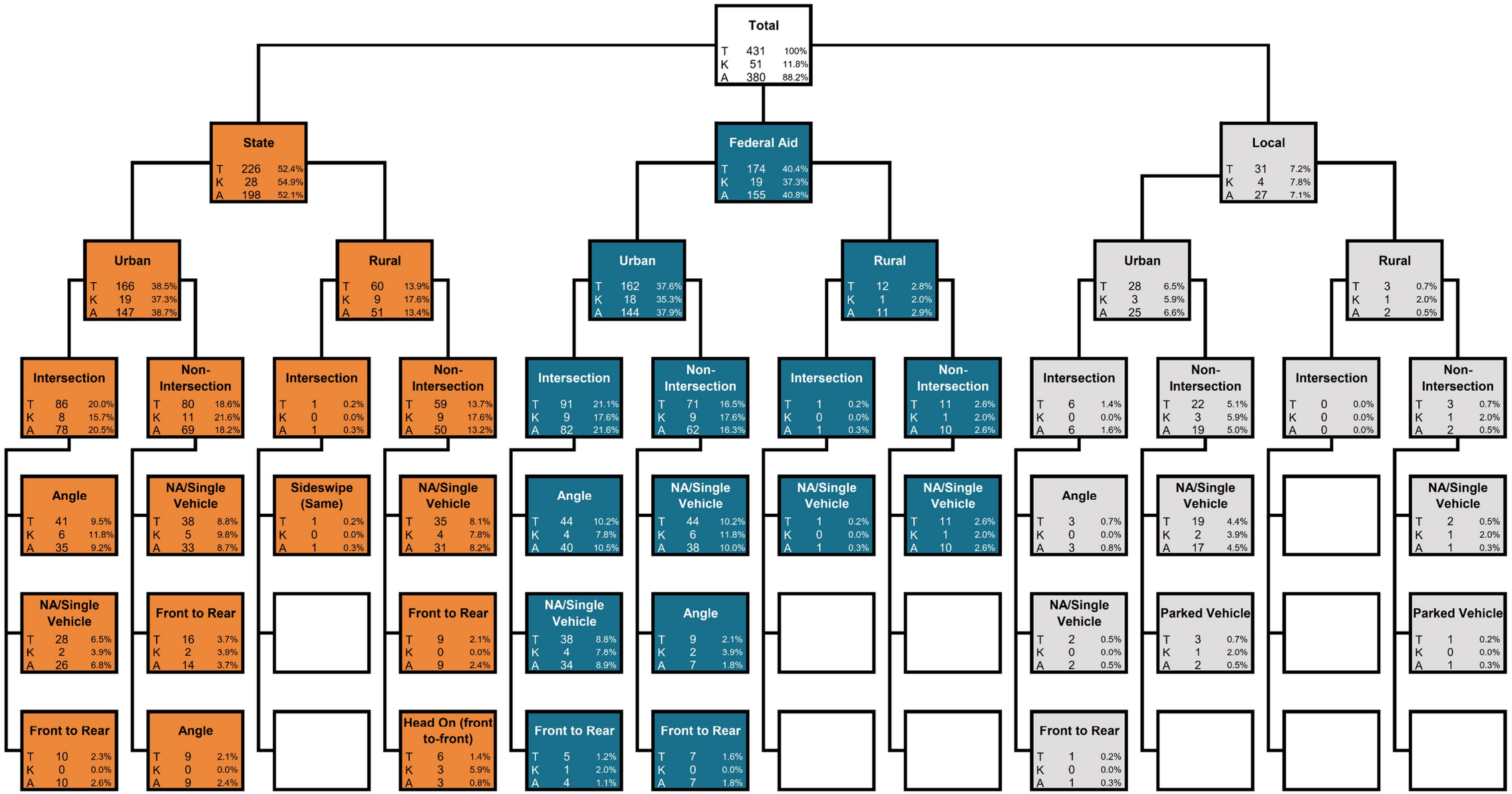


Figure 4.24 – Fatal and Serious Injury Crash Tree Diagram (Manner of Collision)

ACTIVE TRANSPORTATION

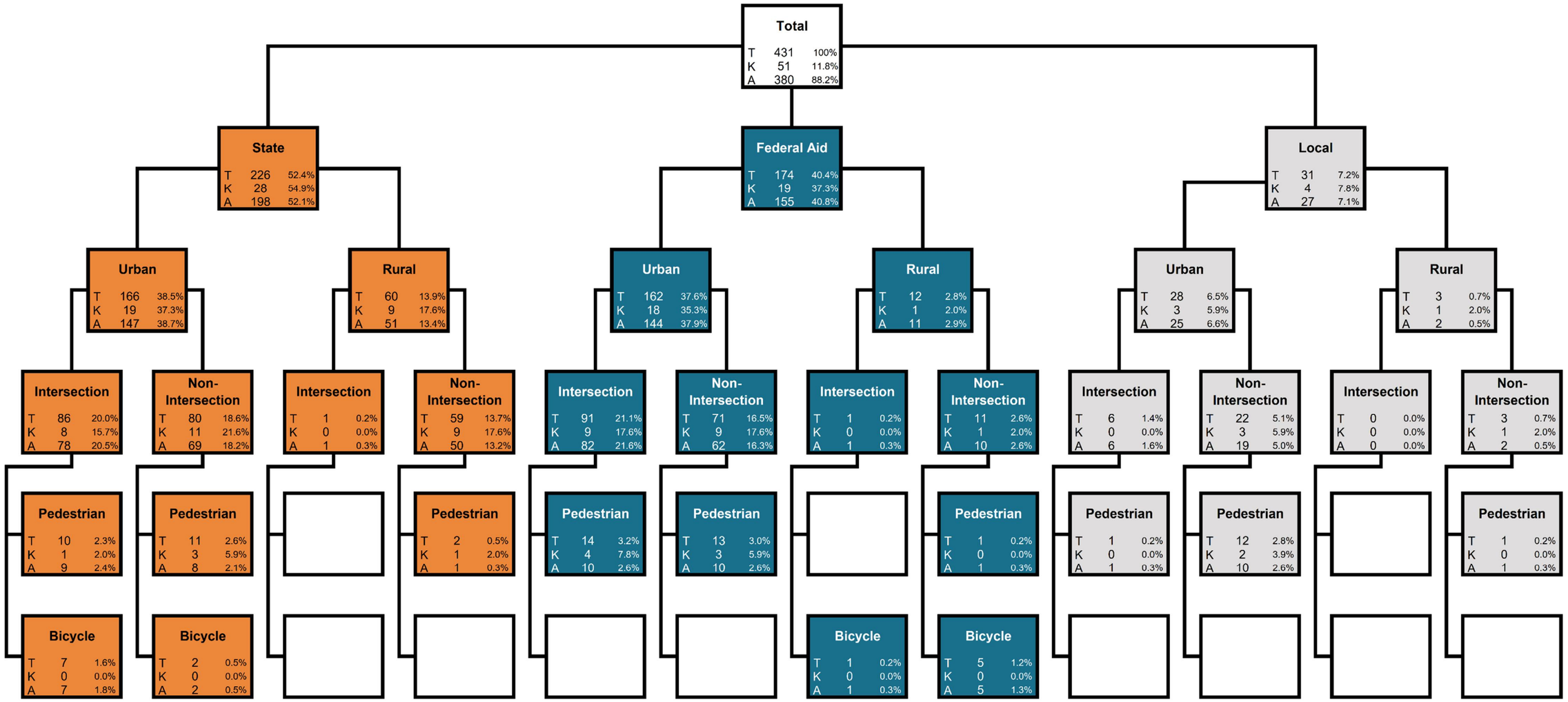


Figure 4.25 – Fatal and Serious Injury Crash Tree Diagram (Active Transportation)

5. Crash and Network Screening Analysis

A crash and network screening analysis was prepared for the East Salt Lake Valley GFA informed by four sub-analyses:

- Number of Crashes
- Critical Crash Rate (CCR)
- Probability of a Specific Crash Type Exceeding Threshold Proportion
- Equivalent Property Damage Only (EPDO)

CCR Differential by roadway ownership are mapped in the following figures:

- **Figure 5.1** – CCR Differential – Segments (State Routes)
- **Figure 5.2** – CCR Differential – Segments (Federal Aid Routes)
- **Figure 5.3** – CCR Differential – Segments (Local Routes)
- **Figure 5.4** – CCR Differential – Intersections (Signalized)
- **Figure 5.5** – CCR Differential – Intersections (Unsignalized)

A positive Local CCR Differential is an indication of a location with a potential for safety improvement (PSI).

A list of the top 10 CCR Differential segments and intersections for the East Salt Lake Valley GFA are located in **Table 5.1** and **Table 5.2** along with their associated number of crashes, probability of a specific crash type exceeding threshold proportion, and EPDO analysis results.

These locations represent those with the highest potential for safety improvements and can be considered as project candidate locations.

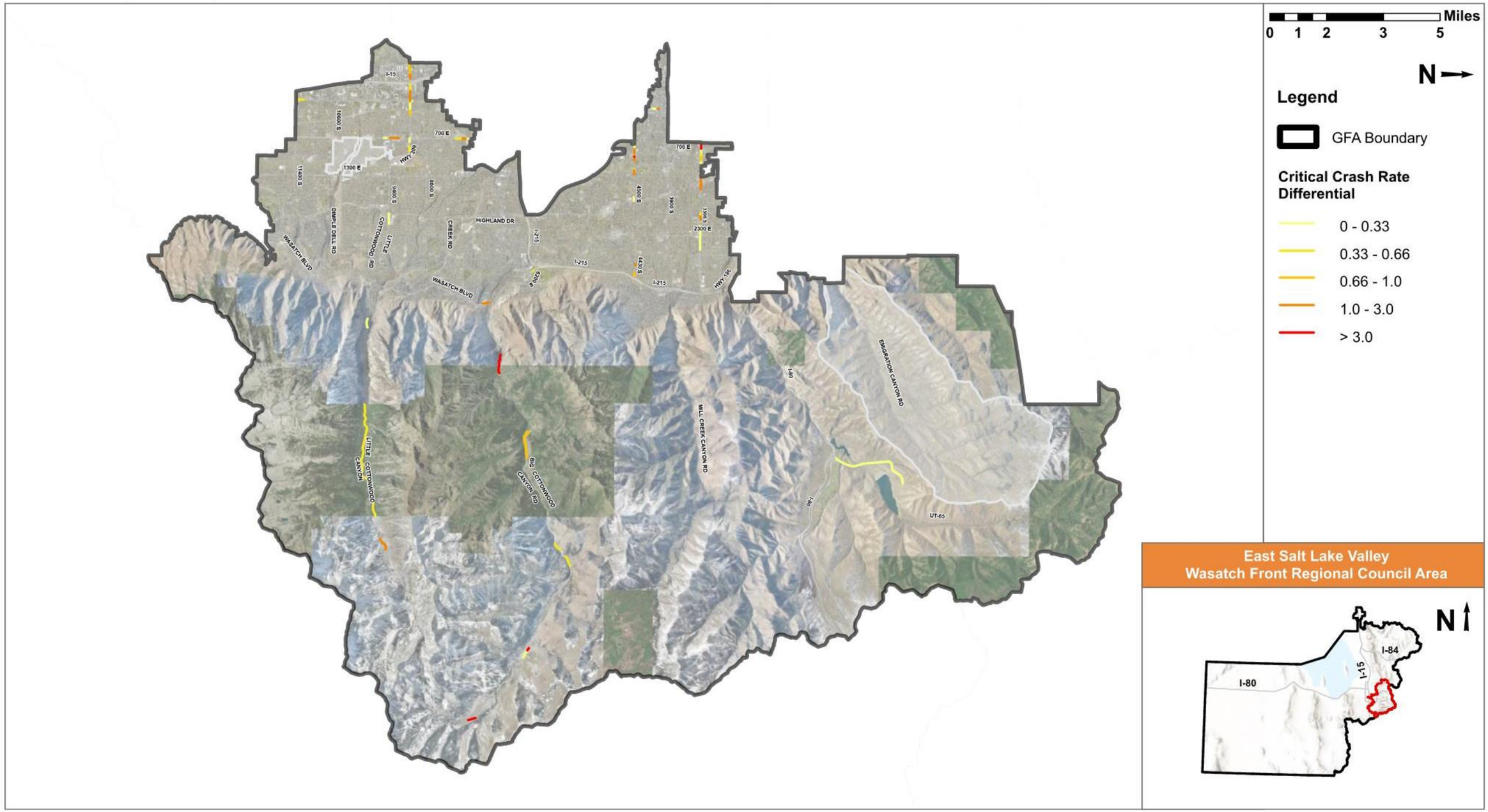


Figure 5.1 – CCR Differential – Segments (State Routes)

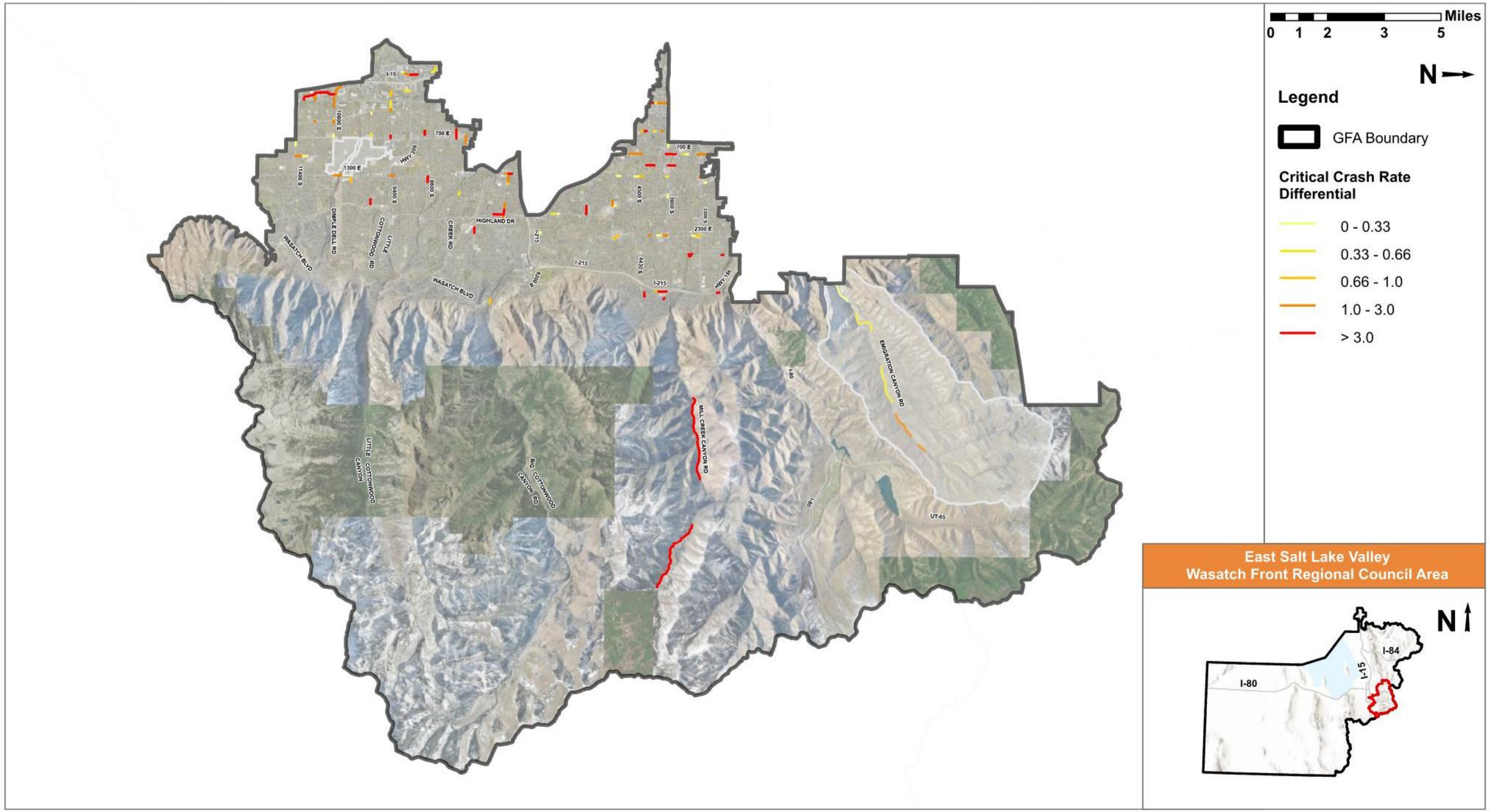


Figure 5.2 – CCR Differential – Segments (Federal Aid Routes)

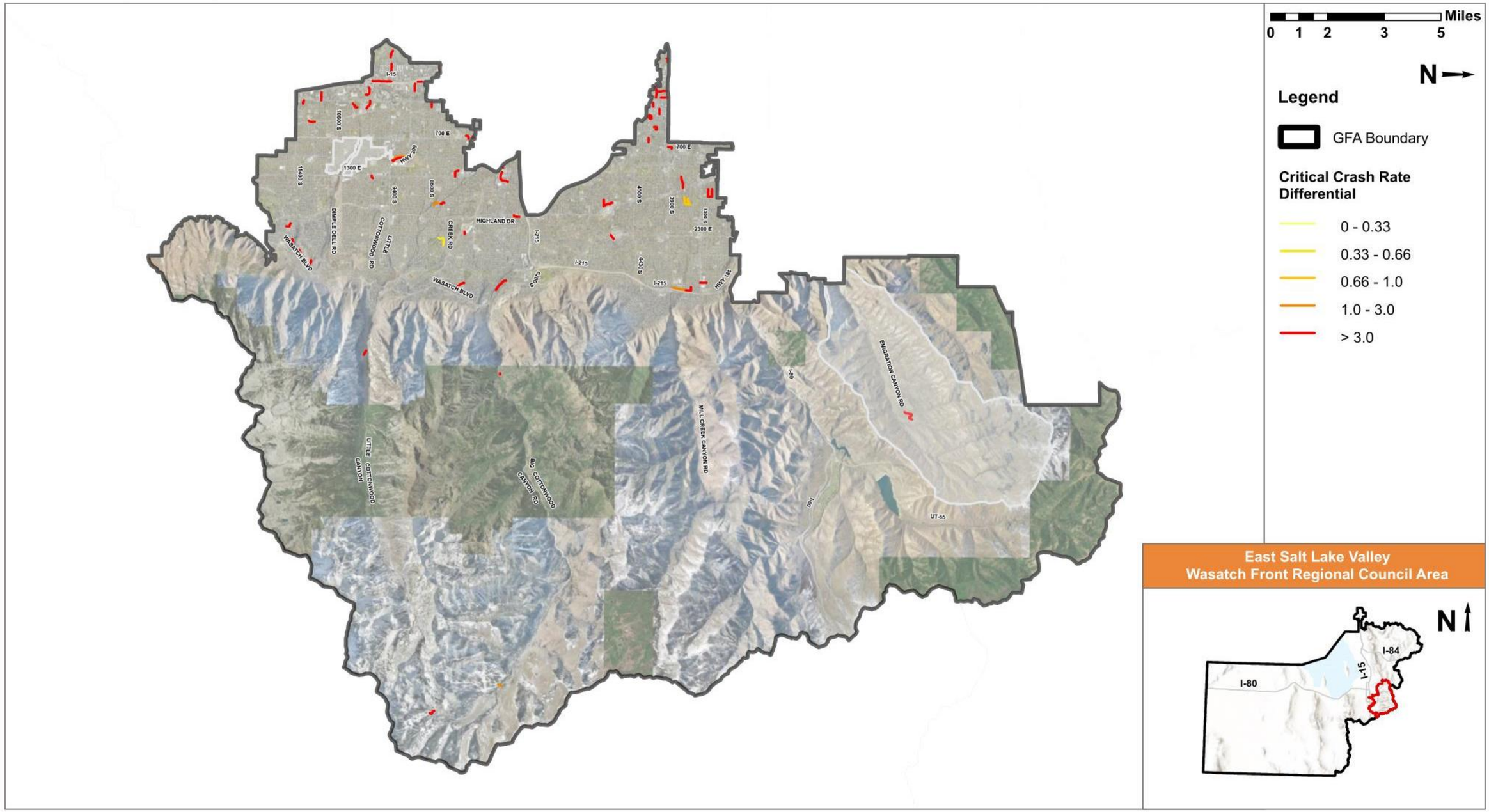


Figure 5.3 – CCR Differential – Segments (Local Routes)

