

# South Meadows Multimodal Transportation Study

April 17, 2020

Prepared for:



Prepared by:





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## EXECUTIVE SUMMARY

The South Meadows Multimodal Transportation Study was conducted to create a safe and efficient multimodal transportation network specifically for the South Meadows area. Implementation of the recommendations will:

- Improve roadway safety for all users
- Plan regional roadway and intersection capacity improvements
- Expand pedestrian and bicycle connectivity
- Enhance public transportation connectivity and travel options

This study represents the first step in the process of funding and implementing regional transportation projects. The list of potential improvements created by this study will be forwarded to the upcoming Regional Transportation Plan (RTP) update process for prioritization and programming considering regional needs, priorities, and available funding. The list of seventy (70) potential improvements was developed based on detailed traffic analysis, an understanding of build-out level land use, and extensive community input. More than 1,000 community members participated in this study process and provided nearly 3,000 comments. Figures 2-2 through 2-7 present the citizen comments in a heat map format. Overall, the community recommended the following distribution of funding between travel modes:

- Vehicular Capacity – 35%
- Safety Improvements – 25%
- Pedestrian Improvements – 13%
- Bicycle Improvements – 12%
- Transit – 10%
- Park & Ride Facilities – 5%

Chapter 8 is the heart of this report presents a comprehensive list of potential improvements specific to Bicycle, Pedestrian, Safety, Park & Ride, and Vehicular Capacity. These potential improvements should not be viewed as individual “projects”, rather, many of the improvements can, and should, be combined to form “corridor projects” or “grouped projects” interweaving the needs of multiple travel modes and more efficiently utilizing available funding. The RTC would need to program approximately \$216,650,000 (current 2019 dollars) for the South Meadows area in order to implement every potential improvement. The potential improvements will be advanced to the upcoming Regional Transportation Plan (RTP) for prioritization and programming considering all needs in the Truckee Meadows region.

The high cost of building transportation infrastructure, and the lack of right-of-way for new corridors, re-emphasizes the critical importance of maintaining existing and future roadway capacity on existing arterials. The South Meadows area is roughly 65% built out at this time and traffic volumes can therefore be expected to grow another 35% in the overall study area over next 20 to 30 years. The following actions are necessary and critical to maintaining a transportation network that will serve the existing and approved future developments and traffic levels:

- Maintain roadway hierarchy including the proactive management of Veterans Parkway as a High Access Control Arterial
- Maintain the existing number of travel lanes on study area roadways
- Strictly adhere to the Access Management Standards established in the RTP
- Maintain appropriate speed limits based on roadway classification
- Limit the installation of new traffic signals to locations identified in the traffic signal masterplan (Figure 9-1)
- Implement bicycle and pedestrian facilities consistent with roadway classification



## ACKNOWLEDGEMENTS

The South Meadows Multimodal Transportation Study was funded and administered by the Regional Transportation Commission of Washoe County (RTC), for the benefit of current South Meadows residents, and every community member who will walk, cycle, ride a bus, or drive in the South Meadows over the next 20 years and beyond. Long-range planning for numerous regionally significant major arterial roadways and intersections is no easy task. The project team is therefore sincerely grateful to every citizen, stakeholder, technical advisor, and agency representative that gave of their personal time and knowledge, to guide the study process and identify a set of well-rounded multi-modal improvements that will serve our community well into the future. Thank you for helping shape the future of the South Meadows!

## TECHNICAL ADVISORY COMMITTEE

<u>Member</u>	<u>Agency</u>	<u>Member</u>	<u>Agency</u>
Xuan Wang	RTC Project Manager	Alex Wolfson	NDOT
Amy Cummings	RTC Interim Executive Director	Dominique Lucier	NDOT
Dan Doenges	RTC Interim Director of Planning	Kevin Verre	NDOT
Brian Stewart	RTC Director of Engineering	Mike Fuess	NDOT
Mark Maloney	RTC Director of Public Transportation	Nick Johnson	NDOT
Andrew Jayankura	RTC	Richard Oujevolk (OJ)	NDOT
James Weston	RTC	Tara Smaltz	NDOT
Julie Masterpool	RTC	Jeremy Smith	TMRPA
Lauren Ball	RTC	Julee Olander	Washoe County
Leslie Benton	RTC	Kelly Mullin	Washoe County
Michael Moreno	RTC	Mitchell Fink	Washoe County
Scott Miklos	RTC	Adam Searcy	Washoe County School District
Tina Wu	RTC	Brett Rodela	Washoe County School District
Arlo Stockham	City of Reno	Mike Boster	Washoe County School District
Jon Simpson	City of Reno		
Kurt Dietrich	City of Reno		
Sienna Reid	City of Reno		

## CONSULTING TEAM

Loren Chilson	Headway Transportation
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## CHAPTER 1 - INTRODUCTION

### PURPOSE AND GOALS

The purpose of this multimodal study is to identify needs and long-term transportation improvements for regional roads and intersections in the South Meadows area. This study focuses on traffic operations analysis and capacity improvements, safety improvements, pedestrian and bicycle connectivity, and transit service needs. The goals of the study are the following:

- Improve roadway safety for all users
- Plan regional roadway and intersection capacity improvements
- Expand pedestrian and bicycle connectivity
- Enhance public transportation connectivity and travel options

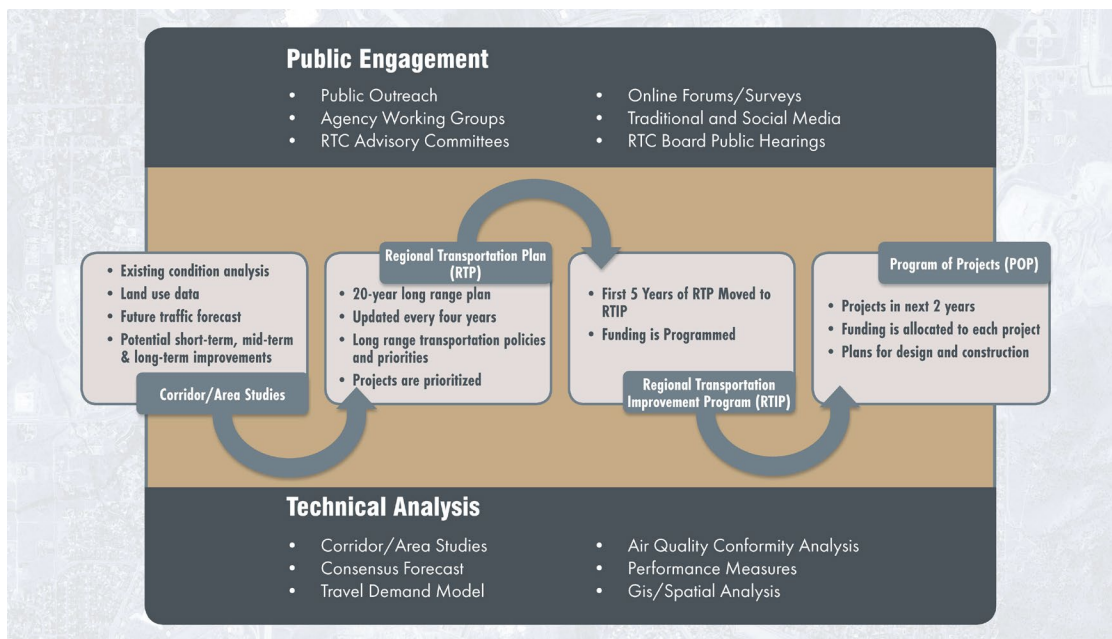
### VISION STATEMENT

The following vision statement was developed for this study through stakeholder and community input:

“Create a safe and efficient multimodal transportation system in the South Meadows.”

### THE TRANSPORTATION PLANNING PROCESS

It is important to outline the transportation planning process to understand the many steps involved before projects can be physically constructed. **Exhibit 1-1** shows the local transportation planning process. As shown, this study is the first step (Corridor/Area Studies) in the planning process and the potential improvements list outlined later in this report will be advanced to the upcoming Regional Transportation Plan (RTP) for prioritization and programming.