Table 5.1 – Crash and Network Screening Analysis Results - Segments

Facility	Limits	Functional Classification	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	Angle	Front to Rear	Head On	Single Vehicle	Parked Vehicle	Rear to Rear	Rear to Side	Sideswipe (Same Direction)	Sideswipe (opposite Direction)	Other/Unknown	Pedestrian	Bicycle	Motorcycle
State Routes																								
Guardsman Pass Rd (SR-190)	Fallen Pines Ln to Skyline View Ln	Minor Collector	Brighton	4	7.3	36	0	0	1	1	2	0	0	0	2	0	1	0	1	0	0	0	0	1
Big Cottonwood Canyon Rd (SR-	Silver Fork Rd to Mountain Sun Ln	Minor Arterial	Brighton	4	5.8	4	0	0	0	0	4	0	2	0	2	0	0	0	0	0	0	0	0	0
Big Cottonwood Canyon Rd (SR-	Moose Meadow Ln to Silver Fork Rd	Minor Arterial	Brighton	4	5.5	46	0	0	1	2	1	0	0	0	3	0	0	0	1	0	0	0	0	0
Big Cottonwood Canyon Rd (SR-	Access Road to Access Road	Minor Arterial		55	5.4	587	0	3	9	6	37	4	6	0	37	4	0	0	4	0	0	0	0	7
3300 S (SR-171)	800 E to Scott Ct	Other Principal Arterial	Millcreek	26	4.3	78	0	0	1	3	22	10	11	1	1	0	0	0	0	2	1	0	0	0
4500 S (SR-266)	950 E to Lemans Dr	Other Principal Arterial	Millcreek	4	4.0	35	0	0	0	3	1	1	3	0	0	0	0	0	0	0	0	0	0	0
4500 S (SR-266)	Arcadia Green Way to 900 E	Other Principal Arterial	Millcreek	27	3.0	163	0	0	3	7	17	11	7	0	4	2	0	0	0	3	0	2	0	0
4430 S (SR-266)	2950 E to Wallace Ln	Other Principal Arterial	Holladay	6	2.4	152	0	1	2	1	2	5	0	0	1	0	0	0	0	0	0	0	0	0
9000 S (SR-209)	Sandy Pkwy to I-15	Other Principal Arterial	Sandy	34	2.4	170	0	0	3	7	24	2	12	0	4	1	0	0	0	15	0	0	0	2
State St (US-89)	Gordon Ave to Hill Ave	Other Principal Arterial	Millcreek	9	2.3	144	0	1	2	0	6	7	0	0	2	0	0	0	0	0	0	1	0	0
Federal Aid Routes																								
Millcreek Canyon Rd	NF-018 to NF-020	Minor Collector		6	171.7	234	0	2	2	0	2	0	0	0	4	2	0	0	0	0	0	0	4	0
Millcreek Canyon Rd	Fir Crest to Big Water Gulch	Minor Collector		5	128.0	26	0	0	1	0	4	0	0	0	4	1	0	0	0	0	0	0	0	0
Jupiter Dr	Pluto Way to Juno Cir	Minor Collector	Millcreek	5	121.3	5	0	0	0	0	5	2	1	0	2	0	0	0	0	0	0	0	0	0
8000 S	615 E to 700 E	Minor Collector	Sandy	7	52.6	17	0	0	0	1	6	3	3	1	0	0	0	0	0	0	0	0	0	0
Millcreek Canyon Rd	Nf-020 to Maple Cove	Minor Collector		3	50.2	96	0	1	0	0	2	0	1	0	1	1	0	0	0	0	0	1	0	0
Auto Mall Dr	State St to 11000 S	Major Collector	Sandy	18	23.5	101	0	0	1	6	11	10	4	0	0	0	0	0	0	4	0	0	0	0
Auto Mall Dr	Holiday Park Dr to 10600 S	Major Collector	Sandy	10	23.4	31	0	0	0	2	8	5	3	0	1	0	0	0	0	1	0	0	0	0
2700 E	Hillside Ln to Evergreen Ave	Major Collector	Millcreek	9	23.2	41	0	0	1	1	7	0	0	0	7	0	0	0	2	0	0	0	0	0
1100 E	3900 S to 3745 S	Minor Collector	Millcreek	5	15.9	5	0	0	0	0	5	0	1	0	3	0	0	0	0	1	0	0	0	0
Oakview Dr	Diana Way to Fortuna Way	Minor Collector	Millcreek	3	13.1	24	0	0	1	0	2	0	0	0	1	2	0	0	0	0	0	0	0	1
Local Streets																								
Oak Grove Dr	Rockhampton Dr to High Mountain Dr	Local	Sandy	3	317.2	24	0	0	1	0	2	0	0	0	1	2	0	0	0	0	0	0	0	0
Sunnyvale Aprtments	3940 S	Local	Millcreek	3	176.8	3	0	0	0	0	3	0	1	0	1	1	0	0	0	0	0	0	0	0
775 E	3900 S to 3805 S	Local	Millcreek	3	127.6	3	0	0	0	0	3	0	1	0	1	1	0	0	0	0	0	0	0	0
Civic Center Dr	240 W to Evening Star Way	Local	Sandy	5	92.9	5	0	0	0	0	5	0	0	0	4	1	0	0	0	0	0	0	0	0
Snake Creek Rd	Brighton Lp to Mary Lake Ln	Local	Brighton	3	87.5	3	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
Wasatch Resort Rd	Little Cottonwood to Power Plant Rd	Local		3	74.3	35	0	0	1	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0
4100 S	430 E to 465 E	Local	Millcreek	3	70.1	3	0	0	0	0	3	1	0	0	0	1	0	0	0	0	1	0	0	0
Vista Way	Cresent Vista Ln to 11000 S	Local	Sandy	4	69.4	25	0	0	1	0	3	2	0	0	2	0	0	0	0	0	0	0	0	0
The Falls Apartment Complex	Falls at Hunters Pointe to The Falls Apa	Local	Sandy	3	69.0	3	0	0	0	0	3	0	0	0	2	1	0	0	0	0	0	1	0	1
Beetdigger Blvd	State St to Sego Lily Dr	Local	Sandy	7	68.6	28	0	0	1	0	6	4	2	0	1	0	0	0	0	0	0	0	0	0

1. Equivalent Property Damage Only Crashes

= Local CCR Differential > 3.0
= Local CCR Differential 1.0 - 3.0
= Local CCR Differential 0.66 - 1.0
= Local CCR Differential 0.33 - 0.66
= Local CCR Differential 0.0 - 0.33

= 90 - 100% probability that crash type is over-represented
= 80 - 90% probability that crash type is over-represented
= 70 - 80% probability that crash type is over-represented

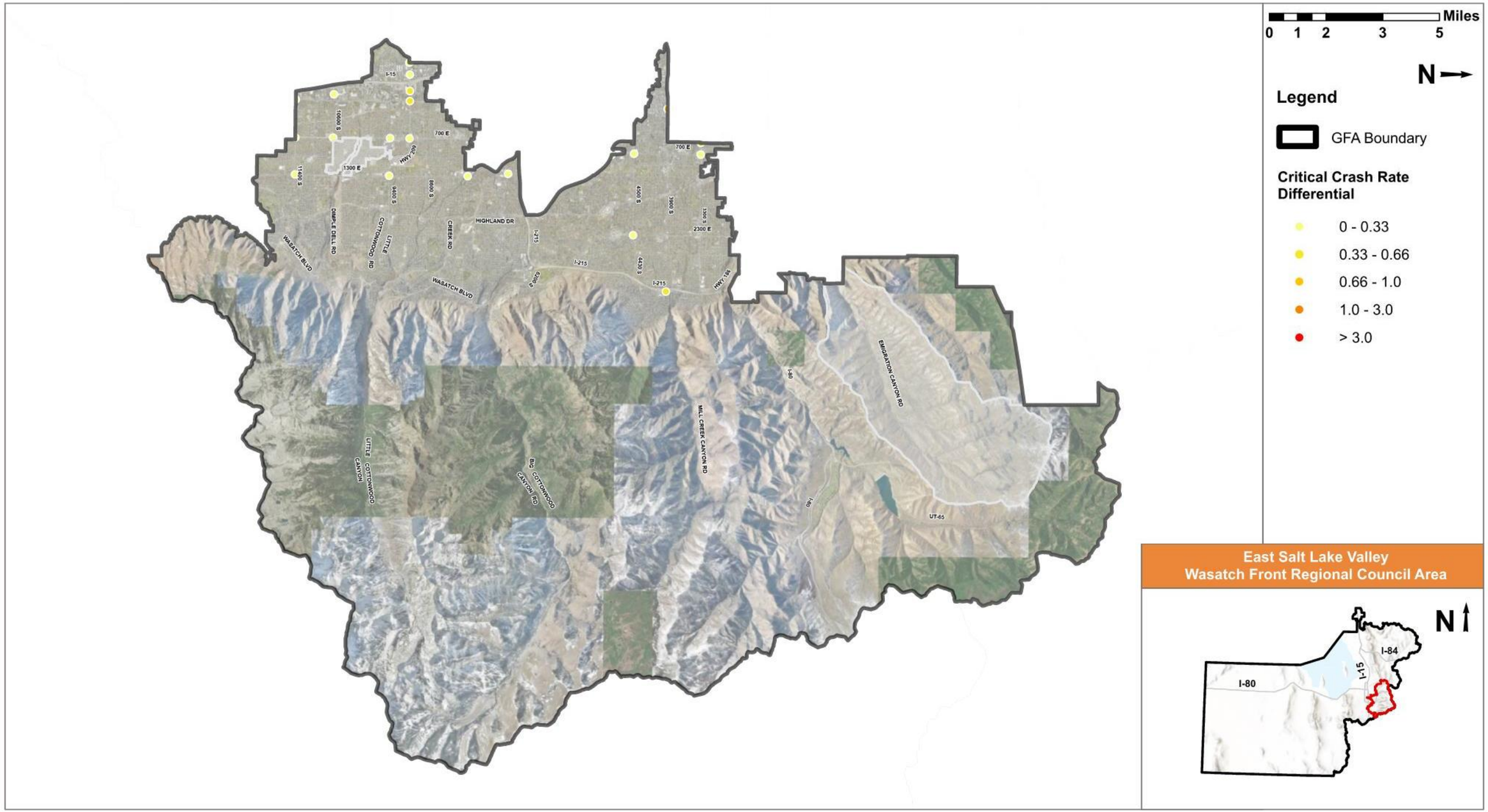


Figure 5.4 – CCR Differential – Intersections (Signalized)

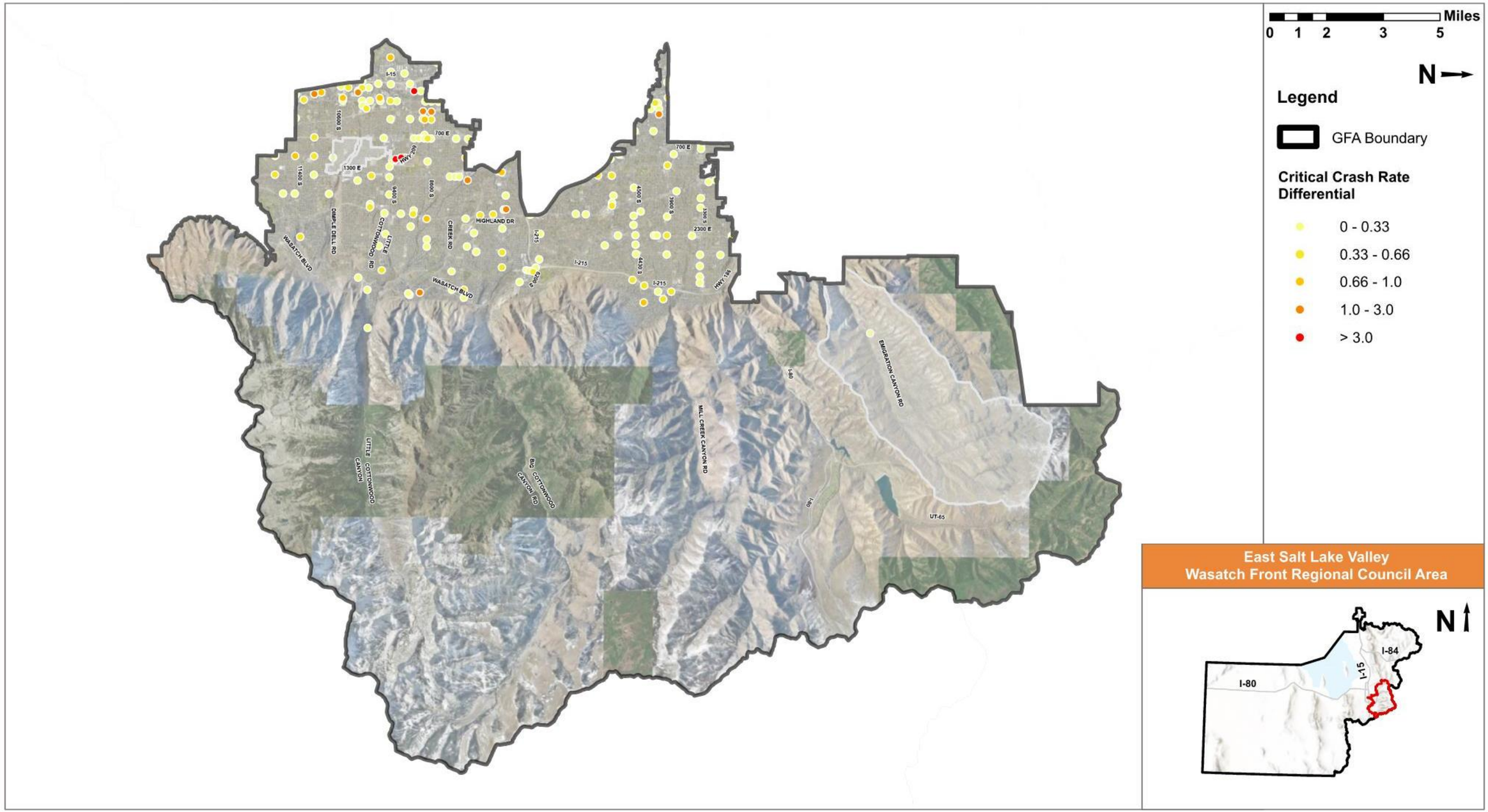


Figure 5.5 – CCR Differential – Intersections (Unsignalized)

Table 5.2 – Crash and Network Screening Analysis Results - Intersections

Intersection	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	Angle	Front to Rear	Head On	Parked Vehicle	Single Vehicle	Rear to Rear	Rear to Side	Sideswipe (Same Direction)	Sideswipe (opposite Direction)	Other/Unknown	Pedestrian	Bicycle	Motorcycle
Signalized Intersections																						
State St & 3900 S	Millcreek	182	0.8	1524	0	3	32	37	110	106	41	10	6	3	0	0	1	15	0	2	0	5
Monroe St & 9000 S	Sandy	141	0.6	957	0	1	15	39	86	60	61	1	0	1	0	0	2	16	0	0	0	2
700 E & 3300 S	Millcreek	149	0.5	1665	1	1	13	25	109	66	54	3	9	0	0	0	1	13	3	4	1	2
Wasatch Blvd & 3900 S	Millcreek	48	0.5	423	0	2	6	6	34	23	16	1	3	0	0	0	1	4	0	0	1	0
State St & 9000 S	Sandy	160	0.3	1182	0	3	15	41	101	33	87	0	14	2	0	0	0	23	1	3	2	2
1300 E & 11400 S	Sandy	68	0.3	653	0	2	10	18	38	39	21	3	2	1	0	0	1	1	0	0	0	1
900 E & 4500 S	Millcreek	113	0.3	969	0	4	15	16	78	53	42	4	7	0	0	1	1	5	0	3	1	5
Sandy Pkwy & 9000 S	Sandy	118	0.2	851	0	1	15	31	71	37	62	2	1	0	0	0	0	16	0	1	1	2
900 E & Vanwinkle Expy	Millcreek	98	0.2	539	0	0	11	20	67	26	52	6	2	0	0	0	1	9	2	0	0	0
1300 E & 9400 S	Sandy	103	0.1	604	0	1	7	25	70	15	71	2	7	0	0	0	0	8	0	2	1	0
Unsignalized Intersections																						
Monroe St & Freedom Ave	Sandy	9	4.3	41	0	0	1	1	7	4	2	0	1	0	0	0	0	2	0	1	0	0
Quarry Bend Dr & 9375 S	Sandy	4	3.6	14	0	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0
Quarry Bend Dr & 9070 S	Sandy	4	3.6	35	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0
Centennial Pkwy & 10070 S	Sandy	6	2.1	69	0	0	2	2	2	6	0	0	0	0	0	0	0	0	0	0	0	0
Alpen Cir & Escalade Ave	Cottonwood	3	1.9	3	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0
Auto Mall Dr & 11000 S	Sandy	5	1.5	15	0	0	0	1	4	4	1	0	0	0	0	0	0	0	0	0	0	0
150 E & Pioneer Ave	Sandy	7	1.5	39	0	0	1	1	5	7	0	0	0	0	0	0	0	0	0	0	0	0
Greenfield Way & Clover Dale Rd	Cottonwood	3	1.3	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
Quarry Bend Dr & 9070 S	Sandy	7	1.3	28	0	0	0	2	5	7	0	0	0	0	0	0	0	0	0	0	0	0
200 E & Hill Ave	Millcreek	3	1.2	3	0	0	0	0	3	1	1	0	1	0	0	0	0	0	0	0	0	0

1. Equivalent Property Damage Only Crashes

= Local CCR Differential > 3.0
= Local CCR Differential 1.0 - 3.0
= Local CCR Differential 0.66 - 1.0
= Local CCR Differential 0.33 - 0.66
= Local CCR Differential 0.0 - 0.33

= 90 - 100% probability that crash type is over-represented
= 80 - 90% probability that crash type is over-represented
= 70 - 80% probability that crash type is over-represented

6. Roadway Characteristic Risk Analysis

A roadway characteristic risk analysis was performed using the following three sub-analysis:

- Crash Profile Risk Assessment
- usRAP Risk Assessment
- Local Street Risk Assessment

6.1. Crash Profile Risk Assessment

This risk assessment sub-analysis identifies common roadway characteristics for fatal and serious injury crashes that occurred within the WFRC study area. Based on the scoring of the various roadway characteristic risks identified from analysis of crash reports, a risk score was assigned to all state and federal aid routes within the East Salt Lake Valley GFA consistent with the methodology described in Tech Memo #1 Section 3.4. The results of the Crash Profile Risk Assessment are mapped in the following figures:

- **Figure 6.1** – Crash Profile Risk Assessment Results (State Routes)
- **Figure 6.2** – Crash Profile Risk Assessment Results (Federal Aid Routes)

Error! Not a valid bookmark self-reference. provides an overview of urban and rural segments with the highest risk scoring. Up to ten urban and rural segments are listed if the segment received at least 67% of the overall total risk score.

Table 6.1 – Crash Profile Risk Segments (Federal Aid Routes)

Area Type	Road Segment	Extents	Risk Score
Urban	Wasatch Boulevard	Heughs Canyon Way to 4431 South	23.1 to 27
Urban	9400 South	255 West to SR-209	23.4 to 25
Urban	Sandy Parkway / 500 West	South GFA Extents to North GFA Extents	23.2 to 25
Urban	7000 South / Fort Union Boulevard	Union Park Avenue to Wasatch Boulevard	23 to 25
Urban	7800 South	415 East to Creek Road	23 to 25
Urban	Murray Holliday Road	Highland Drive to Holladay Boulevard	23.3
Urban	Holladay Boulevard	6200 South to 4500 South	21.8 to 23.1
Urban	3900 South	500 West to Highland Drive	22.2 to 22.9
Urban	Wasatch Boulevard	Little Cottonwood Road to Danish Road	22.2
Urban	10600 South	465 East to Crocus Street	21.6
Rural	Highland Drive	South GFA Extents to North GFA Extents	22.4 to 24.9
Rural	Emigration Canyon Road	West GFA Extents to SR-65	20.1 to 22.8
Rural	Mill Creek Canyon Road	Scout Hollow River to Soldier Fork River	20.7 to 21.5
Rural	Imperial Street	3300 South to North GFA Extents	20.6
Rural	Lincoln Lane	Highland Drive to 2700 East	20.3

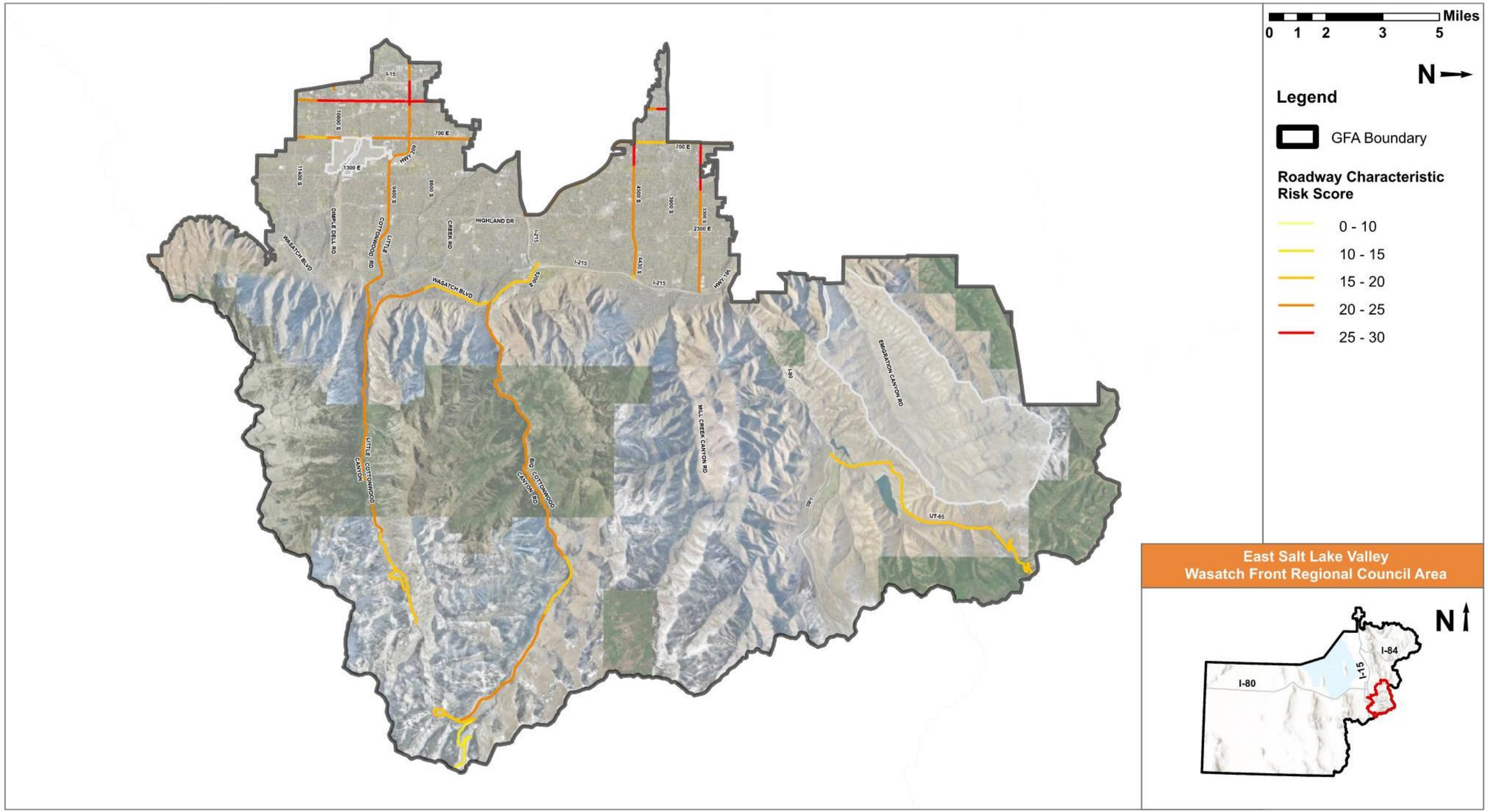


Figure 6.1 – Crash Profile Risk Assessment Results (State Routes)

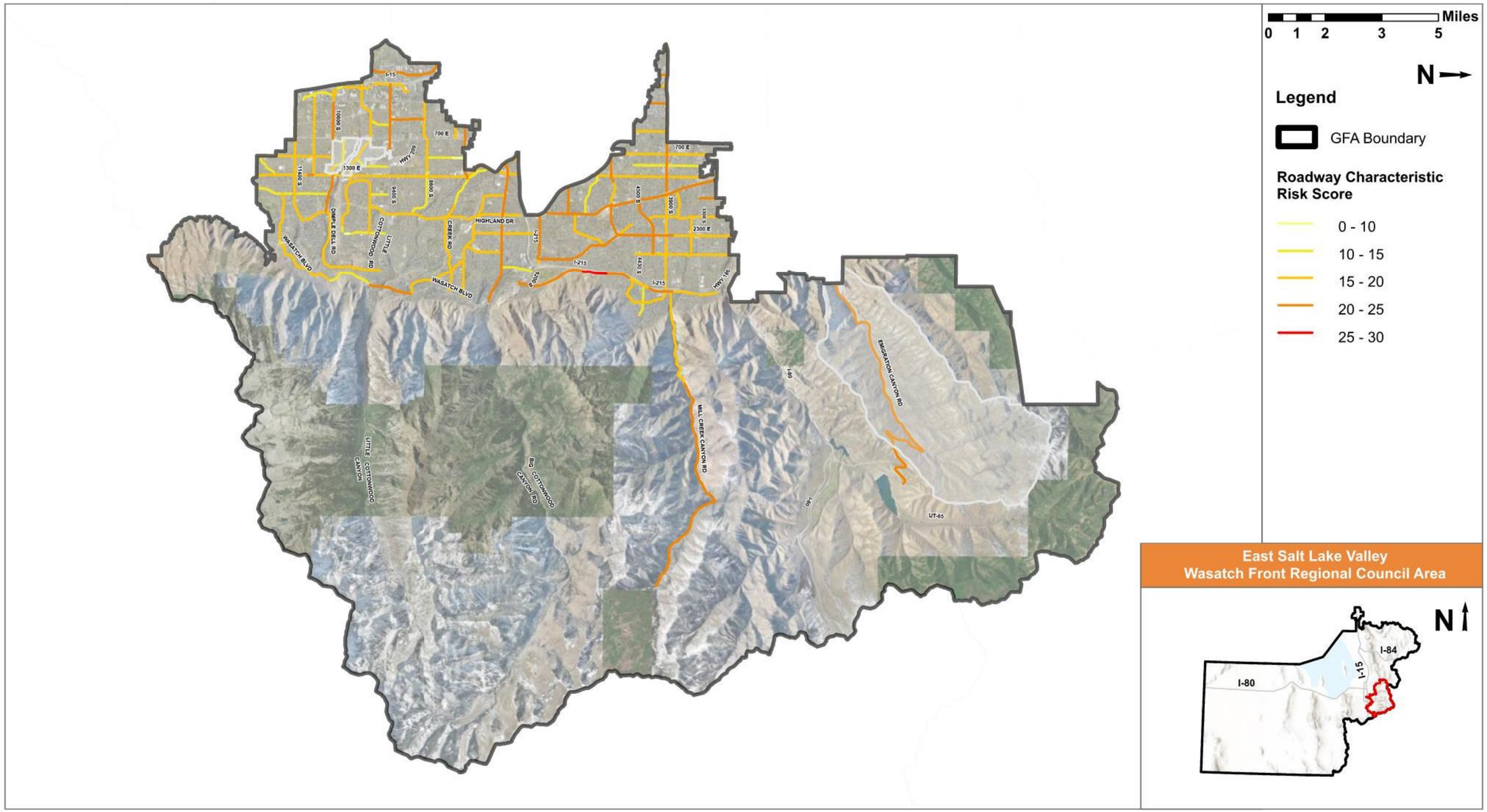


Figure 6.2 – Crash Profile Risk Assessment Results (Federal Aid Routes)

6.2. usRAP Risk Assessment

A roadway characteristic risk assessment was performed using roadway feature data collected for Utah state and federal aid routes. The risk assessment was performed using the usRAP tool. The output of the usRAP tool is a star rating or risk rating for vehicle, pedestrian, and bicyclist features. The results of the usRAP risk assessment by star rating are mapped in the following figures:

- **Figure 6.3** – Vehicle Star Rating (State Routes)
- **Figure 6.4** – Vehicle Star Rating (Federal Aid Routes)
- **Figure 6.5** – Pedestrian Star Rating (State Routes)
- **Figure 6.6** – Pedestrian Star Rating (Federal Aid Routes)
- **Figure 6.7** – Bicycle Star Rating (State Routes)
- **Figure 6.8** – Bicycle Star Rating (Federal Aid Routes)

A summary of the highest risk segments (1-2 Stars) for federal aid routes in the East Salt Lake Valley GFA are located in **Table 6.2**.

Table 6.2 – usRAP Risk Segments (Federal Aid Route)

Road Segment	Extents	Vehicle Risk	Pedestrian Risk	Bicycle Risk
Emigration Canyon Road	West GFA Extents to Pioneer Ridge Road		X	
Emigration Canyon Road	Margarethe Lane to SR-65		X	
Mill Creek Canyon Road	NF-020 to Upper Big Water TH		X	
Richmond Street/1300 East	Lavon Drive to North GFA Extents	X	X	X
Highland Drive	Van Winkle Expressway to North GFA Extents	X	X	X
Imperial Street	3300 South to North GFA Extents	X	X	X
2000 East	3300 South to North GFA Extents	X	X	X
2300 East	Claybourne Avenue to 2700 South	X	X	X
2700 East	3600 South to 3210 South	X		
2300 East	3380 South to North GFA Extents		X	
2300 East	Delia Drive to 3380 South	X	X	X
2300 East	Sky Pines Court to Delia Drive		X	X
2300 East	Murray Holladay Road to Sky Pines Court	X	X	X
Holladay Blvd	County Road to Murray Holladay Road	X	X	X
Holladay Blvd	6200 South to County Road		X	X
Siggard Drive	Highland Drive to 2000 East	X		X
Wasatch Blvd	Bernada Drive to 3300 South		X	

Road Segment	Extents	Vehicle Risk	Pedestrian Risk	Bicycle Risk
Wasatch Blvd	Juniper Way to Bernada Drive		X	X
Wasatch Blvd	6200 South to Juniper Way		X	
1300 East	Van Winkle Expressway to College Street	X	X	X
1300 East	College Street to Park Crest Circle		X	X
3900 South	West GFA Extents to 1100 East	X	X	X
3900 South	1100 East to Highland Drive		X	X
3900 South	Highland Driveto I-215	X	X	X
900 East	Van Winkle Expressway to 3580 South		X	
Lincoln Lane	Highland Drive to 2700 East	X	X	X
2700 East	4500 South to Delsa Drive	X		
Murray Holiday Road	Highland Drive to 2300 East		X	X
6200 South	Highland Drive to Field Rose Drive		X	
6200 South	Field Rose Drive to Holladay Blvd		X	X
6200 South	Holladay Blvd to I-215		X	
Union Park Avenue	1300 East to I-15		X	
Union Park Avenue	Forbusch Lane to 1300 East		X	X
1300 East	8125 South to Forbusch Lane		X	
1300 East	8255 South to 8125 South		X	X
Forbush Lane/7755 South	West GFA Extents to Canterwood Lane		X	X
Fort Union Blvd/7000 South	West GFA Extents to Wasatch Blvd	X	X	X
1300 East	Union park Avenue to I-215		X	
1700 East	Parkridge Drive to 7000 South	X		
Parkridge Drive	1700 East to Highland Drive	X		
Bengal Blvd	Highland Drive to Wasatch Blvd	X	X	X
Highland Drive	Bengal Blvd to I-215	X	X	X
Highland Drive	Johnstone Drive to Bengal Blvd		X	X
Highland Drive	9400 South to Johnstone Drive		X	
Highland Drive	9800 South to 9400 South		X	X
2300 East	Bengal Blvd to 6200 South	X	X	X
2700 East	Bengal Blvd to 7000 South	X		
3500 East	Wasatch Blvd to Bengal Blvd	X	X	X
Creek Road	Telford Way to 3500 East	X	X	X

Road Segment	Extents	Vehicle Risk	Pedestrian Risk	Bicycle Risk
Danish Road	Wasatch Blvd to Bengal Blvd	X	X	
Wasatch Blvd	Little Cottonwood Road (South) to Little Cottonwood Road (North)		X	X
8600 South	State Street to 550 East	X		
500 West	South GFA Extents to 9120 South		X	X
225 West/Monroe Street	10000 South to 9000 South		X	X
240 West	Mall Ring Road to 10000 South		X	
9400 South	Center Street to 9400 South		X	
10000 South	West GFA Extents to State Street	X	X	X
Sego Lily Drive	State Street to Tonya Drive	X	X	X
Sego Lily Drive	Tonya Drive to Poppy Lane		X	X
Sego Lily Drive	Poppy Lane to Hoast Lane		X	
Sego Lily Drive	Firelight Way to 2165 East		X	
Sego Lily Drive	2165 East to Vilas Drive		X	X
Larkspur Drive	700 East to Violet Drive	X		X
10600 South	I-15 to 1300 East	X	X	X
10720 South	1300 East to 2000 East	X	X	X
11000 South	Auto Mall Drive to Vista Way	X	X	X
11000 South	Vista Way to Hawkwood Drive		X	X
11000 South	Hawkwood Drive to 1300 East	X	X	
11400 South	I-15 to 11340 South	X	X	X
11340 South/11270 South	11400 South to High Mesa Drive	X	X	
High Mesa Drive	11270 South to 10720 South	X		
Wasatch Blvd	1700 East to Pepperwood Drive		X	X
Wasatch Blvd	Pepperwood Drive to Little Bell Canyon Road		X	
1700 East	South GFA Extents 10720 South		X	
Hidden Valley Drive	1000 East to 1300 East	X		
1300 East	South GFA Extents to Sego Lily Drive		X	X

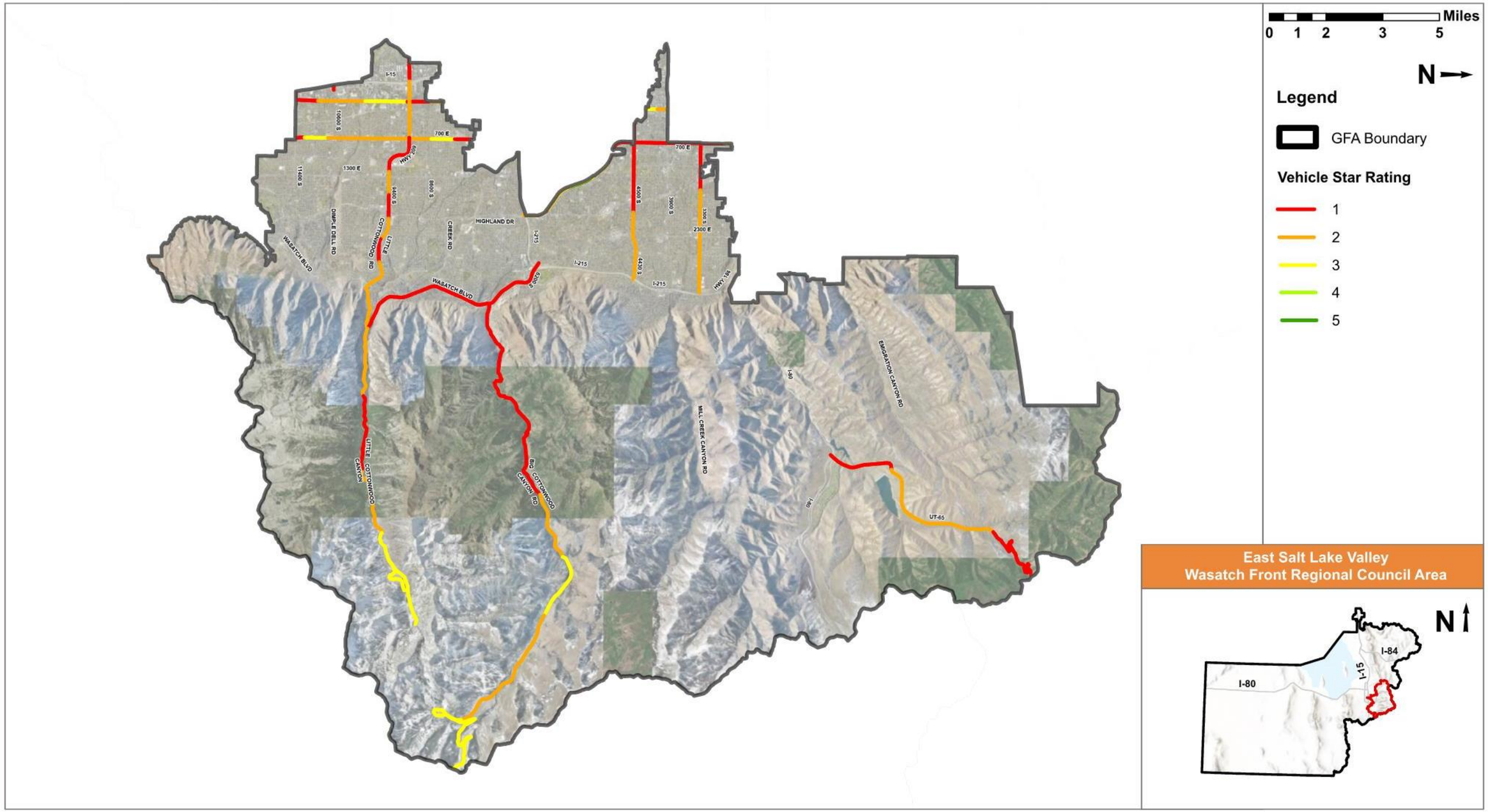


Figure 6.3 – Vehicle Star Rating (State Routes)

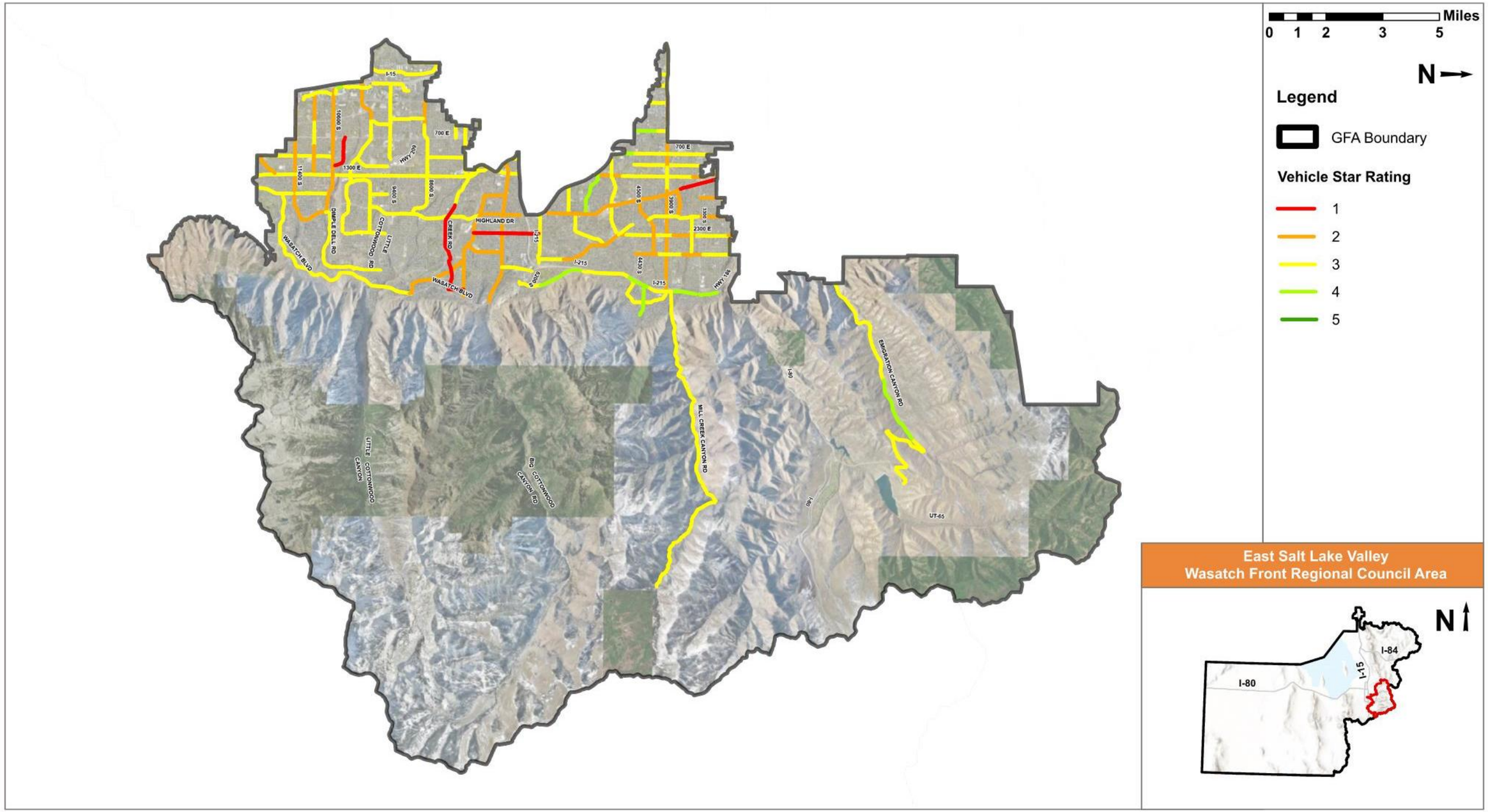


Figure 6.4 – Vehicle Star Rating (Federal Aid Routes)

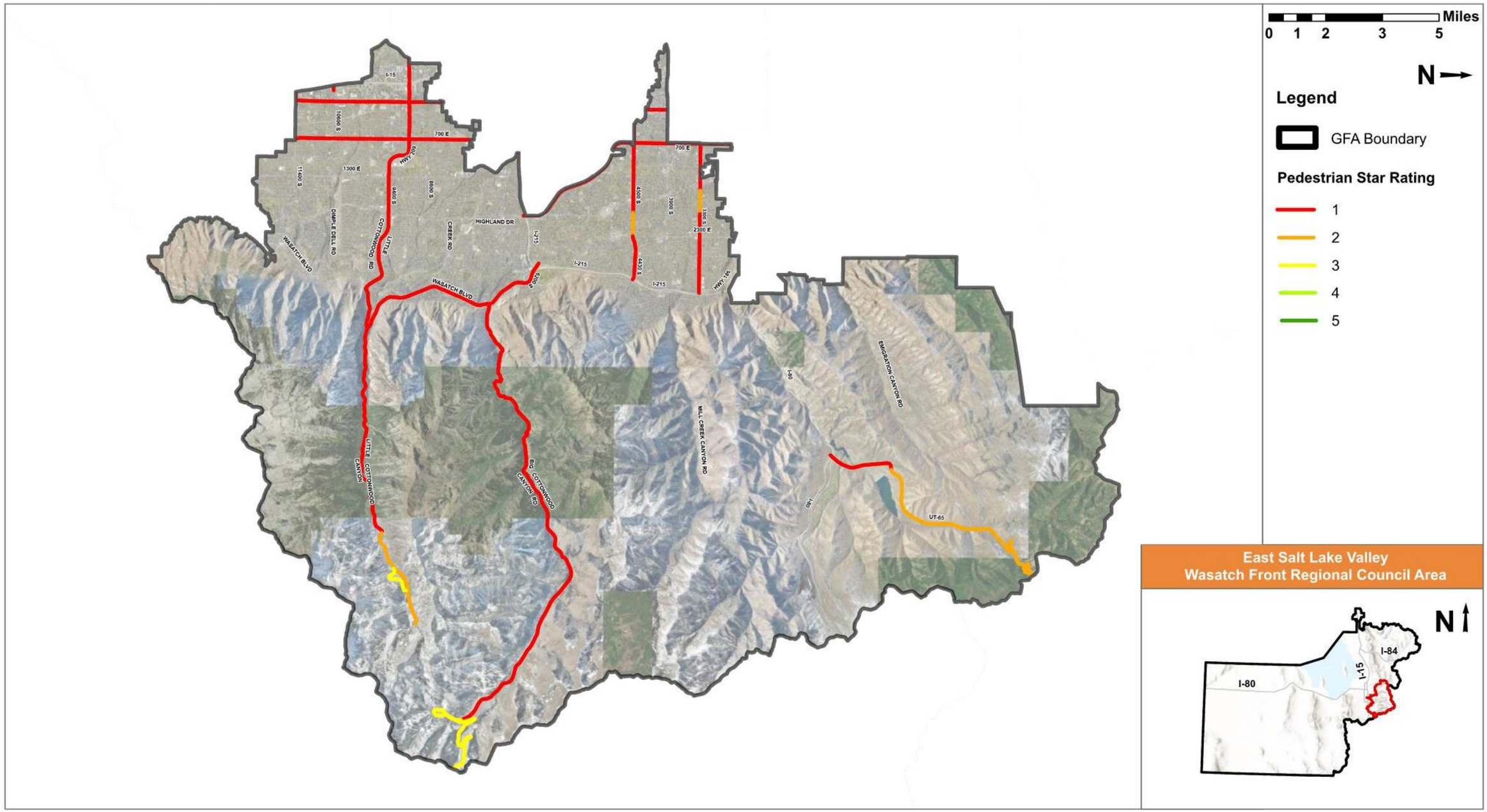


Figure 6.5 – Pedestrian Star Rating (State Routes)