**Exhibit 1-1. The Transportation Planning Process**



## CHAPTER 2 - PUBLIC OUTREACH

A critical part of any successful regional planning study is interweaving community and stakeholder input throughout the duration of the study. The project team sought to engage interested citizens and key stakeholders whenever possible and incorporate their feedback within the study process. The project team engaged key local agencies throughout the study process by meeting multiple times with the Technical Advisory Committee (TAC) established for this project. Three TAC meetings and two community-wide public meetings were conducted to guide the study and recommendations.

The TAC meetings included staff from the Washoe County Regional Transportation Commission (RTC), the Nevada Department of Transportation (NDOT), the City of Reno, Washoe County, Truckee Meadows Regional Planning Agency and the Washoe County School District.

The study process included a significant public outreach effort to identify key issues and concerns from the public's perspective which have directly shaped the list of potential improvements. Public involvement was sought primarily via two public meetings and an extensive online survey that resulted in nearly 3,000 specific comments.

### TECHNICAL ADVISORY COMMITTEE

#### TAC Meeting #1

The first TAC meeting was held on January 31<sup>st</sup>, 2019. The purpose of the first meeting was to introduce the consulting team staff, lead agency staff, the TAC members, and the stakeholders. The project team presented the following items:

- Study goals
- Draft vision statement
- Future development in the study area
- Major safety concerns with wild horses
- Locations with potential safety issues
- Study approach
- Study timeline

#### TAC Meeting #2

The second TAC meeting was held on June 3<sup>rd</sup>, 2019. The primary purpose of the second meeting was to update the TAC on the public outreach to date and the progress of the study. The project team gave a presentation that reviewed the main concerns and themes from the first public meeting and the MetroQuest Survey. The presentation also included detailed information on a draft of potential pedestrian, bicycle, and transit improvements, and identified the study intersections and roadway segments for detailed analysis. Post presentation, the TAC commented on the main themes from the MetroQuest survey and provided feedback on the draft potential improvement list.

#### TAC Meeting #3

The third TAC meeting was held on October 28<sup>th</sup>, 2019. The purpose of the third meeting was to review the traffic analysis and all material to be presented at the second public meeting. The project team presented the methodology and results of the traffic analysis conducted at the 16 study intersections. The TAC provided feedback on the potential improvements list to be presented to the public.



## PUBLIC MEETINGS

This section provides a summary of the activities undertaken to directly engage local residents and the general public. Community supported plans cannot be established without a free exchange of information and public input at all stages of the planning process. In order for the public input process to be effective, the project team organized proactive public meetings and provided complete information for public review and comment throughout the process.

The project team engaged the community through two open house format public meetings. These meetings enabled the public to interact with the project team, voice questions or concerns about the current or future state of roadways in the South Meadows area and submit comments. Questions and concerns were gathered through public comment cards, display boards, and maps that citizens could write comments on.

### Public Meeting #1

The first public meeting was held on March 26<sup>th</sup>, 2019 at Damonte Ranch High School. Many attendees and families showed support and interest in the study with approximately 80 in attendance. The purpose of this meeting was to give residents an opportunity to talk with the project team and comment on some of the larger issues they experience on a daily basis. Attendees could indicate their concerns to the project team on comment cards, on display boards, and via an electronic MetroQuest survey. The comments from this meeting were collected and organized to help create the potential improvements list found later in this report. **Figure 2-1** shows an example board that was presented at the meeting.

### Public Meeting #2

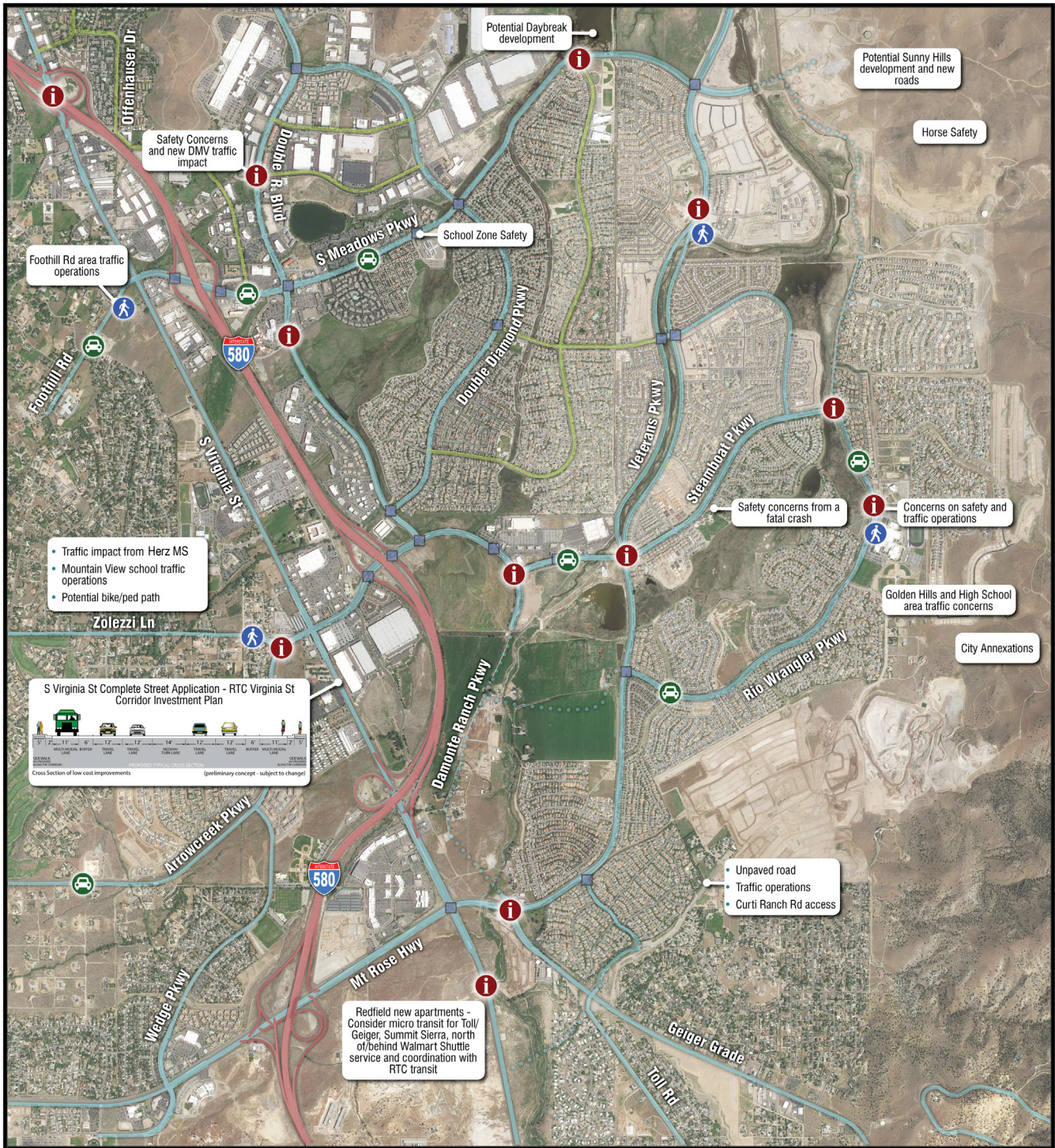
The second public meeting was held on November 5<sup>th</sup>, 2019 at the Zeppelin. The purpose of this meeting was to provide the results of the analysis and the potential improvements lists. In addition, the project team provided a summary and heat maps from the MetroQuest Survey. Nearly 30 display boards were used to present the improvement options. This was an opportunity for attendees to comment and provide feedback to the project team on the results and findings of the study. Approximately 50 people attended this meeting.

## METROQUEST SURVEY

The MetroQuest Survey was an online survey that encouraged specific input to identify desired transportation improvements in the South Meadows area. The survey contained three basic components:

- Questions about how funding should be utilized for various travel modes
- Questions about the desire for transit and Park & Ride facilities
- An interactive map to log specific comments about facilities in the South Meadows study area.

Overall, 1,069 participants completed the online survey, 2,368 individual markers were placed on the map, and 1,831 comments were received, which demonstrates the outstanding public engagement in this study. Comments were also received via email throughout the study duration. Individual comments were grouped into themes and a summary of the survey and email comments received is provided in **Appendix A**.