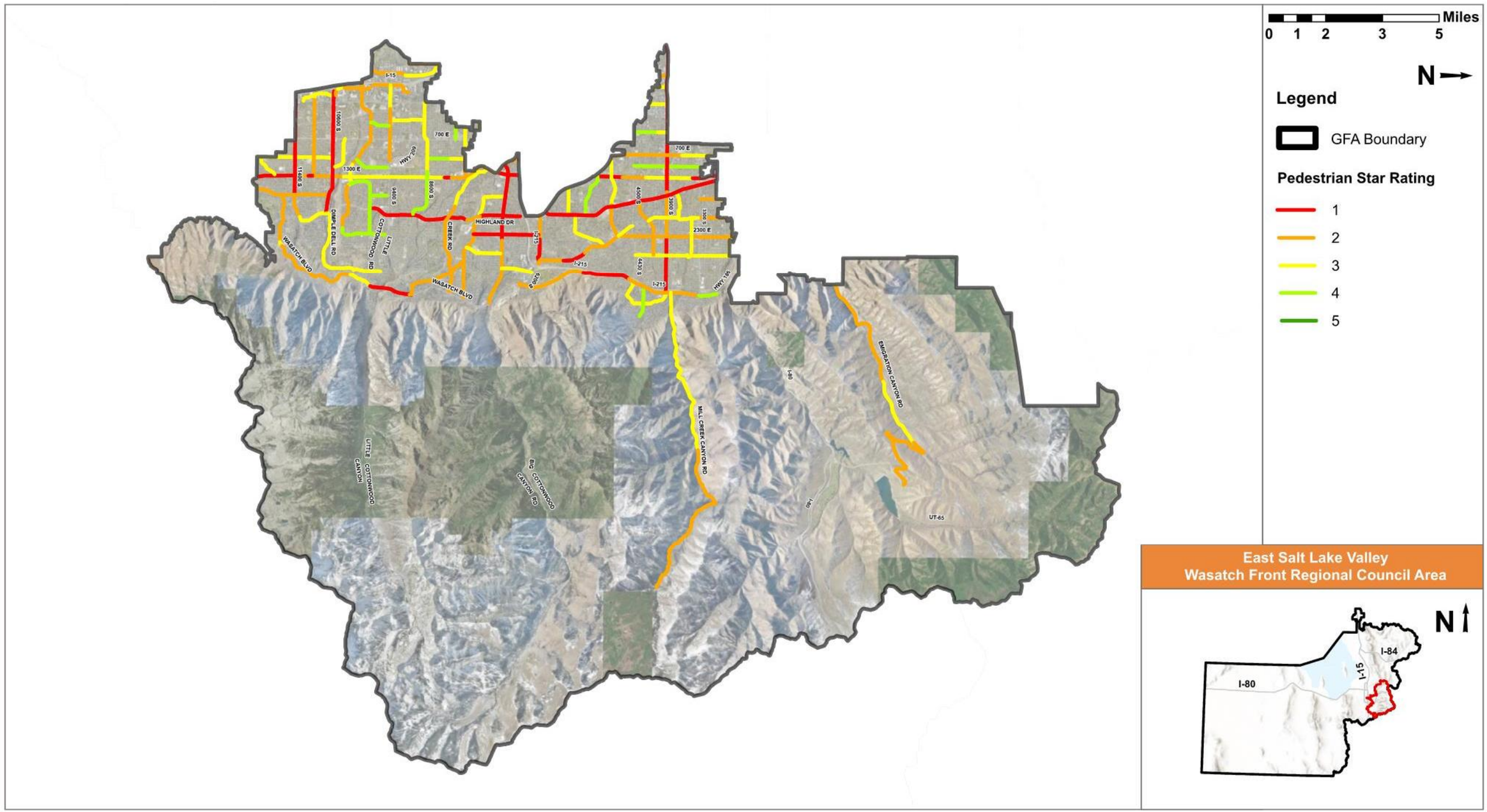


Figure 6.6 – Pedestrian Star Rating (Federal Aid Routes)

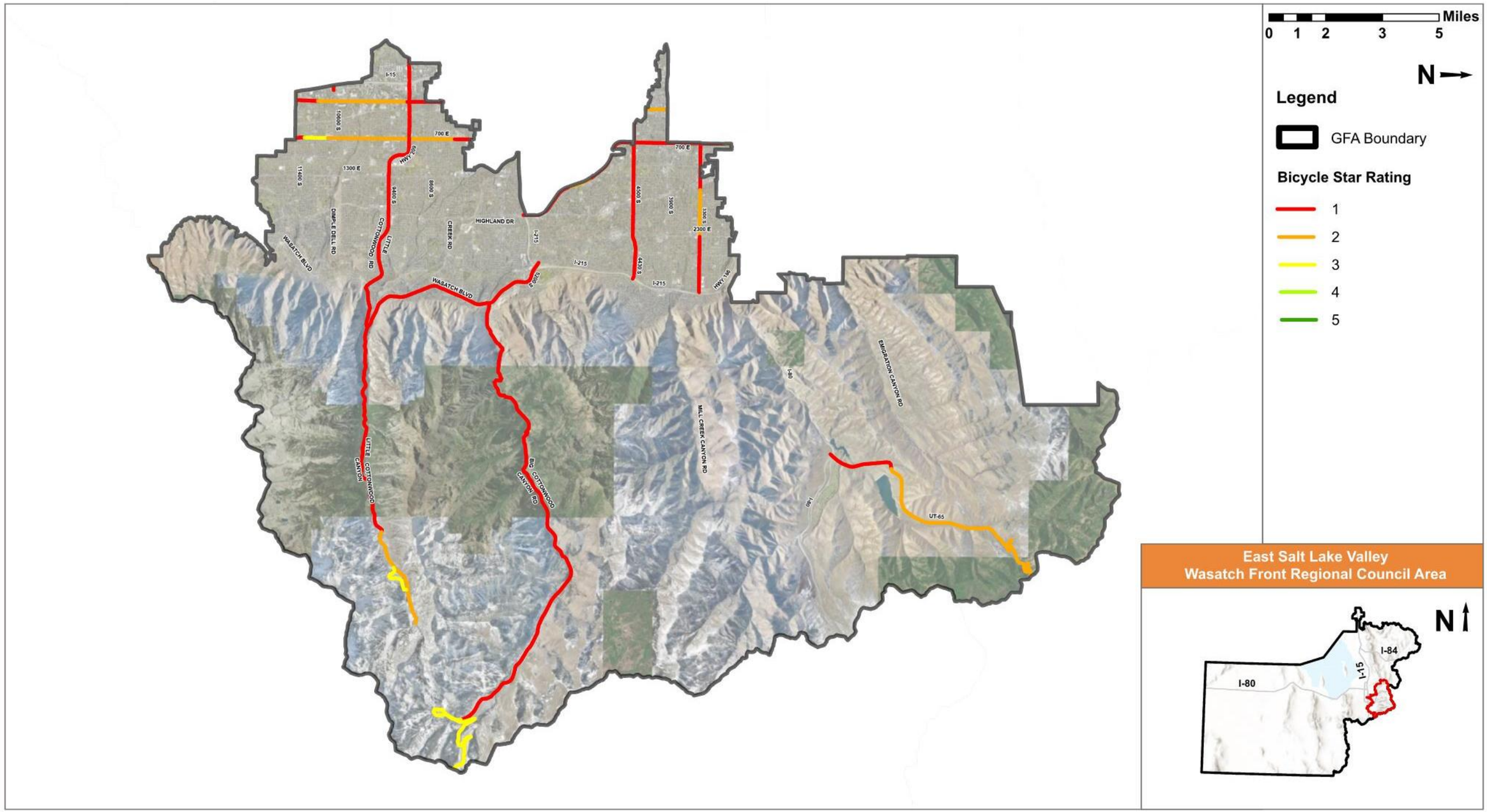


Figure 6.7 – Bicycle Star Rating (State Routes)

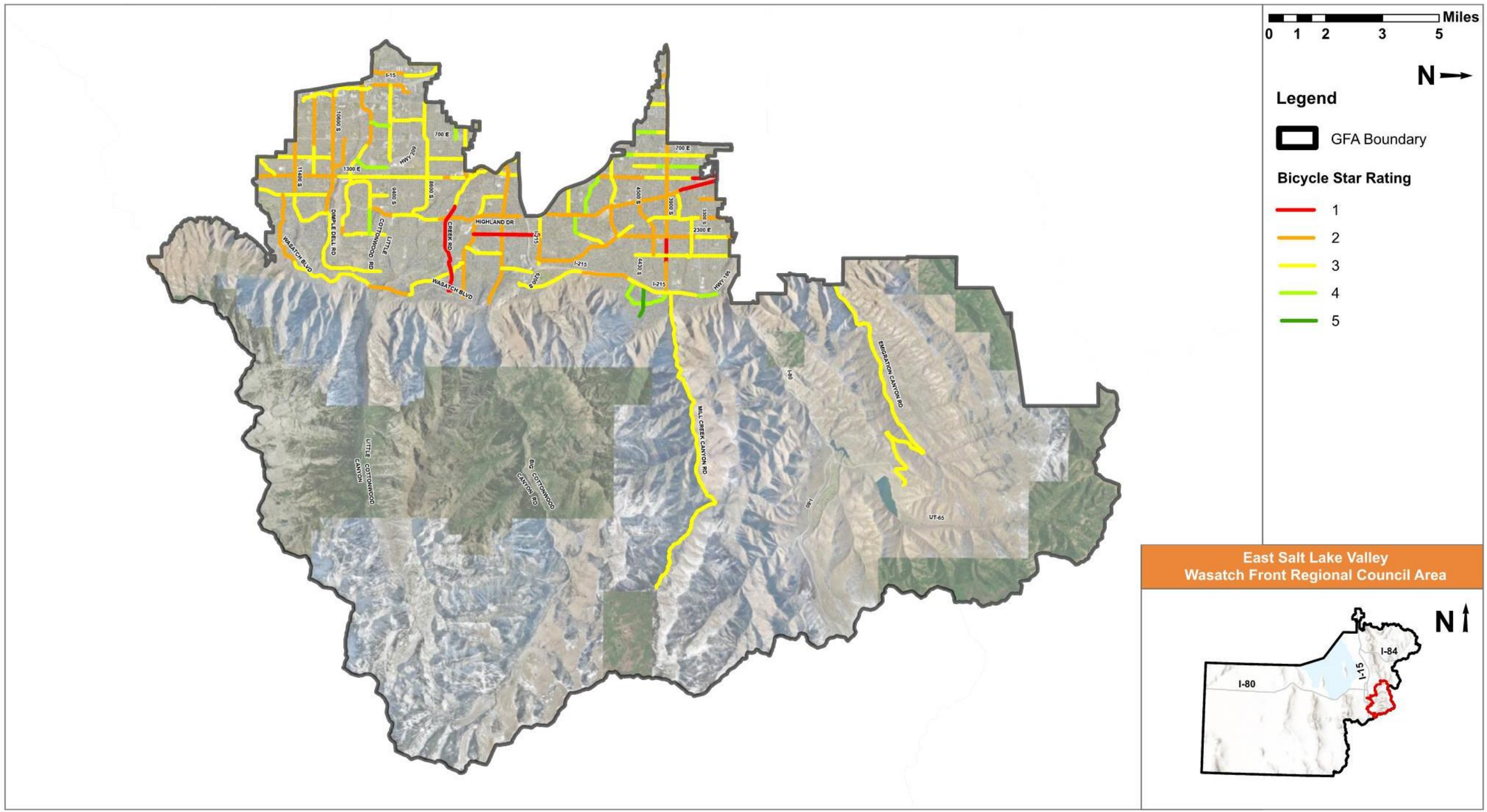


Figure 6.8 – Bicycle Star Rating (Federal Aid Routes)

6.3. Local Street Risk Assessment

A local street risk assessment was performed for all local roads within WFRC that are not included in the usRAP network. The results of the local street risk assessment are summarized in **Table 6.3** and **Figure 6.9**. Mapped segments include the top 5% risk segments within the WFRC study area and the top 10 segments or high priority segments within the East Salt Lake Valley GFA.

Table 6.3 – Local Street High Priority Segments

Road Segment	Extents
900 East:	3100 South – 3500 South
Sandy Parkway:	SR-209 – 700 West
Alta Canyon Drive:	Highland Drive – Willow Creek Drive
Riverside Drive:	SR-209 – 9600 South
900 East:	3700 South – 4000 South
Monroe Street:	8755 South – 9000 South
Jupiter Drive:	Wasatch Boulevard – 4100 South
300 East:	9800 South – 8400 South
1100 East:	3200 South – SR-266
9400 South:	Riverside Drive – I-15

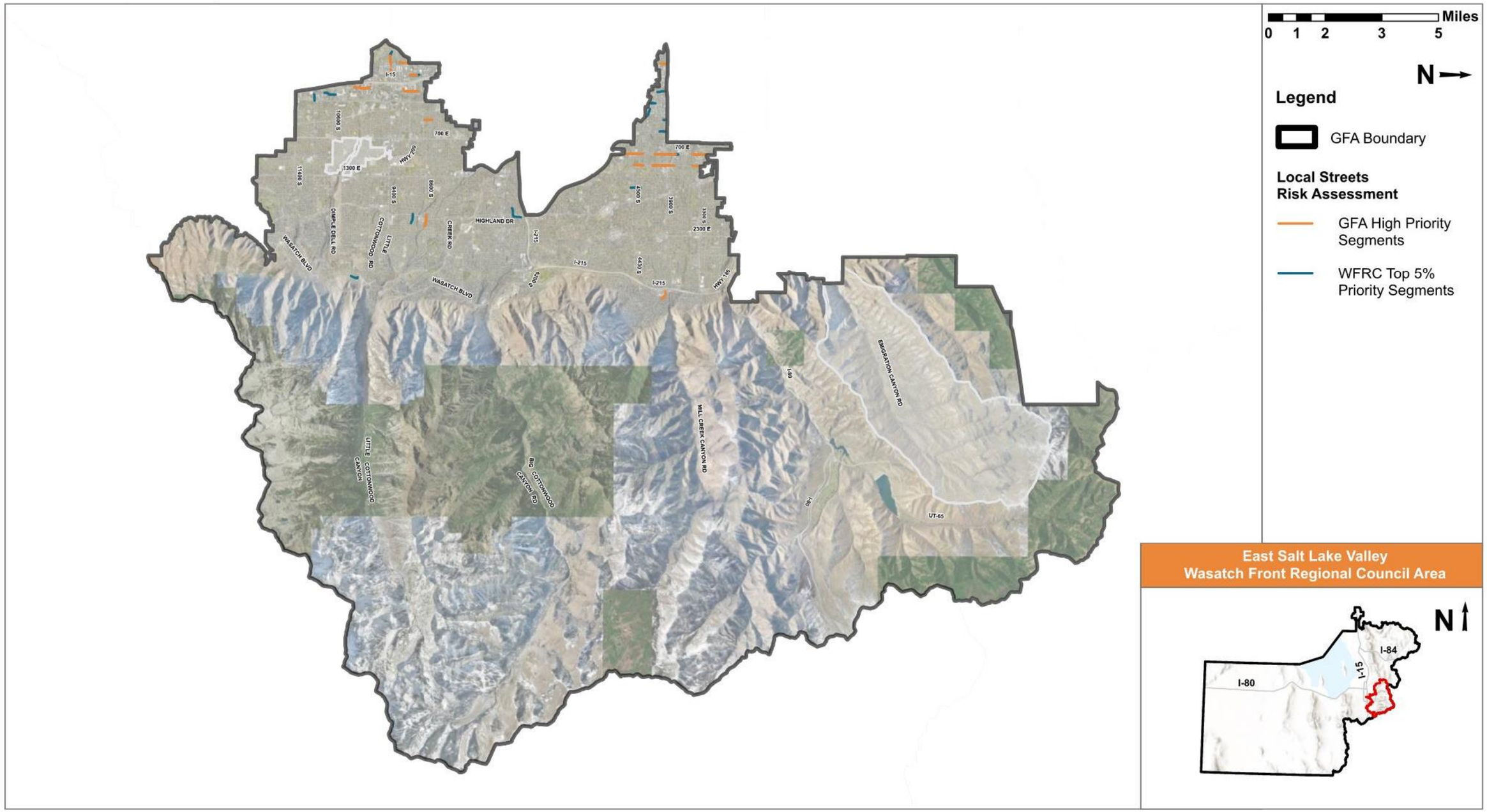


Figure 6.9 – Local Street Risk Assessment Results

7. Safety Analysis Summary

This section summarizes the safety analysis performed for the East Salt Lake Valley GFA by identifying common risk characteristics and a composite high-risk roadway network.

7.1. Common Risk Characteristics

Based on the SHSP Emphasis Area Analysis and the Historical Crash Analysis summarized above, the following are common risk characteristics that should be considered when developing safety improvement projects specific to the East Salt Lake Valley GFA.

- Intersections
  - 43.7% of all fatal and serious injuries
- Roadway Departure
  - 25.6% of all fatal and serious injuries
  - 24.4% of all fatal and serious injury crashes
- Speed-Related
  - 20.2% of all fatal and serious injuries
- Older Driver
  - 20.2% of all fatal and serious injuries
- Motorcycle
  - 19.4% of all fatal and serious injuries
  - 9.0% of all fatal and suspected serious injury crashes
- Active Transportation
  - 18.1% of all fatal and serious injury crashes
- Left Turn at Intersection
  - 18.8% of all fatal and serious injury crashes

7.2. Composite High-Risk Roadway Network

Each of the safety analysis methodologies completed identified segments that can be improved to reduce fatalities and serious injuries.

To identify an overall high-risk roadway network and provide focused information for jurisdictional decisions regarding prioritization of safety improvements, an analysis was performed to identify overlapping segments from each of the analysis methodologies. A composite score, from zero to five, was determined using the approach in **Table 7.1**. The high-risk roadway network is a composite of the various risks as presented in **Section 4** through **Section 6** of Tech Memo #1. The top 10% of roadway segments for the entire WFRC area are included in the Composite High-Risk Network. These segments have a composite risk value of four or higher.

The East Salt Lake Valley GFA Composite High-Risk Network for Federal Aid routes is summarized in **Table 7.2**.

The results are also mapped in **Figure 7.1** (State Routes) and **Figure 7.2** (Federal Aid Routes).

Table 7.1 – Composite High-Risk Roadway

Analysis	Risk Type	Approach	Value
Historical Crash Analysis	Historical Crash Risk	Average Yearly Crash Totals ≥ 3 Crashes	1
Crash and Network Screening Analysis	Systemic Crash Risk	Positive Local CCR Differential	1
WFRC Risk Assessment	Roadway Risk	Risk Score ≥ 20	1
usRAP Risk Assessment	Vehicle Risk	Vehicle Star Rating = 1-2 Stars	1
usRAP Risk Assessment	Pedestrian Risk	Pedestrian Star Rating = 1-2 Stars	0.5
usRAP Risk Assessment	Bicycle Risk	Bicycle Star Rating = 1-2 Stars	0.5
		Total Possible Composite Risk Score	**5**

Table 7.2 – East Salt Lake Valley High-Risk Roadway Network (Federal Aid Routes)

Facility	Limits	Functional Classification	City	Composite Risk Score	Length (miles)	*usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	Crash Profile Risk Score	CCR Differential Analysis	Significant Crashes
Federal Aid Routes											
Highland Dr	Hudson Ave to Van Winkle Expy	Minor Arterial	Millcreek, Holladay	5	4.8	X	X	X	X		X
1300 E	3205 S to 3340 S	Minor Arterial	Millcreek, Holladay	4	0.2	X	X	X		X	X
2300 E	3395 S to Phylden Dr	Minor Arterial	Millcreek, Holladay	4	2.0	X	X		X	X	X
3900 S	700 E to Woodline Dr	Minor Arterial	Millcreek	4	1.5	X	X	X	X		X
Lincoln Ln	Lynne Ln to Camille St	Minor Collector	Holladay	4	0.7	X	X	X	X		X
1300 E	Pondoray Cir	Minor Arterial	Millcreek	4	0.1	X	X	X		X	X
Holladay Blvd	Murray Holladay Rd to Le Jardin Pl	Minor Arterial	Holladay	4	1.5	X	X	X	X		X
Murray Holladay Rd	Highland Cir to Highland Dr	Minor Arterial	Millcreek	4	0.1	X	X		X	X	X
Fort Union Blvd	Union Park Ave to Promenade Dr	Minor Arterial	Cottonwood Heights	4	2.5	X	X	X	X		X
Fort Union Blvd	Racquet Club Dr to Wasatch Blvd	Minor Arterial	Cottonwood Heights	5	0.1	X	X	X	X	X	X
Highland Dr	700 S to 7200 S	Other Principal Arterial	Cottonwoods Heights	4	0.3	X	X	X		X	X
Bengal Blvd	Butler Hills Dr to 2300 E	Minor Arterial	Cottonwoods Heights	4	0.1	X	X	X		X	X
Sego Lily Dr	Kills Ln to Kristin Dr	Minor Arterial	Cottonwoods Heights	4	0.1	X	X	X		X	X
Sandy Pkwy	9120 S to Universal Cir	Minor Arterial	Sandy	4	0.1	X	X		X	X	X
10600 S	I-15 to 2000 E	Minor Arterial	Sandy	4	3.5	X	X	X	X		X
11000 S	Heather Ridge Dr to Sady Ln	Major Collector	Sandy	4	0.1	X	X	X		X	X

Facility	Limits	Functional Classification	City	Composite Risk Score	Length (miles)	*usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	Crash Profile Risk Score	CCR Differential Analysis	Significant Crashes
11400 S	700 E to Sandy Creek Dr	Minor Arterial	Sandy	4	0.2	X	X	X		X	X

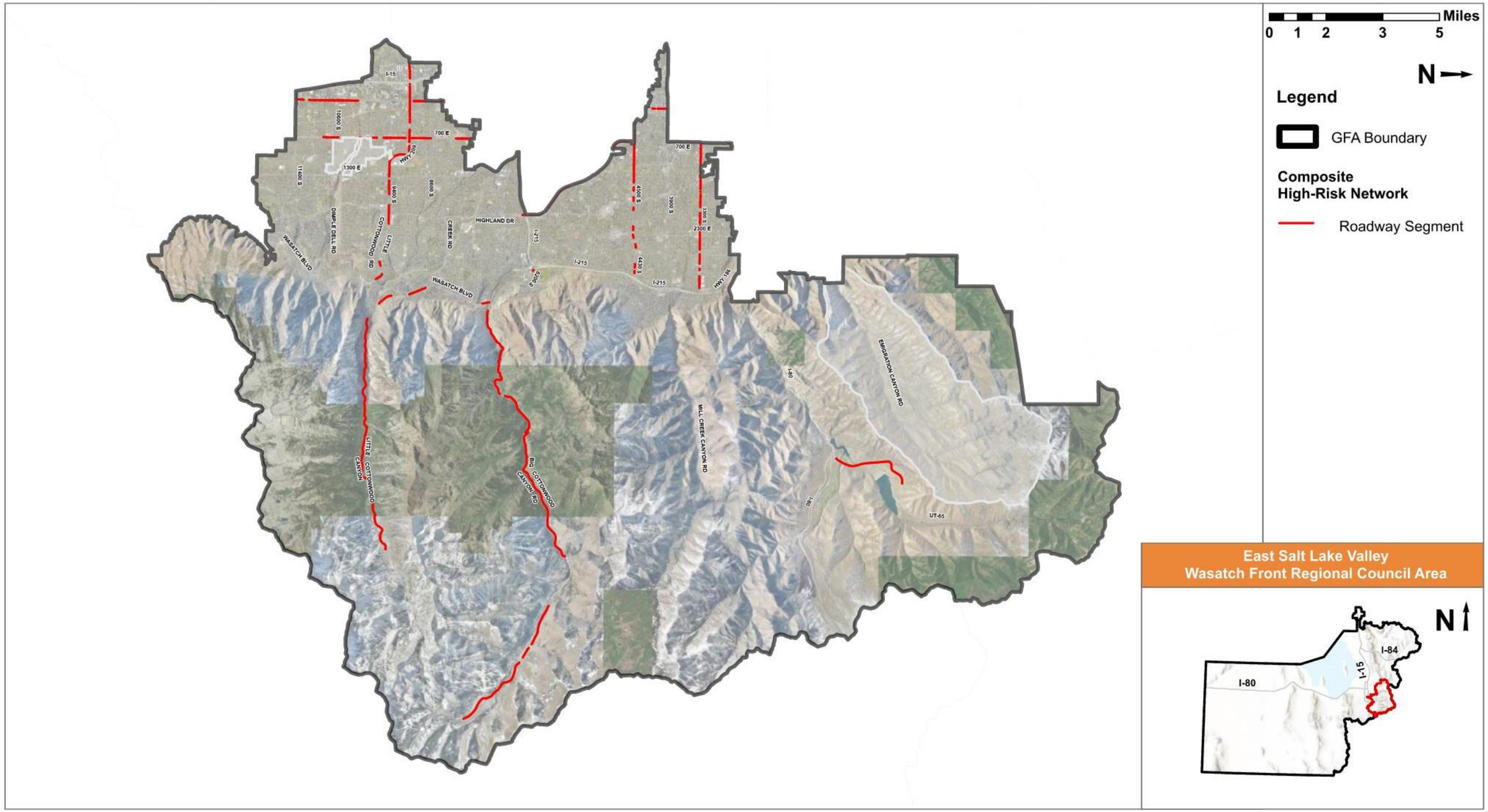


Figure 7.1 – East Salt Lake Valley High-Risk Roadway Network (State Routes)

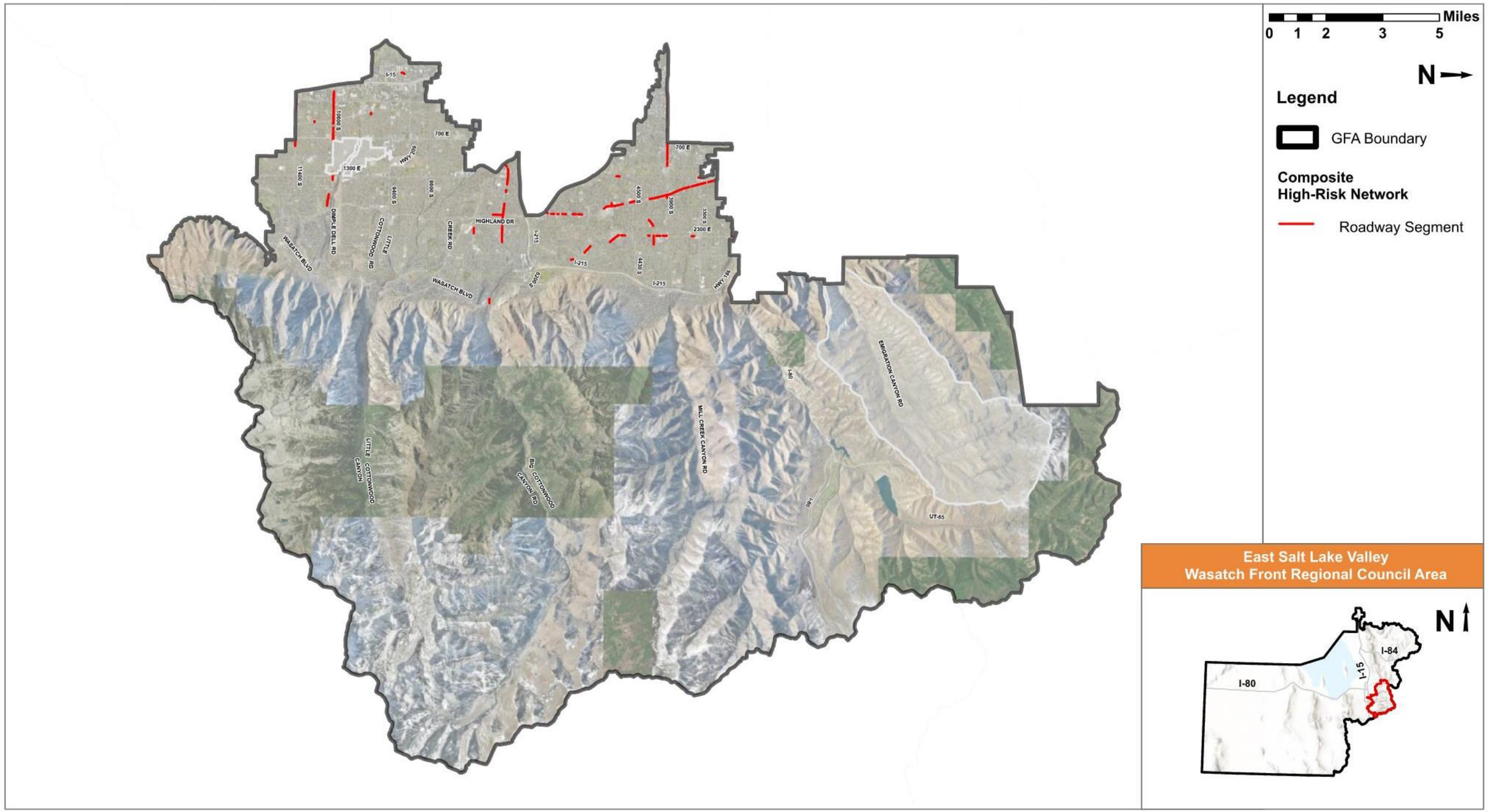


Figure 7.2 – East Salt Lake Valley High-Risk Roadway Network (Federal Aid Routes)

APPENDIX

EAST SALT LAKE VALLEY CASE STUDY
PROJECT INFORMATION SHEETS

East Salt Lake Valley

Project ID	Jurisdictions	Project Name
8.36.1	Alta	Little Cottonwood Canyon (SR 21) Unsignalized Intersection: Bypass Road, Michigan City Road, day Lodge Road, Hellgate Road, and Collins Road
8.37.1	Brighton	Big Cottonwood Canyon (SR 190) from Cardiff Fork Road to Guardsman Pass Road
8.38.1.1	Cottonwood Heights, Holladay	Wasatch Boulevard from I-215 to Fort Union Boulevard
8.38.2	Cottonwood Heights	Fort Union Boulevard from Union Park Avenue to 3000 East
8.38.3	Cottonwood Heights	Creek Road from Union Park Avenue to 3500 East
8.39.1	Holladay	Lincoln Lane: Lynne Lane to 2700 East
8.39.2.1	Holladay, Millcreek	Highland Drive from 3000 South to SR 152
8.39.3	Holladay	2300 East from 3000 South to Lincoln Lane
8.40.1.1	Millcreek, Holladay, South Salt Lake	3900 South from I-15 to Wasatch Boulevard
8.40.2.1	Millcreek, Holladay	Highland Drive from 3000 South to SR 152
8.40.3	Millcreek	1300 East from 3300 South to Murray Holladay Road
8.41.1	Sandy	School Area Improvements from 1000 East to 11000 South
8.41.2	Sandy	Auto Mall Drive from 10600 South to State Street
8.41.3	Sandy	9400 South from Monroe Street to SR 209
8.41.4.1	Sandy, White City	10600 South from 700 East to 1300 East
8.42.1	White City	White City Trail Intersections: Lake Spur Drive, Carnation Drive, and Sego Lily Drive
8.42.2	White City	10600 South from 700 East to 1300 East
8.43.1	Emigration	Emigration Canyon Road from Crestview Drive to Pincecrest Canyon Road

Project Information Sheet

GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**Little Cottonwood Canyon (SR 210) Unsignalized Intersection Improvements**	**Prepared By:**	**JSF**
Jurisdiction(s):	**Alta**	**Checked By:**	**BCC**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium**		

Location Description

Roadway:	NA
From:	NA
To:	NA
Length:	NA

Key Intersection Locations:

Bypass Road & Little Cottonwood
Michigan City Road & Little Cottonwood
Day Lodge Road & Little Cottonwood
Hellgate Road & Little Cottonwood
Collins Road & Little Cottonwood

Project Location Map

Map ID: 8.36.1

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	NA
Average Daily Traffic (vehicles per day)	NA
Functional Classification	NA
Roadway Ownership	NA
Urban/Rural Designation	NA
Number of Key Intersections	NA

Why Was This Location Identified?	
Composite Safety Score	NA
Historic Crashes	NA
Critical Crash Rate Differential	NA
Crash Profile Risk Score	NA
usRAP - Star Rating (Veh, Ped, Bike)	NA
Local Street Assessment	NA

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	NA
Suspected Serious Injury Crashes (A)	NA
Suspected Minor Injury Crashes (B)	NA
Possible Injury Crashes (C)	NA
No Injury/PDO Crashes (O)	NA
Total Crashes	NA
Total EPDO Crashes	NA

What Crash Types are Over-Represented?			
Fatal	NA	Head On (HO)	NA
Serious Injury	NA	Parked Vehicle (PV)	NA
Pedestrian (Ped)	NA	Single Vehicle	NA
Bicycle (Bike)	NA	Rear to Rear (RR)	NA
Motorcycle	NA	Rear to Side (RS)	NA
Angle	NA	Sideswipe (SS)	NA
Front to Rear (FR)	NA	Other/Unknown	NA

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Bypass Road & Little Cottonwood		0	0	0	0	0										
Michigan City Road & Little Cotton		0	0	0	0	0										
Day Lodge Road & Little Cottonwo		0	0	0	1	0	1	11				✓				
Hellgate Road & Little Cottonwood		0	0	0	0	0										
Collins Road & Little Cottonwood		0	0	0	0	0										

Project Description/How is safety improved?

This project includes unsignalized intersection improvements at Hellgate Road, Bypass Road, and Collins Road. A right-turn lane is proposed on SR 210 at both Hellgate Road and Bypass Road. It is also recommended that a left-turn lane be added to SR 210 at Bypass Road. Lastly, it is recommended that an intersection control evaluation (ICE) be conducted and implemented at the intersection of Collins Road to determine the best configuration and control type for that intersection.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Dedicated Left and Right-Turn Lanes at Intersections

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide Right-Turn Lanes	0.74 - 0.86	All Crashes	2.00	LANE	$ 150,000	$ 300,000
Provide Left-Turn Lanes	0.52 - 0.72	Rural	1.00	LANE	$ 300,000	$ 300,000
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	1.00	INT	$ 225,000	$ 225,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 825,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 41,250
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 247,500
Estimated Construction Cost:		$ 1,188,750

Local Match†: 20% $ 302,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 142,650
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 178,313
Estimated Project Total:		$ 1,510,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**Big Cottonwood Canyon (SR 190) from Cardiff Fork Road to Guardsman Pass Road**	**Prepared By:**	**JSF**
Jurisdiction(s):	**Brighton**	**Checked By:**	**BCC**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium**		

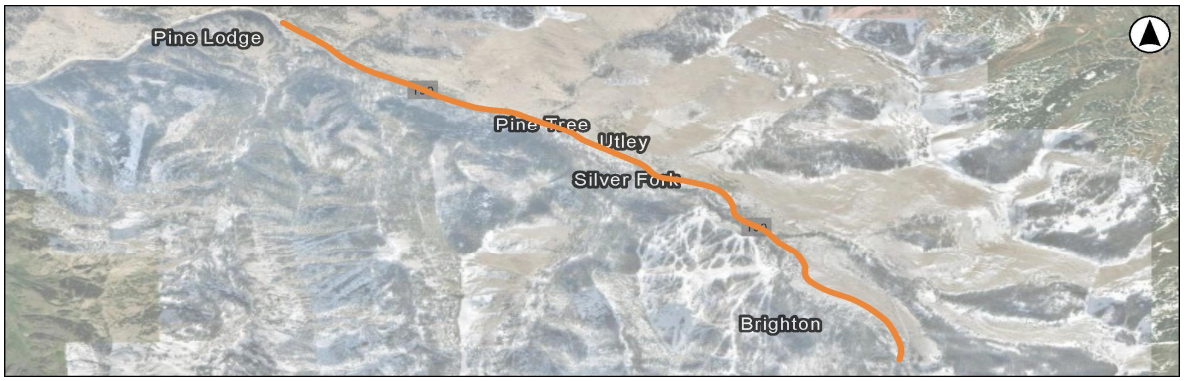
Location Description

Roadway: Big Cottonwood Canyon (SR 190)
From: Cardiff Fork Road
To: Guardsman Pass Road
Length: 4.91 miles

Key Intersection Locations:

Project Location Map

Map ID: 8.37.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**4.91**
Average Daily Traffic (vehicles per day)	**4,255**
Functional Classification	**Minor Arterial**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**4**
Suspected Minor Injury Crashes (B)	**7**
Possible Injury Crashes (C)	**15**
No Injury/PDO Crashes (O)	**82**
Total Crashes	**108**
Total EPDO Crashes	**783**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	✓
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	✓
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle	✓	Sideswipe (SS)	✓
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS

Project Description/How is safety improved?

This project includes shoulder widening and paving to allow for rumble strips and to provide more space for bicyclists. Paved shoulders will also address crashes with parked vehicles. Improvements to reduce head on collisions includes wider edge line and centerline rumble strips. A Safety Edge is proposed to reduce lane departure crashes. Higher quantities for shoulder paving were given to ensure that proper width can be provided to improve the available width for bicyclists. Also included is upgraded curve waring signage with enhanced delineation.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Enhanced Delineation for Horizontal Curves


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


SafetyEdge™


Wider Edge Lines

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	7.37	MILE	$ 298,000	$ 2,196,260
Shoulder Widening on Rural Roads	0.771	All Crashes	4.91	MILE	$ 32,000	$ 157,120
Install 6" Edge line (Both Sides of Road)	0.64 - 0.88	All Crashes	4.91	MILE	$ 7,000	$ 34,370
Install Safety Edge with Repaving Projects	0.79 - 0.892	All Crashes	4.91	MILE	$ 121,000	$ 594,110
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	4.91	MILE	$ 9,000	$ 44,190
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injur	4.91	MILE	$ 5,000	$ 24,550
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	6.00	CURVE	$ 2,000	$ 12,000
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 3,062,600
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 153,130
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 918,780
Estimated Construction Cost:		$ 4,209,510

Local Match†: 20% $ 1,069,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 505,141
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 631,427
Estimated Project Total:		$ 5,347,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s): East Salt Lake Valley
Project Name: Wasatch Boulevard from I-215 to Fort Union Boulevard
Jurisdiction(s): Cottonwood Heights, Holladay
Emphasis Areas: Intersections, Roadway Departures, Impaired Driving
Equity Priority: Medium, Low

Date Prepared: 3/13/2024
Prepared By: JSF
Checked By: BCC

Location Description

Roadway: Wasatch Boulevard
From: I-215
To: Fort Union Boulevard
Length: 1.93 miles

Key Intersection Locations:
Millrock Drive
3000 East
I-215 Off Ramp

Project Location Map

Map ID: 8.38.1.1

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	1.93
Average Daily Traffic (vehicles per day)	19,120
Functional Classification	Other Principal Arteria
Roadway Ownership	State
Urban/Rural Designation	Urban
Number of Key Intersections	3

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	0
Suspected Serious Injury Crashes (A)	4
Suspected Minor Injury Crashes (B)	3
Possible Injury Crashes (C)	6
No Injury/PDO Crashes (O)	46
Total Crashes	59
Total EPDO Crashes	556

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle	✓	Rear to Side (RS)	
Angle		Sideswipe (SS)	✓
Front to Rear (FR)	✓	Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	Signal	K	A	B	C	O	Total	EPDO	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Millrock Drive & Wasatch Bouleva	✓	0	0	6	11	6	23	265								✓
3000 East & Wasatch Boulevard	✓	0	0	4	15	5	24	265				✓				
I-215 Off Ramp & Wasatch Boule	✓	0	0	2	4	1	7	91				✓				

Project Description/How is safety improved?

This project implements systemic corridor safety improvements on Wasatch Boulevard from Fort Union Boulevard to 3000 East. These improvements include installation of a raised median and lane narrowing from 12' lanes to 11' lanes (Millrock Drive - Fort Union Boulevard) to promote traffic calming and providing a larger buffer for the existing bicycle lane.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Bicycle Lanes


Corridor Access Management

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Raised Medians on Roadways with Existing TWLTL	0.29	All Crashes	1.52	MILE	$ 928,000	$ 1,410,560
Traffic Calming - Lane Narrowing	0.68	All Crashes	0.99	MILE	$ 39,000	$ 38,610
Install Buffered Bicycle Lane	NA	Bicycle	0.99	MILE	$ 26,000	$ 25,740
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,474,910
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 73,746
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 442,473
Estimated Construction Cost:		$ 2,066,129

Local Match†: 20% $ 524,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 247,935
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 309,919
Estimated Project Total:		$ 2,624,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**Fort Union Boulevard from Union Park Avenue to 3000 East**	**Prepared By:**	**JSF**
Jurisdiction(s):	**Cottonwood Heights**	**Checked By:**	**BCC**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium, Low**		

Location Description

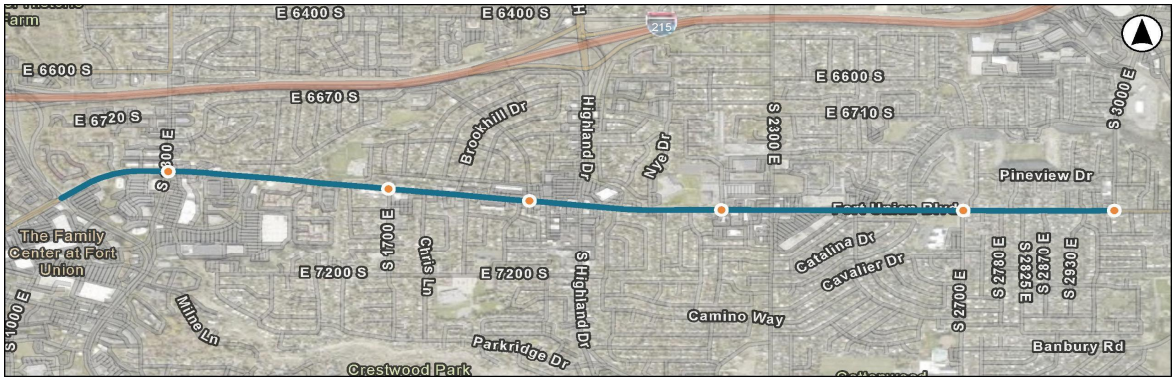
Roadway:	Fort Union Boulevard
From:	Union Park Avenue
To:	3000 East
Length:	2.80 miles

Key Intersection Locations:

2700 East	1300 East
Greenfield Way	Whitemore Way
1700 East	3000 East

Project Location Map

Map ID: 8.38.2



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**2.80**
Average Daily Traffic (vehicles per day)	**21,849**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**6**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**2**
Suspected Minor Injury Crashes (B)	**16**
Possible Injury Crashes (C)	**23**
No Injury/PDO Crashes (O)	**156**
Total Crashes	**197**
Total EPDO Crashes	**961**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	✓
Serious Injury	✓	Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	✓
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle	✓	Rear to Side (RS)	
Angle		Sideswipe (SS)	✓
Front to Rear (FR)	✓	Other/Unknown	✓

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
2700 East & Fort Union Boulevard	✓	1	1	3	10	7	22	1,170	✓	✓			✓			✓
Greenfield Way & Fort Union Bou		0	1	0	7	5	13	178	✓		✓					
1700 East & Fort Union Boulevard	✓	0	0	4	12	3	19	228					✓			✓
1300 East & Fort Union Boulevard	✓	0	2	19	60	28	109	1,321		✓			✓			✓
Whitemore Way & Fort Union Bou	✓	0	1	2	7	7	17	225	✓	✓	✓		✓			
3000 East & Fort Union Boulevard	✓	0	0	1	12	5	18	164				✓			✓	✓

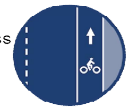
Project Description/How is safety improved?