**Legend**

	Freeways and Ramps		<b>NORTH</b>
	Existing Regional Roads		
	Planned Regional Roads		
	Local Road (Non-Regional)		
	Existing Traffic Signal		
	Intersections of Interest		
	Bicycle/Pedestrian Concerns		
	Capacity Concerns		

## Specific Concerns We Have Heard to Date Tell Us Your Thoughts

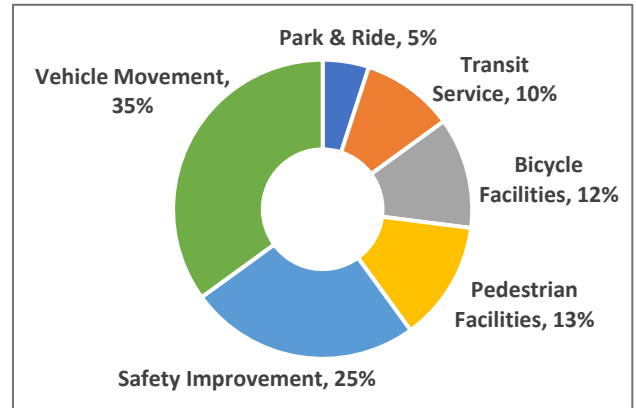


**FIGURE 2-1. PUBLIC MEETING #1  
EXAMPLE BOARD**





The funding allocation component of the survey asked: “For every \$100 to spend on improving transportation in the South Meadows area, how would you allocate the \$100 in each of the following categories?” The various categories that money could be allocated to were Safety Improvement, Vehicle Movement, Bicycle Facilities, Pedestrian Facilities, Transit Service, and Park & Ride. **Exhibit 2-1** shows the survey results for the funding allocation question. As shown, vehicular movement (35%) and safety improvements (25%) were clearly the two categories that were allocated the most money. The pedestrian facilities, bicycle facilities, and transit facilities categories were relatively equal in budget allocation.

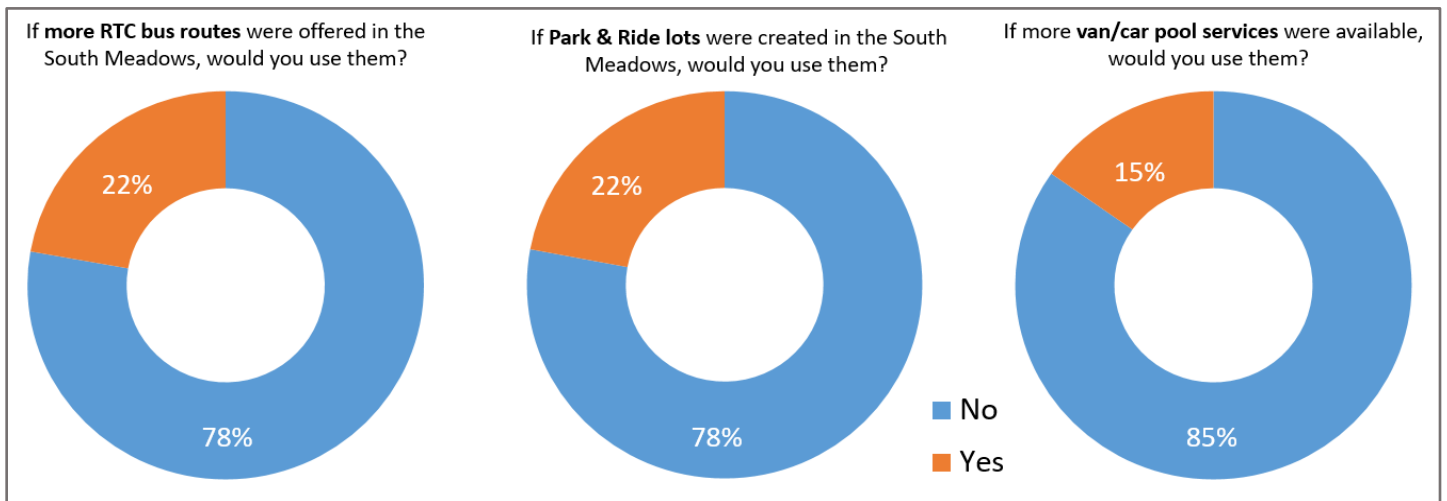


**Exhibit 2-1. Funding Allocation**

The transit component of the survey asked:

- If more RTC bus routes were offered in the South Meadows, would you use them?
- If Park & Ride lots were created in the South Meadows, would you use them?
- If more van/car pool services were available, would you use them?

**Exhibit 2-2** shows the survey results for these three questions.



**Exhibit 2-2. Survey Questions Results**

As shown in **Exhibit 2-2**, 22% or less of the participants answered “Yes” to using more transit services. The desire for transit improvements might seem low, however, the existing RTC transit services available in the South Meadows area are very limited at this time. This indicates that there might be a potential for the RTC to increase transit or park and ride services in this area.

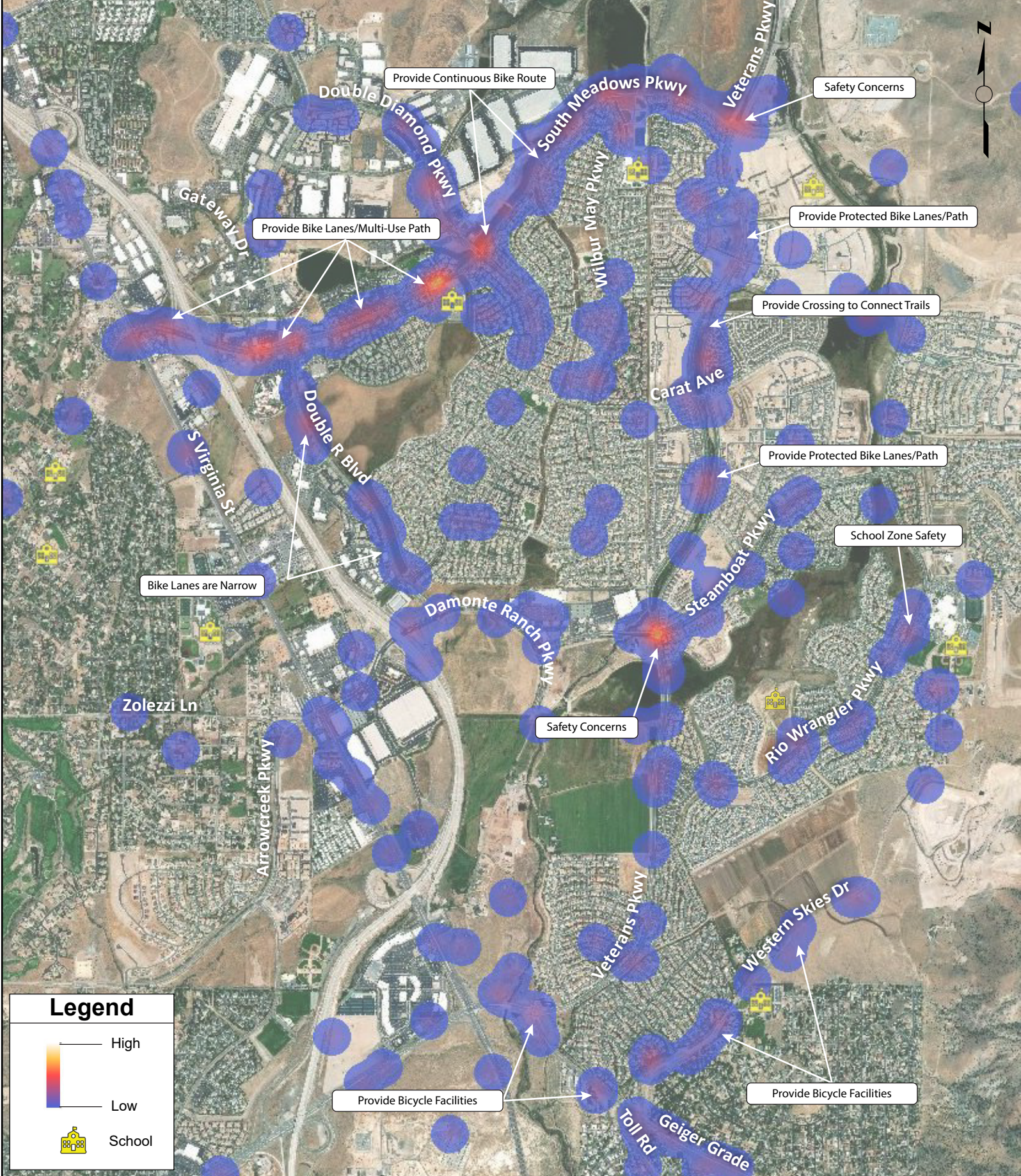
The last component, the interactive map, was the most comprehensive component. This tool enabled participants to drop markers into a map and state their specific comments and/or concerns. Participants could create entries regarding Intersection, Road Section, Bike Route, Pedestrian, Park & Ride, and Other categories. **Exhibit 2-3** shows an example of the Damonte Ranch area after polling ended. Within the entire map, participants entered 2,369 markers and 1,831 comments. The percentage of markers placed in each category were as follows:

- Intersection – 36%
- Road Segment – 19%
- Pedestrian – 17%
- Bike Route – 14%
- Other – 8%
- Park & Ride – 6%



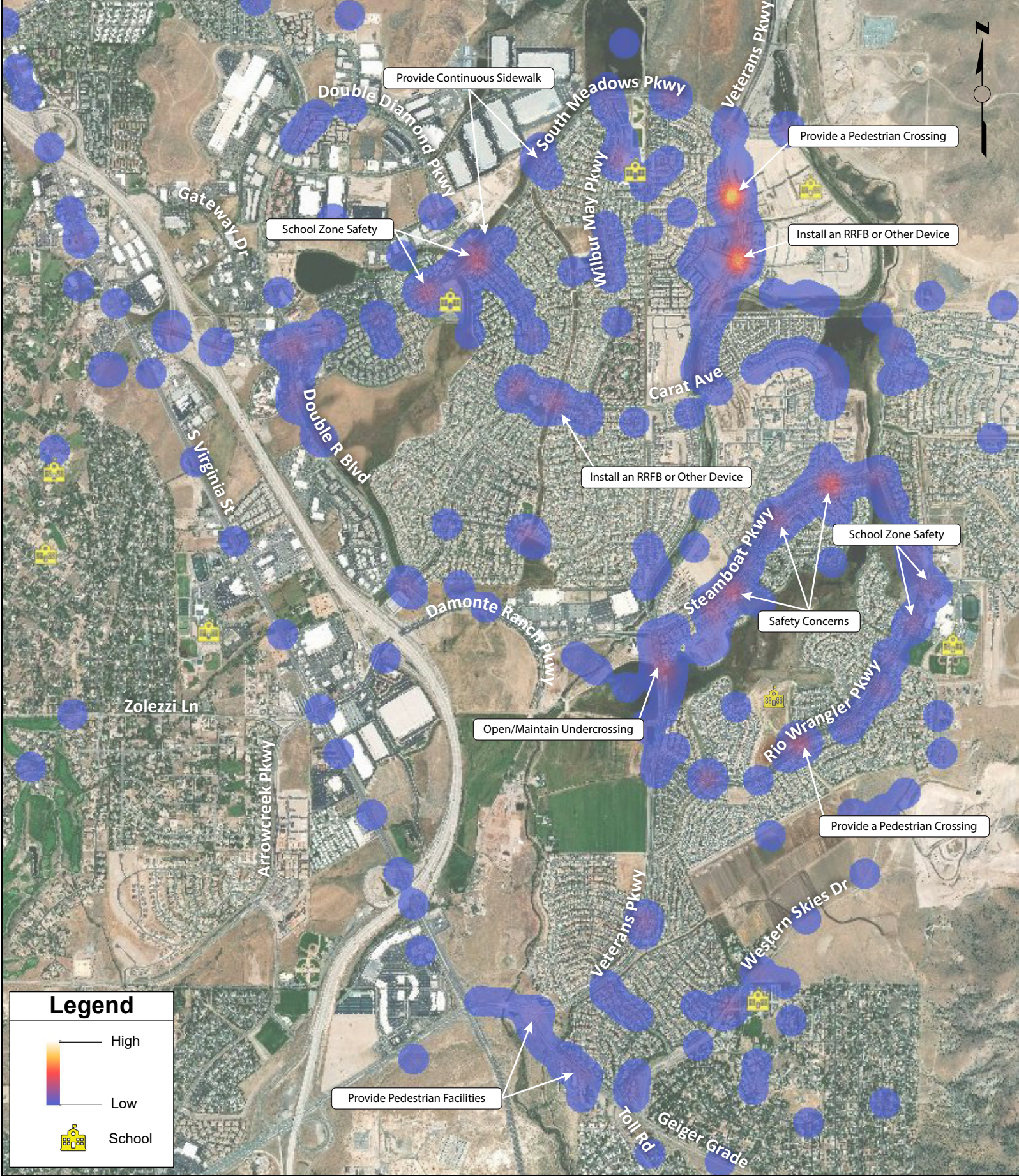
**Exhibit 2-3. Survey Map Example**

Based on the location of the markers for each category, heat maps were created for the Bike Routes (**Figure 2-2**), Pedestrian (**Figure 2-3**), Safety (**Figure 2-4**), Park & Ride (**Figure 2-5**), Intersection (**Figure 2-6**), and Road Segments (**Figure 2-7**) categories. The safety heat map was created by filtering the comments with the search word “safe”. Each heat map includes summary notes characterizing the comments for the highest marked areas. These maps were then used to help identify key areas of interest for further analysis.



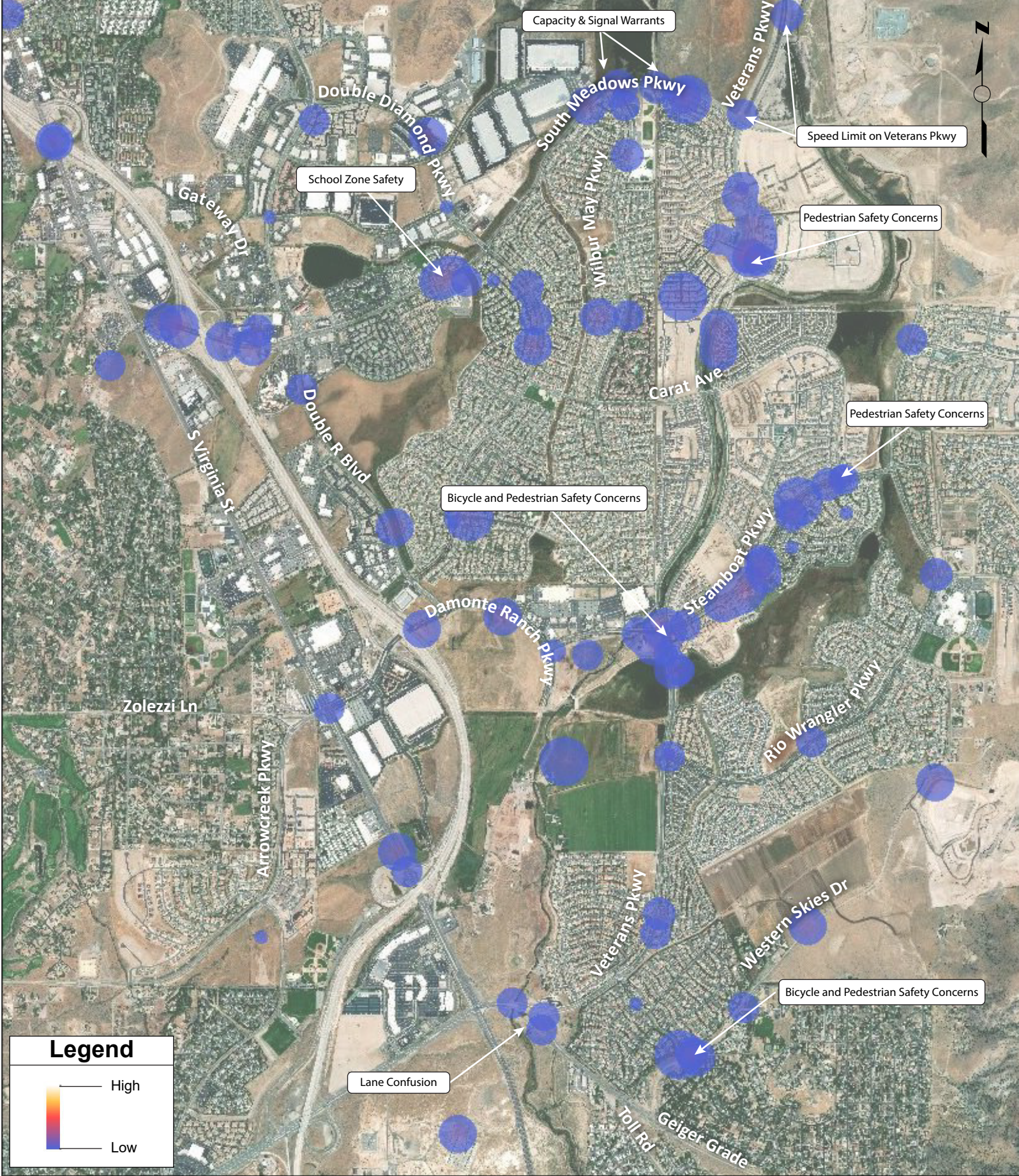
**FIGURE 2-2. PUBLIC COMMENTS/CONCERNS - BIKE ROUTES**