This project installs a raised median and manages access at driveways and minor intersection. Right-in/right-out and 3/4 access should be considered at all unsignalized intersections. Lane narrowing is recommended to facilitate a bicycle lane and promote traffic calming. Crosswalk improvements are needed at Mtn. View Park and 2115 E, to include high-visibility markings, pedestrian refuge islands, and a HAWK signal (2115 E.). Several signalized intersections should be upgraded to have flashing yellow arrow (FYA) signal heads (1300 E., Park Centre Drive, Whitmore Way, 1700 E., 2300 E., 2700 E., 3000 E.).

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Corridor Access Management


Bicycle Lanes


Pedestrian Hybrid Beacons


Crosswalk Visibility Enhancements


Medians and Pedestrian Refuge Islands in Urban & Suburban Areas

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Traffic Calming - Lane Narrowing	0.68	All Crashes	2.80	MILE	$ 39,000	$ 109,200
Install Bicycle Lane	0.51 - 0.694	Bicycle	2.80	MILE	$ 21,000	$ 58,800
Install Raised Medians on Roadways with Existing TWLTL	0.29	All Crashes	2.80	MILE	$ 928,000	$ 2,598,400
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	6.00	INT	$ 8,000	$ 48,000
Install High Visibility Crosswalk Markings	0.6	Pedestrian	1.00	XING	$ 2,500	$ 2,500
Install Pedestrian Refuge Island	0.54	Pedestrian	2.00	EACH	$ 30,000	$ 60,000
Change a permissive only to Flashing Yellow Arrow	0.5 - 0.6	Left-Turn	1.00	INT	$ 8,000	$ 8,000
Upgrade Existing Crosswalk to High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	1.00	XING	$ 37,000	$ 37,000
Install Pedestrian Hybrid Beacons (PHB) or HAWK	0.453	Pedestrian	1.00	EACH	$ 200,000	$ 200,000
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	2.00	INT	$ 225,000	$ 450,000
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	2.00	INT	$ 2,500,000	$ 5,000,000
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 8,571,900
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 428,595
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 2,571,570
Estimated Construction Cost:		$ 11,647,065

Local Match†: 20% $ 2,958,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 1,397,648
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 1,747,060
Estimated Project Total:		$ 14,792,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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Project Information Sheet

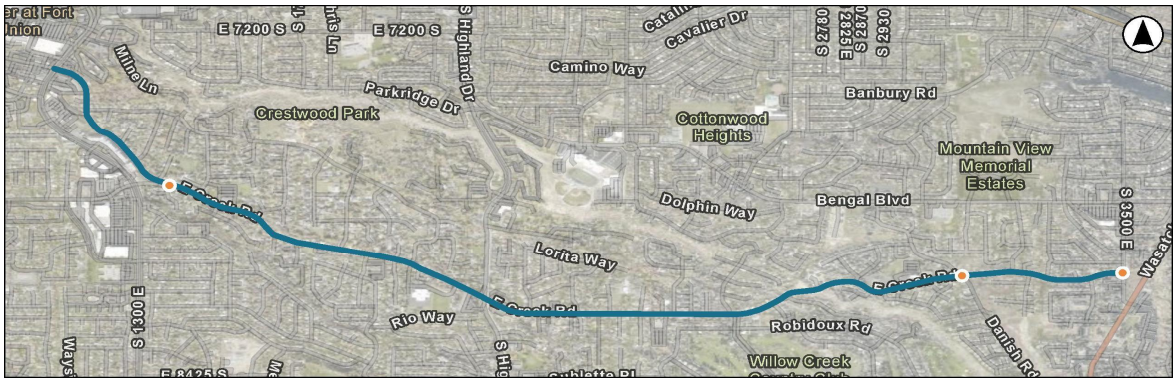
GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**Creek Road from Union Park Avenue to 3500 East**	**Prepared By:**	**MA**
Jurisdiction(s):	**Cottonwood Heights**	**Checked By:**	**EMF**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium, Low**		

Location Description

Roadway:	Creek Road	**Key Intersection Locations:**	
From:	Union Park Avenue	7800 South	
To:	3500 East	Danish Road	
Length:	3.84 miles	3500 East	

Project Location Map

Map ID: 8.38.3



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**3.84**
Average Daily Traffic (vehicles per day)	**9,317**
Functional Classification	**Major Collector**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**3**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**6**
Possible Injury Crashes (C)	**5**
No Injury/PDO Crashes (O)	**24**
Total Crashes	**36**
Total EPDO Crashes	**308**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
7800 South & Creek Road		0	0	4	4	16	24	151			✓		✓			✓
Danish Road & Creek Road		0	0	0	0	5	5	5				✓				
3500 East & Creek Road		0	0	0	0	4	4	4			✓					

Project Description/How is safety improved?

This project recommends improvements along Creek Rd to address an overrepresentation of serious injury and parked vehicle collisions: reduce posted speed limit from 30 or 35 mph to 25 mph; narrow travel lanes by widening lane and edge line pavement markings, replace on-street parking with bicycle lane; transition TWLTL to raised median; install RRFB's and high-visibility improvements at all unsignalized marked crosswalks along the corridor. The following intersection improvements are recommended to address an overrepresentation of angle, rear-end and sideswipe collisions: 7800 S/Creek Rd, Danish Rd/Creek Rd and 3500 E/Creek Rd, perform intersection control evaluations to evaluate potential roundabouts; sight distance improvements.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Traffic Calming - Wider Lane Lines	0.68	All Crashes	3.84	MILE	$ 21,000	$ 80,640
Install a Rectangular Rapid Flashing Beacons (RRFB)	0.526	Pedestrian	6.00	XING (2)	$ 15,000	$ 90,000
Upgrade Crosswalk to High-Visibility Crosswalk at Midblock	0.6 - 0.75	Pedestrian	6.00	XING	$ 37,000	$ 222,000
Traffic Calming - Lane Narrowing	0.68	All Crashes	2.00	MILE	$ 39,000	$ 78,000
Install Bicycle Lane	0.51 - 0.69	Bicycle	1.00	MILE	$ 21,000	$ 21,000
Install Raised Medians on Roadways with Existing TWLTL	0.29	All Crashes	3.84	MILE	$ 928,000	$ 3,563,520
Install Sidewalk or Walkways	NA	Pedestrian	0.65	MILE	$ 634,000	$ 412,100
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	3.00	INT	$ 225,000	$ 675,000
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	3.00	INT	$ 2,500,000	$ 7,500,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	3.00	INT	$ 19,000	$ 57,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 12,699,260
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 634,963
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 3,809,778
Estimated Construction Cost:		$ 17,219,001

Local Match†: 20% $ 4,373,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 2,066,280
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 2,582,850
Estimated Project Total:		$ 21,869,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Safe Routes to School
Additional Improvements #3: Update or Add Curb Ramps at Marked Crosswalks
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

ADDITIONAL INFORMATION

This project recommends the following segment improvements along Creek Rd to address an overrepresentation of serious injury and parked vehicle collisions:
-Lower speed limit from 30 or 35 mph to 25 mph
-Narrow the travelled way by widening lane and edge lines along the full segment and removing the on-street parking between 3500 E and Highland Dr, repurposing that space for bicycle lanes.
-TWLTL to Median
-To lower speed of vehicles, add RRFB's and high-visibility improvements at all unsignalized marked crosswalks along the corridor.
The following intersection improvements are also recommended to address an overrepresentation of angle, rear-end and sideswipe collisions:
-7800 S/Creek Rd: Intersection control evaluation to evaluate options for addressing intersection offset, including potential roundabout; Sight distance improvements.
-Danish Rd/Creek Rd: Intersection control evaluation to evaluate options for addressing intersection offset, including potential roundabout; Sight distance improvements.
-3500 E/Creek Rd: Intersection control evaluation to evaluate potential roundabout; Sight distance improvements.

Project Information Sheet

GFA(s): East Salt Lake Valley
Project Name: Lincoln Lane: Lynne Lane to 2700 East
Jurisdiction(s): Holladay
Emphasis Areas: Intersections, Roadway Departures, Impaired Driving
Equity Priority: Low

Date Prepared: 3/13/2024
Prepared By: MA
Checked By: EMF

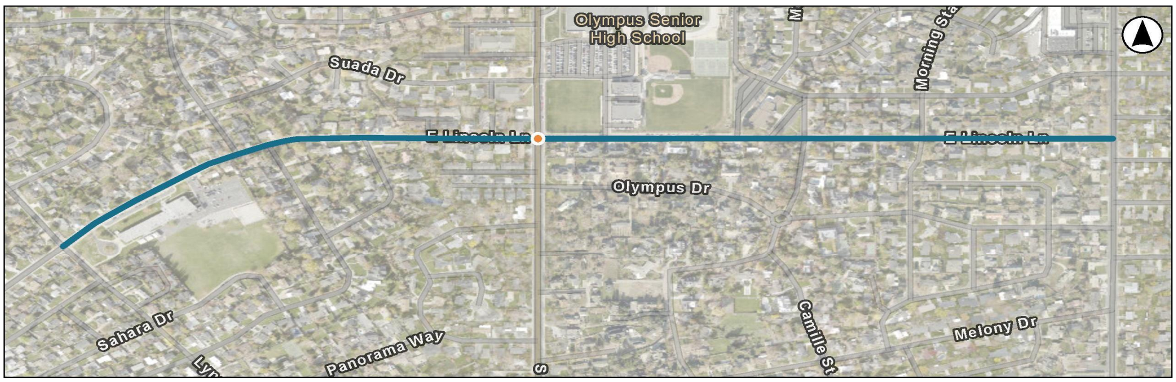
Location Description

Roadway: Lincoln Ln
From: Lynne Ln
To: 2700 E
Length: 0.96 miles

Key Intersection Locations:
2300 East

Project Location Map

Map ID: 8.39.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	0.96
Average Daily Traffic (vehicles per day)	4,172
Functional Classification	Minor Collector
Roadway Ownership	Federal Aid - Local
Urban/Rural Designation	Urban
Number of Key Intersections	1

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	0
Suspected Serious Injury Crashes (A)	1
Suspected Minor Injury Crashes (B)	1
Possible Injury Crashes (C)	0
No Injury/PDO Crashes (O)	7
Total Crashes	**9**
Total EPDO Crashes	**123**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	Signal	K	A	B	C	O	Total	EPDO	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
2300 East & Lincoln Lane		0	0	0	0	4	4	4				✓				✓

Project Description/How is safety improved?

This project recommends the following segment improvements along Lincoln Ln to address an overrepresentation of serious injury and parked vehicle collisions: driver speed feedback signs at multiple locations along the segment; wider lane pavement marking lines; RRFB's, high visibility improvements and raised crossings at existing unsignalized marked crosswalks. It is also recommended that high visibility crossing improvements be added to the Lincoln Ln/2300 E intersection to further encourage slower speeds and pedestrian visibility.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Appropriate Speed Limits for All Road Users


Crosswalk Visibility Enhancements


Wider Edge Lines


Rectangular Rapid Flashing Beacons (RRFB)

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Driver Feedback Speed Limit Signs	NA	All Crashes	4.00	EACH	$ 10,000	$ 40,000
Install a Rectangular Rapid Flashing Beacons (RRFB)	0.526	Pedestrian	2.00	XING (2)	$ 15,000	$ 30,000
Upgrade Crosswalk to High-Visibility Crosswalk at Midblock	0.6 - 0.75	Pedestrian	2.00	XING	$ 37,000	$ 74,000
Traffic Calming - Wider Lane Lines	0.68	All Crashes	0.96	MILE	$ 21,000	$ 20,160
Install Raised Crosswalk	NA	Pedestrian	2.00	EACH	$ 71,000	$ 142,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	2.00	XING	$ 36,000	$ 72,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 378,160
*Mobilization: (% +/-)**	*10%*	$ 37,820
Traffic Control: (% +/-)	*5%*	$ 18,908
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 113,448
Estimated Construction Cost:		$ 548,336

Local Match†: **20%** **$ 139,400**

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 65,800
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 82,250
Estimated Project Total:		$ 697,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

ADDITIONAL INFORMATION

This project recommends the following segment improvements along Lincoln Ln to address an overrepresentation of serious injury and parked vehicle collisions (slow speeds):
-Driver speed feedback signs at multiple locations along the segment
-Wider lane lines
-RRFB's, high visibility improvements and raised crossings at existing unsignalized marked crosswalks.

The following intersection improvements are recommended at Lincoln Ln/2300 E:
-High visibility pedestrian crossing (collisions are too low to be indicative of specific issue)

Project Information Sheet

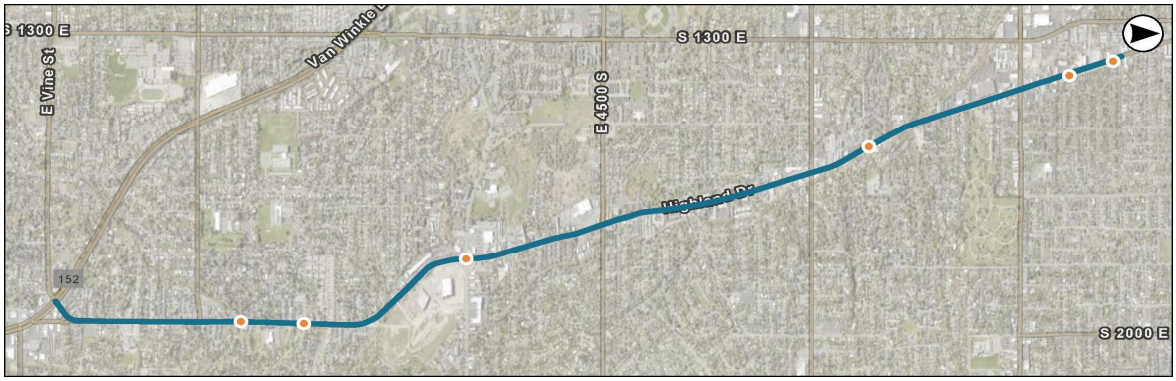
GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**Highland Drive from 3000 South to SR 152**	**Prepared By:**	**JSF**
Jurisdiction(s):	**Holladay, Millcreek**	**Checked By:**	**BCC**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium, Low**		

Location Description

Roadway:	Highland Drive	**Key Intersection Locations:**	
From:	3000 South	Walker Lane	Siggard Drive
To:	SR 152	Spring Lane	Crescent Drive
Length:	4.72 miles	Murray Hollday Boulevard	3010 South

Project Location Map

Map ID: 8.39.2.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**4.72**
Average Daily Traffic (vehicles per day)	**21,190**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**6**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**4**
Suspected Serious Injury Crashes (A)	**6**
Suspected Minor Injury Crashes (B)	**16**
Possible Injury Crashes (C)	**41**
No Injury/PDO Crashes (O)	**130**
Total Crashes	**197**
Total EPDO Crashes	**5,068**

What Crash Types are Over-Represented?			
Fatal	✓	Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	✓
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle	✓	Sideswipe (SS)	
Front to Rear (FR)	✓	Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Walker Lane & Highland Drive	✓	0	1	0	10	1	12	208	✓			✓				✓
Spring Lane & Highland Drive	✓	0	0	3	11	4	18	196				✓				✓
Murray Hollday Boulevard & Highl	✓	0	1	11	22	14	48	603				✓				
Siggard Drive & Highland Drive	✓	0	0	2	8	4	14	139		✓		✓				
Crescent Drive & Highland Drive	✓	0	0	0	9	2	11	104				✓				
3010 South & Highland Drive		0	0	2	5	2	9	103				✓				

Project Description/How is safety improved?

This project installs a raised median and manages access at driveways and minor intersections. Right-in/right-out and 3/4 access should be considered at all unsignalized locations. Crosswalk improvements are needed at Siggard Drive and Oakwood Elementary to include pedestrian refuge islands and a HAWK signal (Oakwood Elementary). Several signalized intersections should be upgraded to flashing yellow arrow (FYA) signal heads (3300 S., 3440 S., Siggard Dr., 3900 S., Holladay Blvd, 4500 S., 4830 S., 5600 S., Van Winkle) and retroreflective backplates (Murray Holladay Dr., 4830 S., Meadowmoor Dr.).

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Corridor Access Management


Backplates with Retroreflective Borders


Medians and Pedestrian Refuge Islands in Urban & Suburban Areas


Pedestrian Hybrid Beacons

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Traffic Calming - Medians (Back-To-Back Curb)	0.68	All Crashes	0.75	MILE	$ 264,000	$ 198,000
Install Raised Medians on Roadways with Existing TWLTL	0.29	All Crashes	3.97	MILE	$ 928,000	$ 3,684,160
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	9.00	INT	$ 8,000	$ 72,000
Install Pedestrian Refuge Island	0.54	Pedestrian	2.00	EACH	$ 30,000	$ 60,000
Install Retroreflective Backplates/Boarders	0.85	All Crashes	27.00	EACH	$ 275	$ 7,425
Install Pedestrian Hybrid Beacons (PHB) or HAWK	0.453	Pedestrian	1.00	EACH	$ 200,000	$ 200,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 4,221,585
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 211,079
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 1,266,476
Estimated Construction Cost:		$ 5,774,140

Local Match†: 20% $ 1,466,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 692,897
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 866,121
Estimated Project Total:		$ 7,334,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**2300 East from 3900 South to Lincoln Lane**	**Prepared By:**	**JSF**
Jurisdiction(s):	**Holladay**	**Checked By:**	**BCC**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Low**		

Location Description

Roadway:	2300 East	**Key Intersection Locations:**	
From:	3900 South	Suada Drive	
To:	Lincoln Lane	Lincoln Lane	
Length:	0.34 miles	3900 South	

Project Location Map

Map ID: **8.39.3**

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.34**
Average Daily Traffic (vehicles per day)	**12,719**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**3**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**2**
No Injury/PDO Crashes (O)	**14**
Total Crashes	**17**
Total EPDO Crashes	**59**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)	✓	Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Suada Drive & 2300 East		0	0	0	3	0	3	34		✓		✓		✓		
Lincoln Lane & 2300 East	✓	0	0	5	8	2	15	204		✓		✓		✓		
3900 South & 2300 East	✓	0	0	6	23	10	39	405		✓		✓	✓	✓		

Project Description/How is safety improved?

This project is focused on systemic bicycle and pedestrian improvements near Olympus High School. These improvements include driver feedback speed limit signs, traffic calming through lane narrowing and wider pavement marking lines, striping a bicycle lane, and high-visibility crosswalk markings. Also included in this project is signal upgrades at Lincoln Lane to have flashing yellow arrows and retroreflective backplates.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Backplates with Retroreflective Borders


Bicycle Lanes


Crosswalk Visibility Enhancements

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Bicycle Lane	0.51 - 0.694	Bicycle	0.34	MILE	$ 21,000	$ 7,140
Traffic Calming - Lane Narrowing	0.68	All Crashes	0.34	MILE	$ 39,000	$ 13,260
Install Driver Feedback Speed Limit Signs	NA	All Crashes	2.00	EACH	$ 10,000	$ 20,000
Traffic Calming - Wider Lane Lines	0.68	All Crashes	0.34	MILE	$ 21,000	$ 7,140
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install High Visibility Crosswalk Markings	0.6	Pedestrian	4.00	XING	$ 2,500	$ 10,000
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	1.00	INT	$ 8,000	$ 8,000
Install Retroreflective Backplates/Boarders	0.85	All Crashes	8.00	EACH	$ 275	$ 2,200
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 67,740
*Mobilization: (% +/-)**	*10%*	$ 6,780
Traffic Control: (% +/-)	*5%*	$ 3,387
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 20,322
Estimated Construction Cost:		$ 98,229

Local Match†: 20% $ 25,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 11,787
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 14,734
Estimated Project Total:		$ 125,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3: Consider Green Bicycle Lanes
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

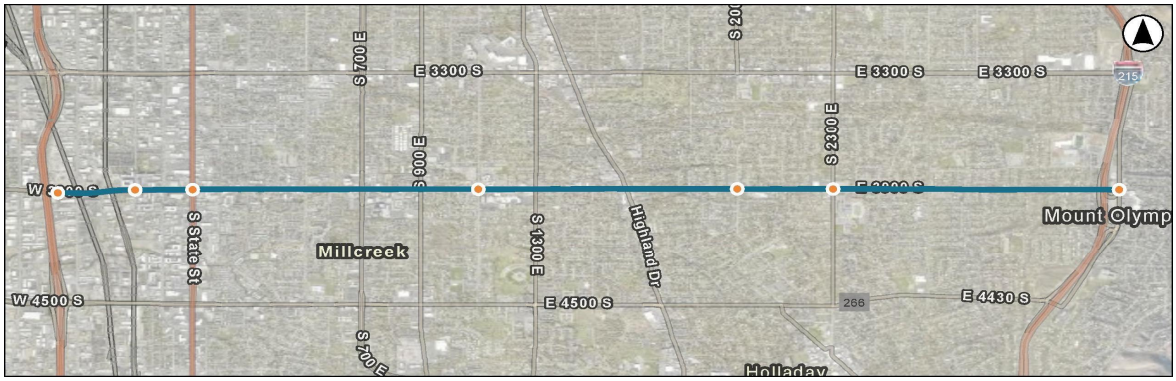
GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**3900 South from I-15 to Wasatch Boulevard**	**Prepared By:**	**JSF**
Jurisdiction(s):	**Millcreek, Holladay, South Salt Lake**	**Checked By:**	**BCC**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**High, Medium**		

Location Description

Roadway:	3900 South	**Key Intersection Locations:**	
From:	I-15	300 West	2300 East 2000 East
To:	Wasatch Boulevard	West Temple	State Street
Length:	5.55 miles	Wasatch Boulevard	1100 East

Project Location Map

Map ID: 8.40.1.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**5.55**
Average Daily Traffic (vehicles per day)	**20,168**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**7**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**5**
Suspected Minor Injury Crashes (B)	**17**
Possible Injury Crashes (C)	**29**
No Injury/PDO Crashes (O)	**183**
Total Crashes	**235**
Total EPDO Crashes	**2,248**

What Crash Types are Over-Represented?			
Fatal	✓	Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	✓
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle	✓	Sideswipe (SS)	✓
Front to Rear (FR)	✓	Other/Unknown	✓

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
300 West & 3900 South		0	0	2	7	4	13	128								
West Temple & 3900 South	✓	0	0	7	19	15	41	387			✓	✓				
Wasatch Boulevard & 3900 South	✓	0	2	6	34	23	65	731	✓		✓					
2300 East & 3900 South	✓	0	0	6	23	10	39	405		✓		✓	✓	✓		
State Street & 3900 South	✓	0	3	37	110	106	256	2,461			✓		✓			
1100 East & 3900 South	✓	0	0	5	18	17	40	333			✓					✓
2000 East & 3900 South	✓	0	0	6	5	5	16	195				✓				

Project Description/How is safety improved?

This project systemically mitigates active transportation, angled, and left-turn crashes. The project installs medians with pedestrian refuge islands where no median is currently present. All unsignalized intersections and accesses should be considered for right-in/right-out or 3/4 access. Bicycle lanes are proposed from Arroyo Road to 2300 East with additional bicycle treatments at Wasatch Blvd. & 2300 East. High visibility crosswalks (Hillside Ln, 2250 E.) and leading pedestrian intervals (Highland Dr., 1100 E., 900 E.) are also proposed. Additional intersection are recommended for upgrades to include flashing yellow arrow signal heads (Wasatch Blvd., Highland Dr., 1300 E., 1100 E., 900 E., State St., Main St., West Temple, 210 W.)

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Medians and Pedestrian Refuge Islands in Urban & Suburban Areas


Bicycle Lanes


Leading Pedestrian Interval


Crosswalk Visibility Enhancements

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Medians and Pedestrian Refuge Islands in Urban Areas	0.44	Pedestrian	4.84	LE (URBA	$ 958,000	$ 4,636,720
Install Bicycle Lane	0.51 - 0.694	Bicycle	0.98	MILE	$ 21,000	$ 20,580
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	1.00	INT	$ 8,000	$ 8,000
Add Bicycle Treatments at Intersections	NA	All Crashes	2.00	INT	$ 9,000	$ 18,000
Install High Visibility Crosswalk Markings	0.6	Pedestrian	2.00	XING	$ 2,500	$ 5,000
Include a Leading Pedestrian Interval (LPI)	0.87	Pedestrian	1.00	INT	$ 3,000	$ 3,000
Change a permissive only to Flashing Yellow Arrow	0.5 - 0.6	Left-Turn	1.00	INT	$ 8,000	$ 8,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 4,699,300
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 234,965
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 1,409,790
Estimated Construction Cost:		$ 6,419,055

Local Match†: 20% $ 1,630,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 770,287
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 962,858
Estimated Project Total:		$ 8,153,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

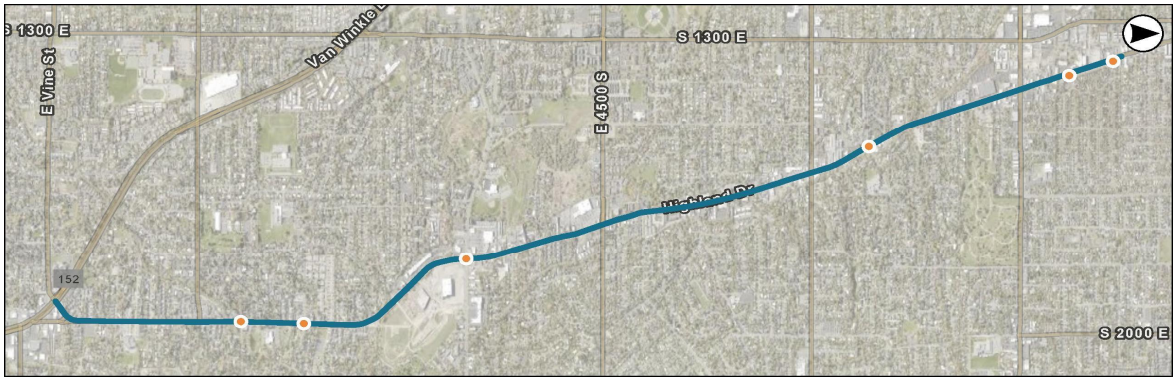
GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**Highland Drive from 3000 South to SR 152**	**Prepared By:**	**JSF**
Jurisdiction(s):	**Millcreek, Holladay**	**Checked By:**	**BCC**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium, Low**		

Location Description

Roadway:	Highland Drive	**Key Intersection Locations:**	
From:	3000 South	Walker Lane	Siggard Drive
To:	SR 152	Spring Lane	Crescent Drive
Length:	4.72 miles	Murray Hollday Boulevard	3010 S(

Project Location Map

Map ID: 8.40.2.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**4.72**
Average Daily Traffic (vehicles per day)	**21,190**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**6**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**4**
Suspected Serious Injury Crashes (A)	**6**
Suspected Minor Injury Crashes (B)	**16**
Possible Injury Crashes (C)	**41**
No Injury/PDO Crashes (O)	**130**
Total Crashes	**197**
Total EPDO Crashes	**5,068**

What Crash Types are Over-Represented?			
Fatal	✓	Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	✓
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle	✓	Sideswipe (SS)	
Front to Rear (FR)	✓	Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Walker Lane & Highland Drive	✓	0	1	0	10	1	12	208	✓			✓				✓
Spring Lane & Highland Drive	✓	0	0	3	11	4	18	196				✓				✓
Murray Hollday Boulevard & Highl	✓	0	1	11	22	14	48	603				✓				
Siggard Drive & Highland Drive	✓	0	0	2	8	4	14	139		✓		✓				
Crescent Drive & Highland Drive	✓	0	0	0	9	2	11	104				✓				
3010 South & Highland Drive		0	0	2	5	2	9	103				✓				

Project Description/How is safety improved?

This project installs a raised median and manages access at driveways and minor intersections. Right-in/right-out and 3/4 access should be considered at all unsignalized locations. Crosswalk improvements are needed at Siggard Drive and Oakwood Elementary to include pedestrian refuge islands and a HAWK signal (Oakwood Elementary). Several signalized intersections should be upgraded to flashing yellow arrow (FYA) signal heads (3300 S., 3440 S., Siggard Dr., 3900 S., Holladay Blvd, 4500 S., 4830 S., 5600 S., Van Winkle) and retroreflective backplates (Murray Holladay Dr., 4830 S., Meadowmoor Dr.).

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Corridor Access Management


Backplates with Retroreflective Borders


Medians and Pedestrian Refuge Islands in Urban & Suburban Areas


Pedestrian Hybrid Beacons

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Traffic Calming - Medians (Back-To-Back Curb)	0.68	All Crashes	0.75	MILE	$ 264,000	$ 198,000
Install Raised Medians on Roadways with Existing TWLTL	0.29	All Crashes	3.97	MILE	$ 928,000	$ 3,684,160
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	9.00	INT	$ 8,000	$ 72,000
Install Pedestrian Refuge Island	0.54	Pedestrian	2.00	EACH	$ 30,000	$ 60,000
Install Retroreflective Backplates/Boarders	0.85	All Crashes	27.00	EACH	$ 275	$ 7,425
Install Pedestrian Hybrid Beacons (PHB) or HAWK	0.453	Pedestrian	1.00	EACH	$ 200,000	$ 200,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 4,221,585
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 211,079
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 1,266,476
Estimated Construction Cost:		$ 5,774,140

Local Match†: 20% $ 1,466,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 692,897
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 866,121
Estimated Project Total:		$ 7,334,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**1300 East from 3300 South to Murray Holladay Road**	**Prepared By:**	**MA**
Jurisdiction(s):	**Millcreek**	**Checked By:**	**EMF**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**High, Medium**		

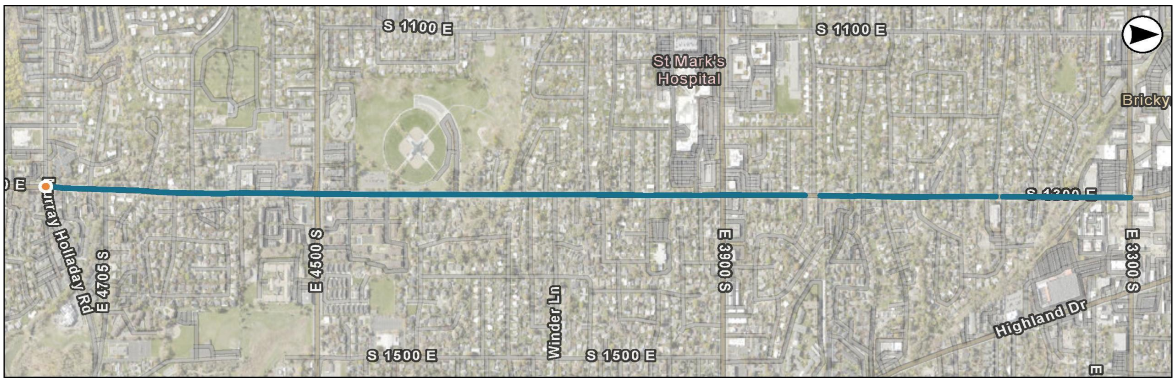
Location Description

Roadway: 1300 East
From: 3300 South
To: Murray Holladay Road
Length: 2.31 miles

Key Intersection Locations:
Murray Holladay

Project Location Map

Map ID: 8.40.3



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**2.31**
Average Daily Traffic (vehicles per day)	**16,016**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**5**
Suspected Minor Injury Crashes (B)	**5**
Possible Injury Crashes (C)	**20**
No Injury/PDO Crashes (O)	**62**
Total Crashes	**92**
Total EPDO Crashes	**869**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	✓
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle	✓	Sideswipe (SS)	
Front to Rear (FR)	✓	Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Murray Holladay Road & 1300 Ea		1	1	4	18	17	41	1,293	✓		✓			✓	✓	

Project Description/How is safety improved?

This project recommends the following improvements on 1300 E to address an overrepresentation of serious injury, angle, rear-end, parked vehicle and single vehicle collisions: TWLTL to median with pedestrian islands; reduce speed limit; install RRFB's with high visibility and raised crossings at key locations including near parks and bus stops; driver feedback speed signs; driveway consolidation where feasible. The following intersection improvements are recommended at 1300 E/Murray Holladay Road: upgrade east/west left-turn phasing heads to FYA; north/south left-turn to protected permitted (FYA); east/west right-turn lanes; advanced warning signage on west approach; on-street parking 50 ft away from intersection; curb extension to narrow north leg.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Appropriate Speed Limits for All Road Users


Crosswalk Visibility Enhancements


Corridor Access Management


Dedicated Left and Right-Turn Lanes at Intersections


Median Barriers


Rectangular Rapid Flashing Beacons (RRFB)

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Driver Feedback Speed Limit Signs	NA	All Crashes	6.00	EACH	$ 10,000	$ 60,000
Install Raised Medians on Roadways with Existing TWLTL	0.29	All Crashes	2.31	MILE	$ 928,000	$ 2,143,680
Install a Rectangular Rapid Flashing Beacons (RRFB)	0.526	Pedestrian	8.00	XING (2)	$ 15,000	$ 120,000
Install Raised Crosswalk	NA	Pedestrian	8.00	EACH	$ 71,000	$ 568,000
Install High-Visibility Crosswalk at Midblock Locations	0.6 - 0.75	Pedestrian	8.00	XING	$ 36,000	$ 288,000
Corridor Access Management-Driveway Consolidation (Urban)	0.69 - 0.75	Fatal & Injury	8.00	DRIVEW	$ 7,000	$ 56,000
Traffic Calming - Bulbouts	0.68	All Crashes	1.00	EACH	$ 36,000	$ 36,000
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	2.00	INT	$ 8,000	$ 16,000
Change a permissive only to Flashing Yellow Arrow	0.5 - 0.6	Left-Turn	2.00	INT	$ 8,000	$ 16,000
Provide Right-Turn Lanes	0.74 - 0.86	All Crashes	2.00	LANE	$ 150,000	$ 300,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1.00	INT	$ 19,000	$ 19,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 3,622,680
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 181,134
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 1,086,804
Estimated Construction Cost:		$ 4,965,618

Local Match†: 20% $ 1,261,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 595,874
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 744,843
Estimated Project Total:		$ 6,307,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

ADDITIONAL INFORMATION

This project recommends the following segment improvements along 1300 E to address an overrepresentation of serious injury, angle, rear-end, parked vehicle and single vehicle collisions:
-TWLTL to Median
-Reduce speed limit from 40 mph to 30 mph
-Installation of RRFB's with high visibility and raised crossings at key locations across corridor, including near parks and in coordination with bus stop locations
-Driver feedback speed signs at multiple locations along the corridor
-Driveway consolidation/access management

The following intersection improvements are recommended at 1300 E/Murray Holladay Road:
-Upgrade east/west left-turn phasing heads to FYA
-Upgrade north/south left-turn to protected permitted (FYA)
-Construct east/west right-turn lanes
-Ensure on-street parking is at least 50 ft away from the intersection.
-Advanced warning signage for west approach
-Curb extension to narrow north leg.

Project Information Sheet

GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**School Area Improvemnts from 1000 East to 11000 South**	**Prepared By:**	**JSF**
Jurisdiction(s):	**Sandy**	**Checked By:**	**BCC**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium**		

Location Description

Roadway:	School Area Improvemnts	**Key Intersection Locations:**	
From:	1000 East	1000 East & 11000 South	1300 East & 11000 South
To:	11000 South	1000 East & 11400 South	
Length:	1.98 miles	1300 East & 11400 South	

Project Location Map

Map ID: 8.41.1

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.98**
Average Daily Traffic (vehicles per day)	**11,686**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**4**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**2**
Suspected Minor Injury Crashes (B)	**2**
Possible Injury Crashes (C)	**3**
No Injury/PDO Crashes (O)	**30**
Total Crashes	**37**
Total EPDO Crashes	**296**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle	✓	Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
1000 East & 11000 South		0	1	4	12	11	28	330	✓	✓	✓					
1000 East & 11400 South	✓	0	2	7	24	19	52	635	✓	✓	✓					
1300 East & 11400 South	✓	0	2	18	38	39	97	1,059			✓		✓		✓	
1300 East & 11000 South	✓	0	0	5	6	9	20	189			✓		✓			

Project Description/How is safety improved?

This project includes systemic active transportation, traffic calming, and intersection improvements. Proposed with this project are median with pedestrian refuge islands, lane narrowing, and bicycle lanes in locations where currently not present. The project includes driver feedback speed limit signs, if warranted, on all four roadways. The crosswalk at Alta High School will be improved to include bulbouts and high visibility crosswalk pavement markings. Stop-controlled intersection improvements are proposed at the intersection of 11000 South/1000 East. Signalized intersection will be upgraded to included flashing yellow arrow signal heads (11400 S./1000 E., 14000 S./1300 E.).

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Bicycle Lanes


Crosswalk Visibility Enhancements


Medians and Pedestrian Refuge Islands in Urban & Suburban Areas

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Medians and Pedestrian Refuge Islands in Urban Areas	0.44	Pedestrian	1.76	LE (URBA	$ 958,000	$ 1,686,080
Traffic Calming - Lane Narrowing	0.68	All Crashes	1.49	MILE	$ 39,000	$ 58,110
Install Bicycle Lane	0.51 - 0.694	Bicycle	1.49	MILE	$ 21,000	$ 31,290
Install Driver Feedback Speed Limit Signs	NA	All Crashes	8.00	EACH	$ 10,000	$ 80,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	1.00	INT	$ 2,500,000	$ 2,500,000
Traffic Calming - Bulbouts	0.68	All Crashes	2.00	EACH	$ 36,000	$ 72,000
Install High Visibility Crosswalk Markings	0.6	Pedestrian	1.00	XING	$ 2,500	$ 2,500
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	2.00	INT	$ 8,000	$ 16,000
Upgrade pedestrian push buttons to Audible Pedestrian Signals (APS)	NA	Pedestrian	3.00	INT	$ 4,000	$ 12,000
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	1.00	INT	$ 2,500,000	$ 2,500,000
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 6,957,980
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 347,899
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 2,087,394
Estimated Construction Cost:		$ 9,468,273

Local Match†: 20% $ 2,405,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 1,136,193
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 1,420,241
Estimated Project Total:		$ 12,025,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Consider Installing Interactive Pedestrian Signal (IPS)
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**Auto Mall Drive from 10600 South to State Street**	**Prepared By:**	**MA**
Jurisdiction(s):	**Sandy**	**Checked By:**	**EMF**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium**		

Location Description

Roadway:	Auto Mall Drive	**Key Intersection Locations:**	
From:	10600 South	10600 South	
To:	State Street	Motor Park Aven	
Length:	0.91 miles	11000 South	

Project Location Map

Map ID: 8.41.2

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.91**
Average Daily Traffic (vehicles per day)	**1,000**
Functional Classification	**Major Collector**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**3**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**9**
No Injury/PDO Crashes (O)	**26**
Total Crashes	**36**
Total EPDO Crashes	**151**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)	✓	Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
10600 South & Auto Mall Drive	✓	0	3	13	70	26	112	1,392								✓
Motor Park Avenue & Auto Mall D		0	0	0	3	1	4	35						✓		✓
11000 South & Auto Mall Drive	✓	0	0	1	4	4	9	72			✓					

Project Description/How is safety improved?

This project recommends improvements along Auto Mall Drive to address an overrepresentation of rear-end collisions: TWLTL to raised median; reduce speed limit from 30 mph to 25 mph; driver feedback speed signs at multiple locations. The following intersection improvements are recommended to address an overrepresentation of angle, parked vehicle and sideswipe collisions: 10600 S/Auto Mall Dr, high visibility crossing improvements; Motor Park Ave/Auto Mall Dr, bulbouts on east approach, parking not allowed within 50 feet of the intersection, high visibility crossings and stop bars where needed; 11000 S/Auto Mall Dr, flashing yellow arrow left turn phasing for all approaches, high visibility crossing improvements, and left-turn lane on west approach.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Appropriate Speed Limits for All Road Users


Crosswalk Visibility Enhancements


Dedicated Left and Right-Turn Lanes at Intersections


Median Barriers

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Raised Medians on Roadways with Existing TWLTL	0.29	All Crashes	0.91	MILE	$ 928,000	$ 841,690
Traffic Calming - Bulbouts	0.68	All Crashes	6.00	EACH	$ 36,000	$ 216,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Change a permissive only to Flashing Yellow Arrow	0.5 - 0.6	Left-Turn	1.00	INT	$ 8,000	$ 8,000
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	3.00	INT	$ 8,000	$ 24,000
Provide Left-Turn Lanes	0.52 - 0.72	Rural	1.00	LANE	$ 300,000	$ 300,000
Install High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	12.00	XING	$ 36,000	$ 432,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1.00	INT	$ 19,000	$ 19,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,840,690
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 92,034
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 552,207
Estimated Construction Cost:		$ 2,559,931

Local Match[†]: 20% $ 650,400

[†] Toward SS4A Implementation Grants

Preconstruction Engineering/Design	*12%*	$ 307,192
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 383,990
Estimated Project Total:		$ 3,252,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

ADDITIONAL INFORMATION

This project recommends the following segment improvements along Auto Mall Drive to address an overrepresentation of rear-end collisions:
-TWLTL to Median
-Reduce speed limit from 30 mph to 25 mph
-Driver feedback speed signs at multiple locations along the corridor

The following intersection improvements are also recommended to address an overrepresentation of angle, parked vehicle and sideswipe collisions:
-10600 S/Auto Mall Dr: Improve striping visibility, particularly for north and south approaches. Add high visibility crossing improvements on all approaches.
-Motor Park Ave/Auto Mall Dr: Implement bulbouts on east approach and ensure parking is not allowed within 50 feet of the intersection. Add stop bars on minor approaches. Add high visibility crossing improvements on all approaches.
-11000 S/Auto Mall Dr: Transition to flashing Yellow Arrow for north/south/east approaches, add protected permitted for west approach. Add high visibility crossing improvements on all approaches.