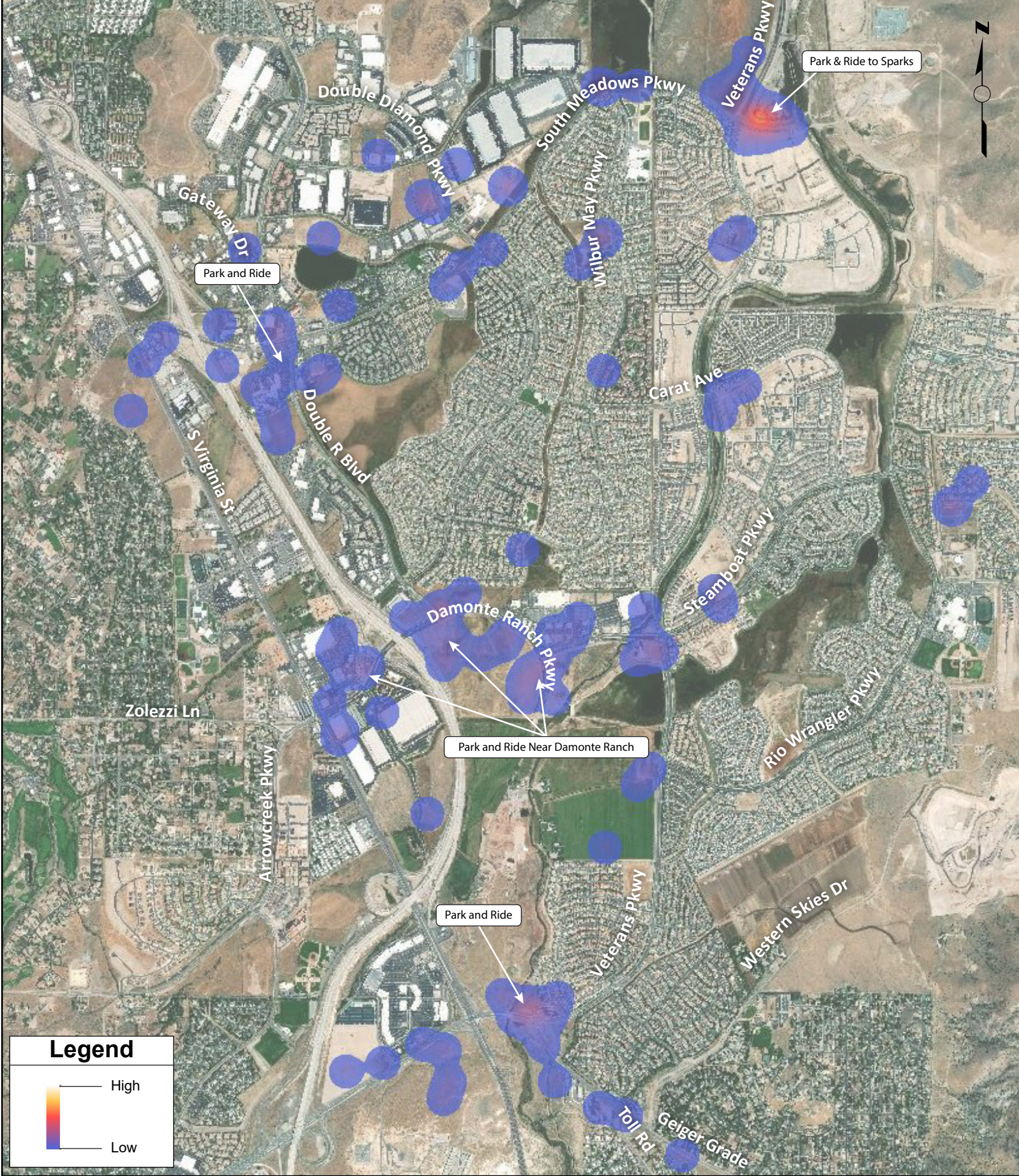
**FIGURE 2-3. PUBLIC COMMENTS/CONCERNS - PEDESTRIAN**





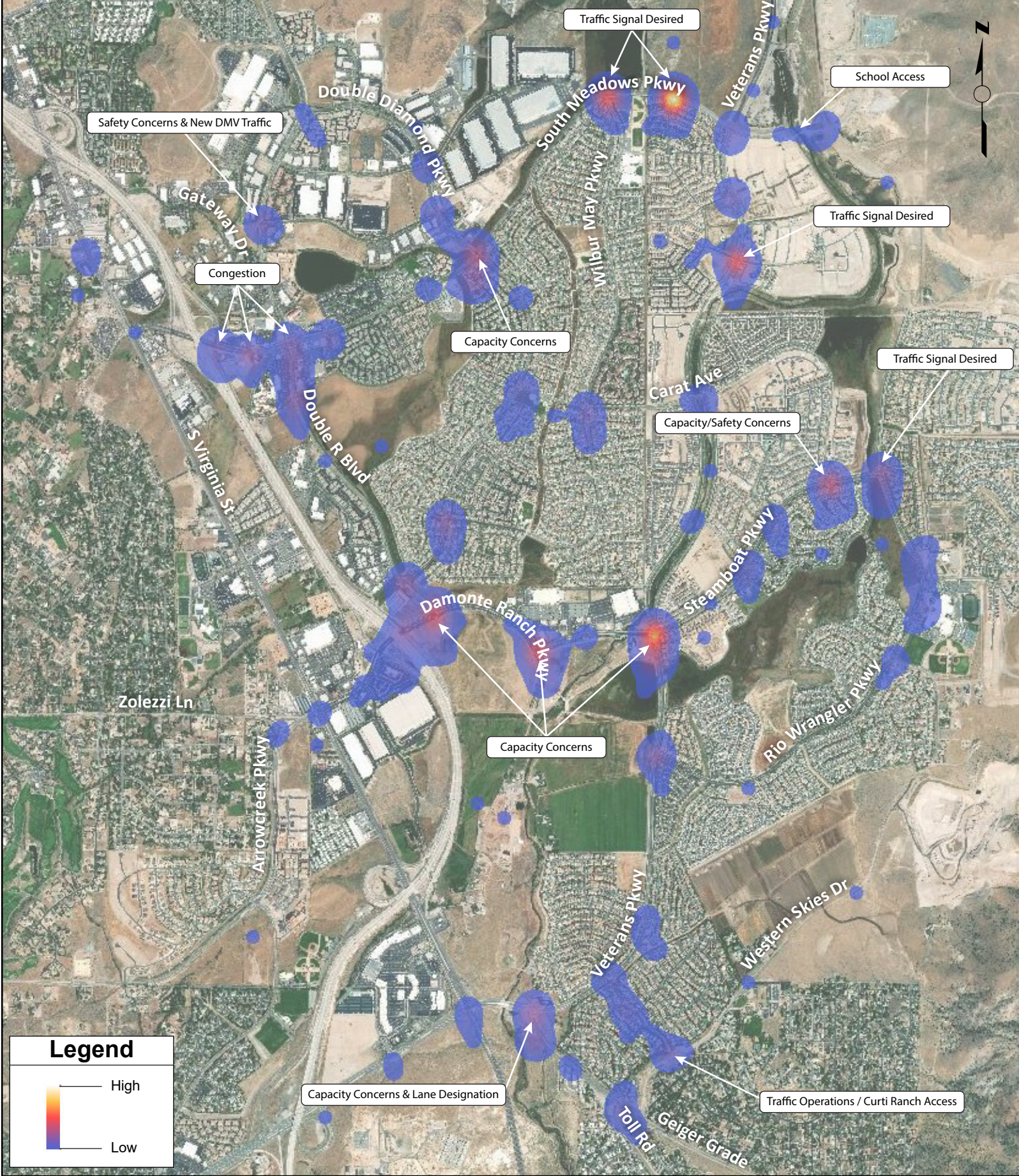
**FIGURE 2-4. PUBLIC COMMENTS/CONCERNS - SAFETY**