Project Information Sheet

GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**9400 South from Monroe Street to SR 209**	**Prepared By:**	**JSF**
Jurisdiction(s):	**Sandy**	**Checked By:**	**BCC**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**High, Medium**		

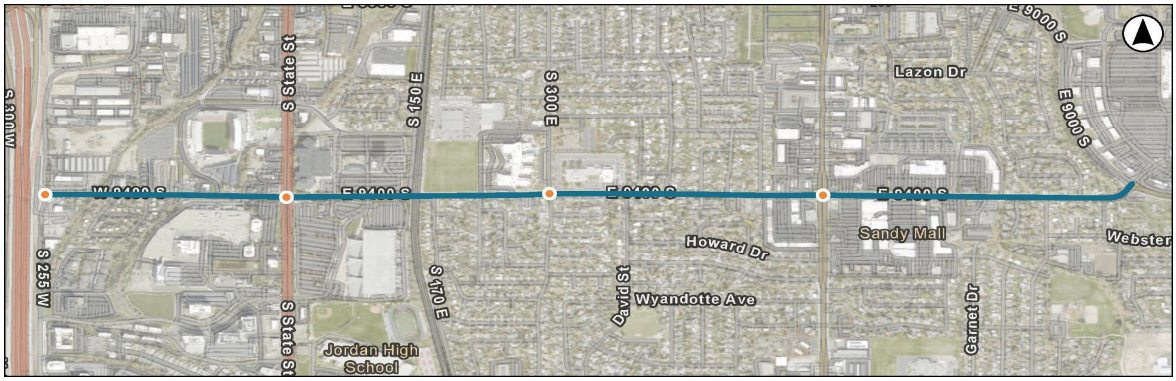
Location Description

Roadway: 9400 South
From: Monroe Street
To: SR 209
Length: 2.01 miles

Key Intersection Locations:
Monroe Street 300 East
State Street
700 East

Project Location Map

Map ID: 8.41.3



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**2.01**
Average Daily Traffic (vehicles per day)	**11,537**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**4**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**8**
Possible Injury Crashes (C)	**10**
No Injury/PDO Crashes (O)	**57**
Total Crashes	**76**
Total EPDO Crashes	**443**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	✓
Front to Rear (FR)	✓	Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Monroe Street & 9400 South		0	0	0	4	0	4	45				✓				✓
State Street & 9400 South	✓	0	0	11	25	14	50	543				✓				✓
700 East & 9400 South	✓	0	3	19	53	53	128	1,360			✓					
300 East & 9400 South	✓	0	0	4	5	5	14	151		✓				✓		

Project Description/How is safety improved?

This project installs raised medians with pedestrian refuge islands, narrows travel lanes, and installs bicycle lanes from 1700 East to SR 209. It also improves midblock crossings at Mountain America Expo Center and Deseret Industries to include high-visibility pavement markings. The intersection at 300 East will be upgraded to include a leading pedestrian interval and flashing yellow arrow signal heads.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Medians and Pedestrian Refuge Islands in Urban & Suburban Areas


Bicycle Lanes


Crosswalk Visibility Enhancements

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Medians and Pedestrian Refuge Islands in Urban Areas	0.44	Pedestrian	1.26	LE (URBA	$ 958,000	$ 1,207,080
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install High Visibility Crosswalk Markings	0.6	Pedestrian	1.00	XING	$ 2,500	$ 2,500
Include a Leading Pedestrian Interval (LPI)	0.87	Pedestrian	1.00	INT	$ 3,000	$ 3,000
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	1.00	INT	$ 8,000	$ 8,000
Upgrade pedestrian push buttons to Audible Pedestrian Signals (APS)	NA	Pedestrian	3.00	INT	$ 4,000	$ 12,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,232,580
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 61,629
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 369,774
Estimated Construction Cost:		$ 1,738,983

Local Match†: 20% $ 441,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 208,678
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 260,847
Estimated Project Total:		$ 2,209,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Consider Installing Interactive Pedestrian Signal (IPS)
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

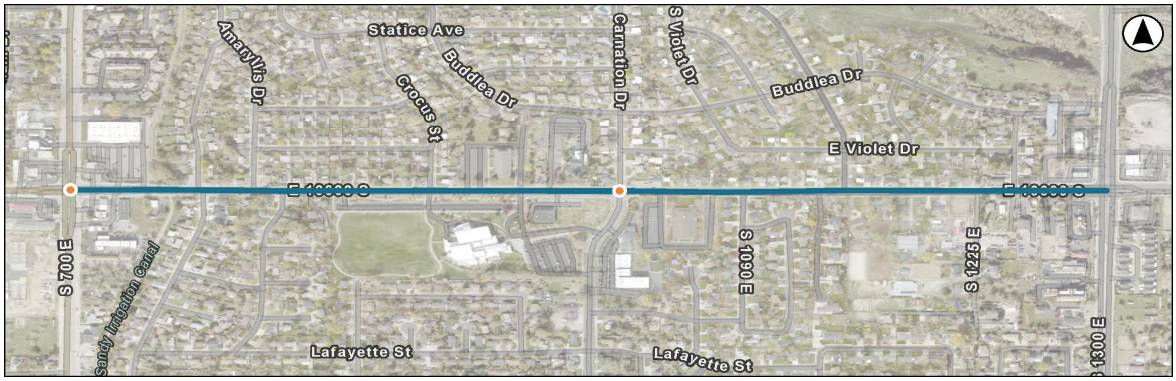
GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**10600 South from 700 East to 1300 East**	**Prepared By:**	**JSF**
Jurisdiction(s):	**Sandy, White City**	**Checked By:**	
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium**		

Location Description

Roadway:	10600 South	**Key Intersection Locations:**	
From:	700 East	Carnation Drive	
To:	1300 East	700 East	
Length:	1.00 miles		

Project Location Map

Map ID: 8.41.4.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.00**
Average Daily Traffic (vehicles per day)	**23,118**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**2**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**9**
No Injury/PDO Crashes (O)	**29**
Total Crashes	**40**
Total EPDO Crashes	**247**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)	✓	Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Carnation Drive & 10600 South	✓	0	0	1	7	2	10	104								
700 East & 10600 South	✓	1	4	24	54	49	132	2,460	✓		✓		✓			

Project Description/How is safety improved?

This project installs a raised median along the length of the corridor and manages access at driveways and unsignalized intersections to reduce head on collisions and front to rear crashes. Right-in/right-out or 3/4 access should be considered at all unsignalized driveways and unsignalized intersections. The project also upgrades signalized intersections to have flashing yellow arrow signal heads (700 East, Carnation Drive) to reduce front to rear crashes.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Corridor Access Management

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Raised Medians on Roadways with Existing TWLTL	0.29	All Crashes	1.00	MILE	$ 928,000	$ 928,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	2.00	INT	$ 8,000	$ 16,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 944,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 47,200
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 283,200
Estimated Construction Cost:		$ 1,349,400

Local Match†: 20% $ 342,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 161,928
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 202,410
Estimated Project Total:		$ 1,714,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**White City Trail Intersection**	**Prepared By:**	**MA**
Jurisdiction(s):	**White City**	**Checked By:**	**EMF**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium**		

Location Description

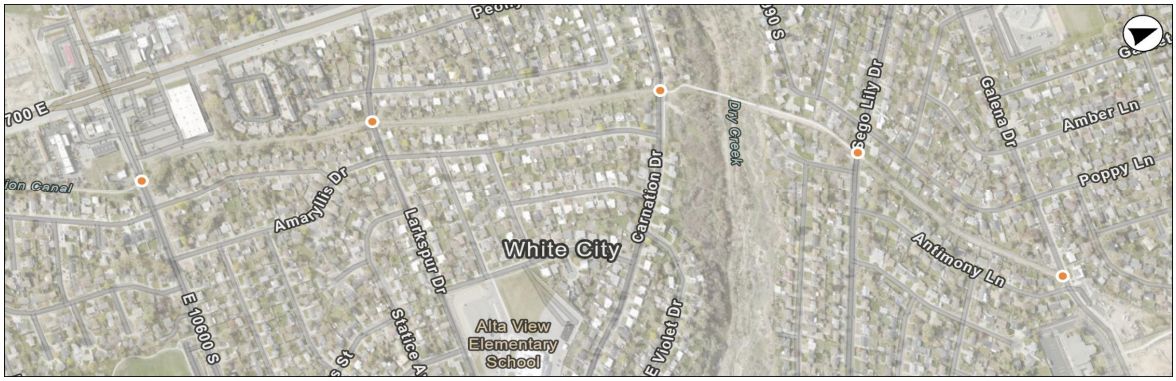
Roadway:	NA
From:	NA
To:	NA
Length:	NA

Key Intersection Locations:

Galena Drive	Carnation Drive
10600 South	Sego Lily Drive
Lake Spur Drive	

Project Location Map

Map ID: 8.42.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**NA**
Average Daily Traffic (vehicles per day)	**NA**
Functional Classification	**NA**
Roadway Ownership	**NA**
Urban/Rural Designation	**NA**
Number of Key Intersections	**NA**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	
Critical Crash Rate Differential	
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**NA**
Suspected Serious Injury Crashes (A)	**NA**
Suspected Minor Injury Crashes (B)	**NA**
Possible Injury Crashes (C)	**NA**
No Injury/PDO Crashes (O)	**NA**
Total Crashes	**NA**
Total EPDO Crashes	**NA**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Galena Drive & White City Trail		0	0	0	0	1	1	1								
10600 South & White City Trail		0	0	0	0	1	1	1								
Lake Spur Drive & White City Tra		0	0	0	0	1	0	1								
Carnation Drive & White City Trai		0	0	0	0	0										
Sego Lily Drive & White City Trail		0	0	0	0	1	1	1								

Project Description/How is safety improved?

This project includes improvements to encourage safe pedestrian crossings at various crossings of the White City Trail, including: installation of raised pedestrian crossings and high visibility crosswalk improvements at all crossings; installation of a pedestrian hybrid beacon at the crossing with 10600 S; relocation of the RRFB at the crossing with Larkspur Dr; install RRFB at the north-south crossing with Galena Dr.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Crosswalk Visibility Enhancements

Pedestrian Hybrid Beacons

Rectangular Rapid Flashing Beacons (RRFB)

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Pedestrian Hybrid Beacons (PHB) or HAWK	0.453	Pedestrian	1.00	EACH	$ 200,000	$ 200,000
Install Raised Crosswalk	NA	Pedestrian	5.00	EACH	$ 71,000	$ 355,000
Install a Rectangular Rapid Flashing Beacons (RRFB)	0.526	Pedestrian	2.00	XING (2)	$ 15,000	$ 30,000
Upgrade Crosswalk to High-Visibility Crosswalk at Midblock	0.6 - 0.75	Pedestrian	3.00	XING	$ 37,000	$ 111,000
Install High-Visibility Crosswalk at Midblock Locations	0.6 - 0.75	Pedestrian	2.00	XING	$ 36,000	$ 72,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 768,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 38,400
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 230,400
Estimated Construction Cost:		$ 1,111,800

Local Match†: 20% $ 282,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 133,416
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 166,770
Estimated Project Total:		$ 1,412,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

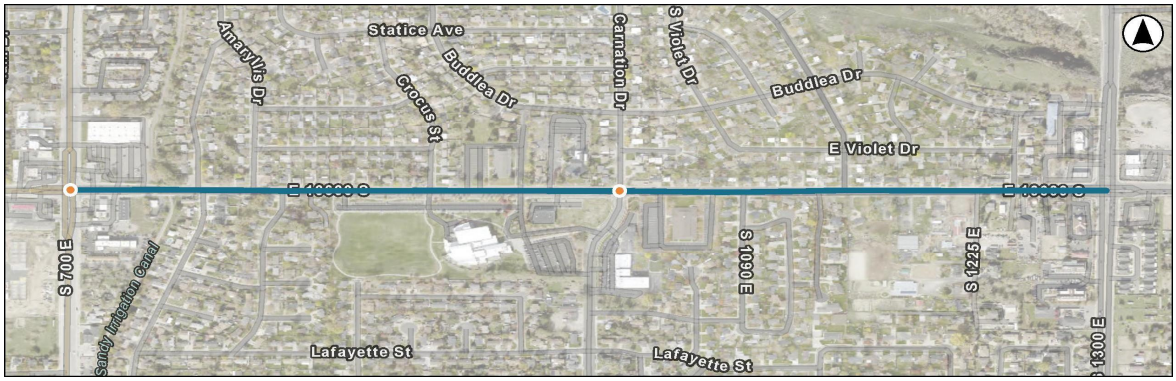
GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**5/22/2024**
Project Name:	**10600 South from 700 East to 1300 East**	**Prepared By:**	**JSF**
Jurisdiction(s):	**White City, Sandy**	**Checked By:**	**BCC**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Medium**		

Location Description

Roadway:	10600 South	**Key Intersection Locations:**	
From:	700 East	Carnation Drive	
To:	1300 East	700 East	
Length:	1.00 miles		

Project Location Map

Map ID: 8.42.2



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.00**
Average Daily Traffic (vehicles per day)	**23,118**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**2**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**9**
No Injury/PDO Crashes (O)	**29**
Total Crashes	**40**
Total EPDO Crashes	**247**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)	✓	Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Carnation Drive & 10600 South	✓	0	0	1	7	2	10	104								
700 East & 10600 South	✓	1	4	24	54	49	132	2,460	✓		✓		✓			

Project Description/How is safety improved?

This project installs a raised median along the length of the corridor and manages access at driveways and unsignalized intersections to reduce head on collisions and front to rear crashes. Right-in/right-out or 3/4 access should be considered at all unsignalized driveways and unsignalized intersections. The project also upgrades signalized intersections to have flashing yellow arrow signal heads (700 East, Carnation Drive) to reduce front to rear crashes.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Corridor Access Management

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Raised Medians on Roadways with Existing TWLTL	0.29	All Crashes	1.00	MILE	$ 928,000	$ 928,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	2.00	INT	$ 8,000	$ 16,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 944,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 47,200
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 283,200
Estimated Construction Cost:		$ 1,349,400

Local Match†: 20% $ 342,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 161,928
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 202,410
Estimated Project Total:		$ 1,714,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**East Salt Lake Valley**	**Date Prepared:**	**3/13/2024**
Project Name:	**Emigration Canyon Road from Crestview Drive to Pincecrest Canyon Road**	**Prepared By:**	**MA**
Jurisdiction(s):	**Emigration**	**Checked By:**	**EMF**
Emphasis Areas:	**Intersections, Roadway Departures, Impaired Driving**		
Equity Priority:	**Low**		

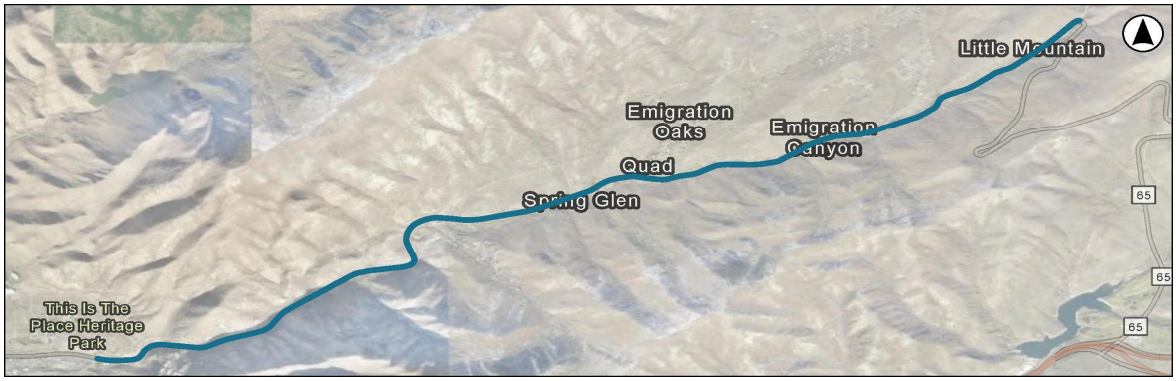
Location Description

Roadway: Emigration Canyon Road
From: Crestview Drive
To: Pincecrest Canyon Road
Length: 5.96 miles

Key Intersection Locations:

Project Location Map

Map ID: 8.43.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**5.96**
Average Daily Traffic (vehicles per day)	**3,901**
Functional Classification	**Major Collector**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**6**
Suspected Minor Injury Crashes (B)	**13**
Possible Injury Crashes (C)	**10**
No Injury/PDO Crashes (O)	**46**
Total Crashes	**75**
Total EPDO Crashes	**1,012**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle	✓	Rear to Side (RS)	
Angle	✓	Sideswipe (SS)	✓
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS

Project Description/How is safety improved?

This project recommends improvements along Emigration Canyon Road between Crestview Drive and Pinecrest Canyon Road: center-line rumble strips; improvements to curves including upgraded curve signage, high-friction surface treatment at horizontal curve, and in-lane curve warning markings; and various visibility, sight distance, and advance warning improvements at all minor roadways intersecting with Emigration Canyon Road along this segment.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Enhanced Delineation for Horizontal Curves


Lighting


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Roadside Design Improvements at Curves

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
			5.96			$ -
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	4.00	CURVE	$ 2,000	$ 8,000
Install High Friction Surface Treatment (HFST) on Curve	0.515	Fatal & Injury	4.00	CURVE	$ 53,000	$ 212,000
Install In-Lane Curve Warning Pavement Markings	.616 - 0.65	All Crashes	4.00	CURVE	$ 3,000	$ 12,000
Install Centerline Rumble Strips	0.36 - 0.56	Head-on (FI)	5.96	MILE	$ 5,000	$ 29,800
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	10.00	INT	$ 19,000	$ 190,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 451,800
*Mobilization: (% +/-)**	*10%*	$ 45,180
Traffic Control: (% +/-)	*5%*	$ 22,590
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 135,540
Estimated Construction Cost:		$ 655,110

Local Match†: 20% $ 166,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 78,613
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 98,267
Estimated Project Total:		$ 832,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

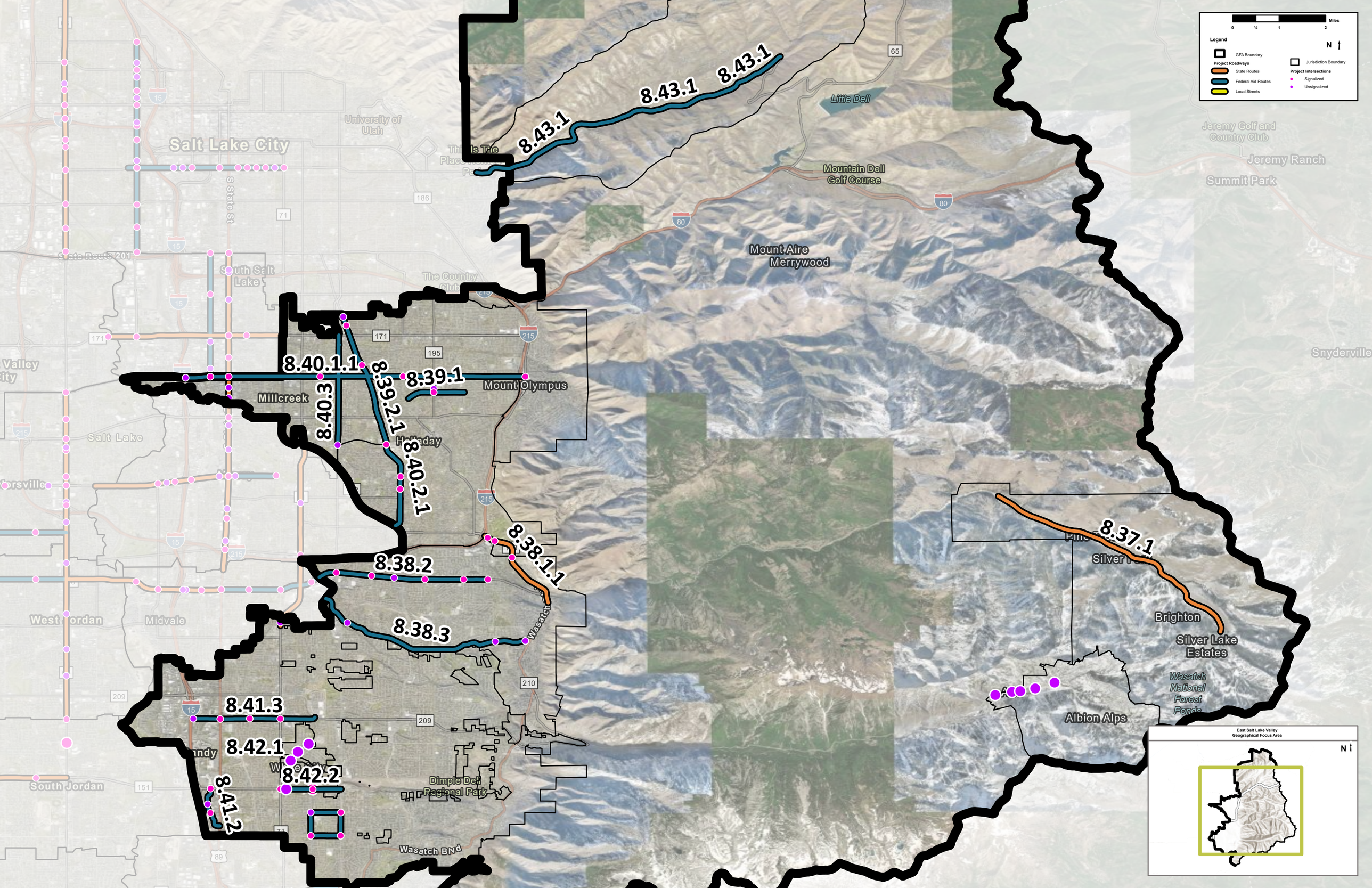
Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

EAST SALT LAKE VALLEY CASE STUDY
PROJECT LOCATION MAP


Miles
0
½
1
2
Legend
N
GFA Boundary
Jurisdiction Boundary
Project Roadways
State Routes
Federal Aid Routes
Local Streets
Project Intersections
Signalized
Unsignalized
8.43.1
8.43.1
8.43.1
8.40.1.1
8.40.3
8.39.2.1
8.40.2.1
8.39.1
8.38.2
8.38.1.1
8.38.3
8.41.3
8.42.1
8.42.2
8.41.2
8.37.1
Salt Lake City
University of Utah
Millcreek
Mount Olympus
Holladay
Mountain Dell Golf Course
Little Dell
Mount Aire
Merrywood
Jeremy Golf and Country Club
Jeremy Ranch
Summit Park
Snyderville
Brighton
Silver Lake Estates
Albion Alps
Wasatch National Forest
South Salt Lake
The Country Club
Salt Lake
West Jordan
Midvale
South Jordan
Dimple Dell Regional Park
Wasatch Blvd
State Route 201
S State St
East Salt Lake Valley
Geographical Focus Area
N

EAST SALT LAKE VALLEY EQUITY INDEX MAP

East Salt Lake Valley

Equity Need Areas

- High
- Medium
- Low