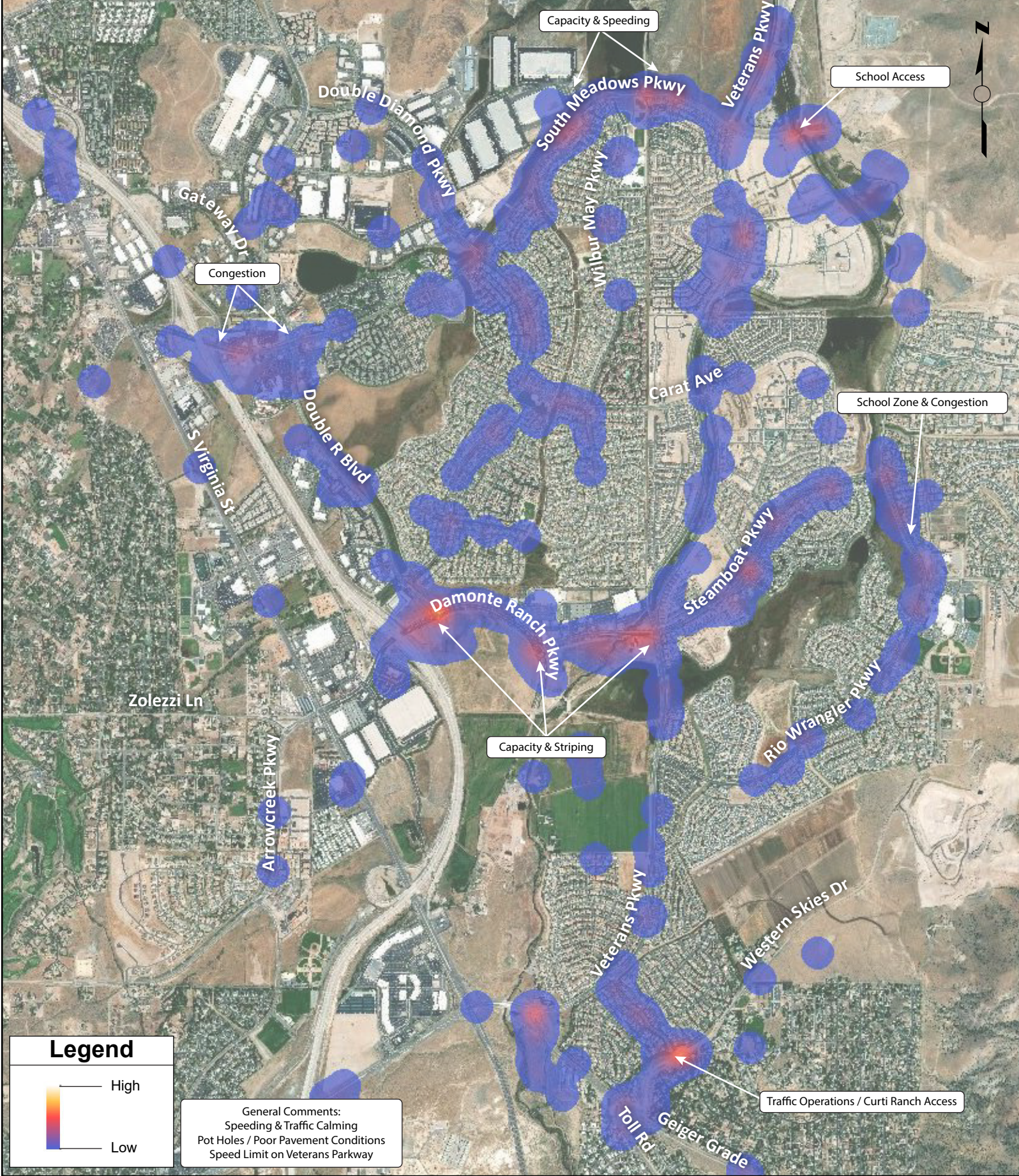
**FIGURE 2-5. PUBLIC COMMENTS/CONCERNS - PARK & RIDE**





**FIGURE 2-6. PUBLIC COMMENTS/CONCERNS - INTERSECTIONS**





**Legend**

High

Low

General Comments:  
 Speeding & Traffic Calming  
 Pot Holes / Poor Pavement Conditions  
 Speed Limit on Veterans Parkway





### CHAPTER 3 - STUDY FOCUS AREAS

This chapter lists the intersections and roadway segments included within the South Meadows Multimodal Transportation Study. The study intersections and roadway segments were selected based on preliminary scoping with the RTC, input from the Technical Advisory Committee, public comments/concerns from the first South Meadows public meeting (March 26, 2019), and the survey/heat map results. **Figure 3-1** illustrates the overall study area and the major roadways and intersections considered in this study.

#### PRIMARY STUDY INTERSECTIONS – OPERATIONAL ANALYSIS

Level of service analysis was performed for the following 16 intersections:

- S. Virginia Street / I-580 Northbound Off-Ramp
- S. Virginia Street / Veterans Parkway (formally Geiger Grade)
- Veterans Parkway / Long Meadow Drive
- Veterans Parkway / Steamboat Parkway
- Veterans Parkway / Geiger Grade (Roundabout)
- S. Meadows Parkway / Echo Valley Parkway
- S. Meadows Parkway / Wilbur May Parkway
- S. Meadows Parkway / Double Diamond Parkway
- S. Meadows Parkway / Double R Boulevard
- S. Meadows Parkway / Gateway Drive
- Rio Wrangler Parkway / McCauley Ranch Boulevard
- Double R Boulevard / Sandhill Road
- Double R Boulevard / Double Diamond Parkway
- Double R Boulevard / Damonte Ranch Parkway
- Steamboat Parkway / Damonte Ranch Parkway
- Steamboat Parkway / Rio Wrangler Parkway

#### ADDITIONAL INTERSECTIONS REVIEWED

Field Review was performed at the following intersections:

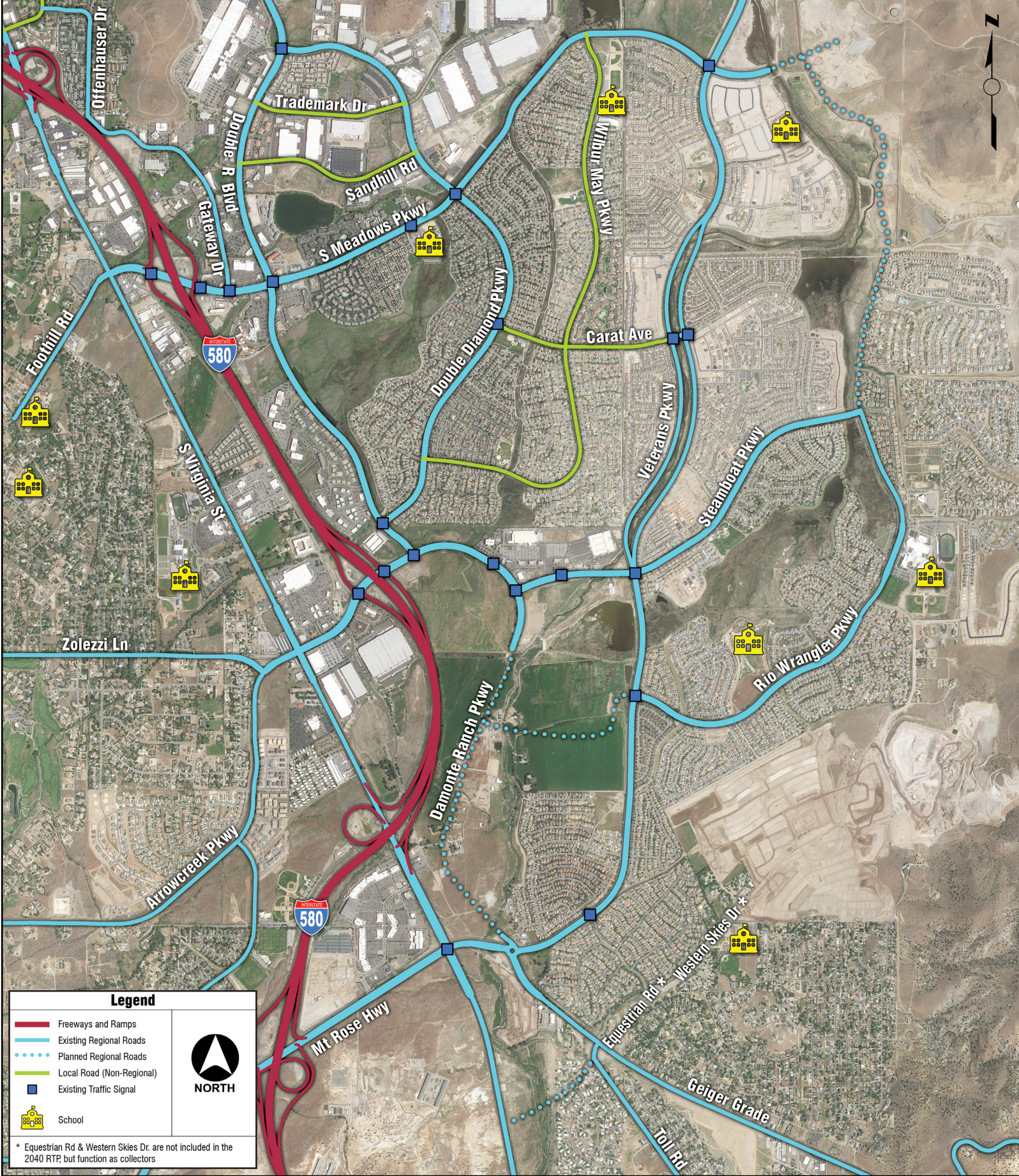
- Damonte Ranch Interchange
- S. Virginia Street / Holcomb Ranch Lane
- S. Meadows Parkway / Mojave Sky Drive
- Veterans Parkway / Carat Avenue
- Arrowcreek Parkway / Zolezzi Lane
- Rio Wrangler Parkway / Spring Flower Drive / Summer Glen Drive
- Rio Wrangler Parkway / Yee Haw Way
- Steamboat Parkway / Brittany Meadows Drive
- Steamboat Parkway / Carat Avenue
- Steamboat Parkway / Hampton Park Drive



### STUDY ROADWAYS – SEGMENT LEVEL OF SERVICE ANALYSIS

Level of Service analysis using daily traffic volumes, was performed for the following road segments:

- S. Virginia Street (Patriot Boulevard to I-580)
- S. Meadows Parkway (Entire Length)
- Veterans Parkway (Mira Loma Drive to Geiger Grade)
- Double R Boulevard (N. Double Diamond Parkway to Damonte Ranch Parkway)
- Steamboat Parkway (Entire Length)
- Rio Wrangler Parkway (Entire Length)
- Damonte Ranch Parkway (Entire Length)
- Double Diamond Parkway (Entire Length)
- Arrowcreek Parkway (Thomas Creek Road to S. Virginia Street)
- Western Skies & Equestrian Road (Ultimate Configuration)
- Foothill Boulevard (Broken Hill Road to S. Virginia Street)
- Geiger Grade (S. Virginia Street to Equestrian Road)



**FIGURE 3-1. STUDY AREA AND OVERVIEW**





## CHAPTER 4 - EXISTING AND PLANNED FACILITIES

This chapter summarizes the existing and previously planned facilities in the South Meadows Multimodal Transportation Study area.

### EXISTING PEDESTRIAN AND BICYCLE FACILITIES

Non-motorized travel, such as walking and cycling, are important elements of the overall transportation system and the provision, extent, and quality of non-motorized facilities affect mode choice. This section summarizes the existing pedestrian and bicycle facilities in the study area.

#### Pedestrian Facilities

**Figure 4-1** shows the existing pedestrian facilities on regional roadways within the study area. As shown, most regional roadways in the South Meadows area currently have sidewalks. However, there are either incomplete or no pedestrian facilities on Foothill Road, Zolezzi Lane, Geiger Grade, Western Skies Drive, and sections of S. Virginia Street.

#### Bicycle Facilities

**Figure 4-2** illustrates the existing bicycle facilities within the South Meadows area. In general, regional roadways currently have either a bike lane or multi-use path. However, some sections of South Meadows Parkway, S. Virginia Street, Foothill Road, and Geiger Grade do not have any bicycle facilities.

### CRASH HISTORY

Crash data obtained from the Nevada Department of Transportation (NDOT) Crash Data Safety App for the most recent 3-year period available (2015 to 2017) was used to help identify crash concentrations and attempt to identify general trends. **Figure 4-3** shows a heat map of all the reported crashes in the study area. Most crashes in the study area are concentrated at the freeway interchanges or intersections with traffic signals. These key intersections process large volumes of vehicular traffic and crashes are more likely to occur at these high conflict areas. In total, there were 1,344 reported crashes within the general study area over the 3-year data period. Of the 1,344 crashes reported, 503 caused injuries and 6 resulted in fatalities.

### PUBLIC TRANSIT

This section documents the existing public transportation infrastructure that serves the South Meadows area.

#### Fixed Route Transit

**Figure 4-4** shows the existing transit routes within the study area. There are two fixed routes (Route 56 and the Regional Connector) that currently operate within the South Meadows area. Route 56 operates from Meadowood Mall to Damonte Ranch Parkway and the RTC Regional Connector route operates to/from Carson City via S. Virginia Street. Currently, the South Meadows region has limited transit routes with transit accessibility primarily in the north-west quadrant of the study area.

#### Transit Utilization

Annual Average Daily Ridership (AADR) was obtained from the most recent RTC ridership data (2019) based on individual roadway segments. RTC Ride Route 56 has an average weekday transit loading of 393.1 riders at the Gateway Drive/Prototype Drive stop and 237.6 riders at the two Renown Medical Center stops. The Regional Connector Route has an average weekday transit loading of 76.8 riders at the Summit Mall stop.



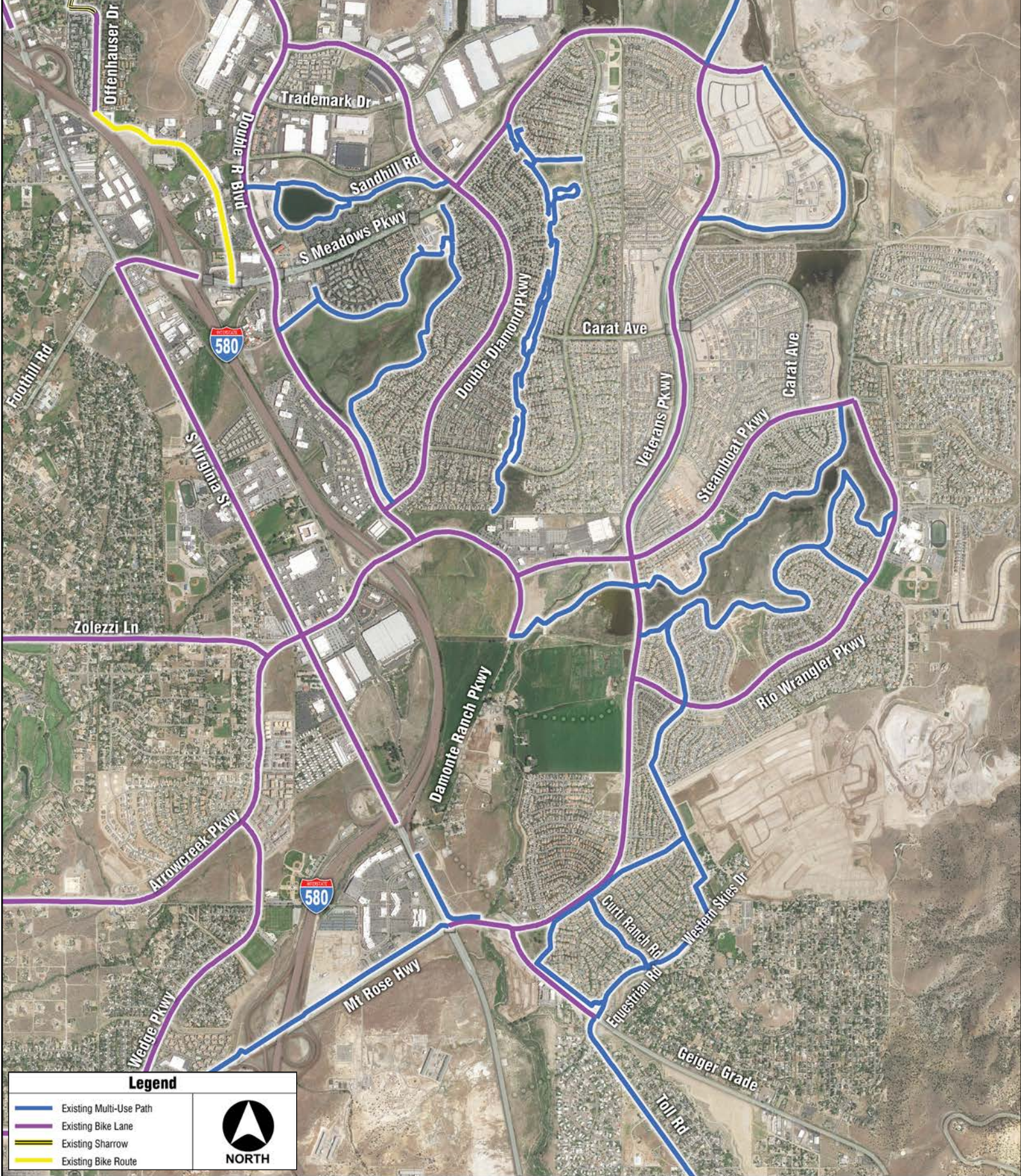
**Legend**

- - - - - Existing Regional Road Sidewalk Facilities
- - - - - Existing Multi-Use Paths



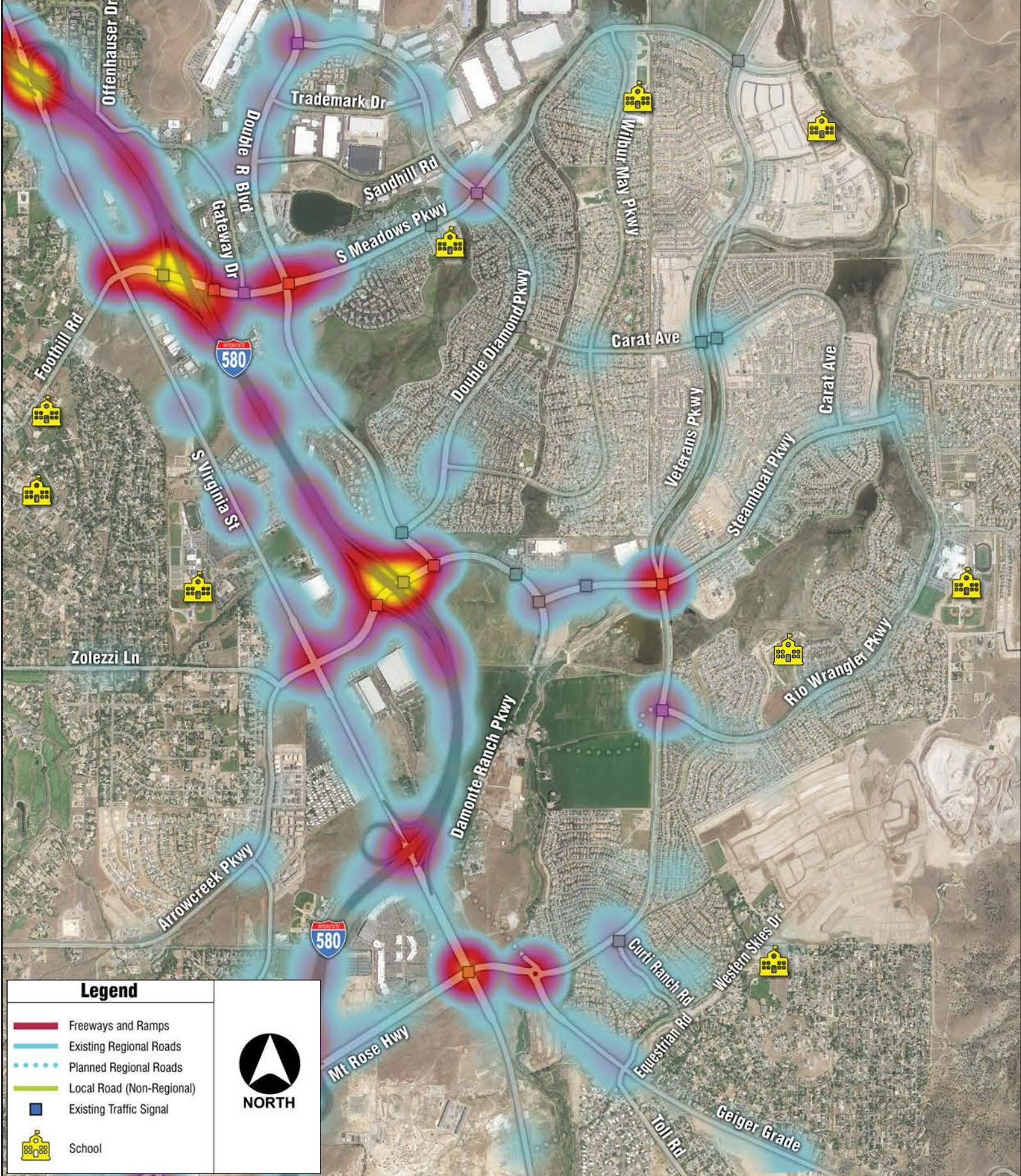
**FIGURE 4-1. EXISTING PEDESTRIAN FACILITIES**





**FIGURE 4-2. EXISTING BICYCLE FACILITIES**





**FIGURE 4-3. CRASH HISTORY**





**Legend**

- Bus Stop
- Bus Stop with Planned ADA Improvements
- Bus Route 56
- Regional Connector
- Freeways and Ramps
- Existing Regional Roads
- Planned Regional Roads
- Local Road (Non-Regional)
- Existing Traffic Signal
- Existing Park & Ride

**NORTH**



**FIGURE 4-4. EXISTING TRANSIT FACILITIES**







## Other Services

In addition to fixed-route service, RTC also provides ADA paratransit service, RTC ACCESS, and has a growing vanpool program, RTC VANPOOL, with over 200 van pools in operation. RTC ACCESS is the paratransit service that provides door-to-door, prescheduled, trips for individuals with access and functional needs who meet eligibility criteria. Trips are reserved from one to three days in advance and the service operates 24 hours a day, seven days a week. The trip origin and trip destination must be within a 3/4 mile corridor surrounding “regular” fixed-route RTC RIDE service. An existing park and ride lot currently exists at the Summit Mall at the Mt. Rose Highway / Herz Boulevard intersection (see **Figure 4-4**).

## EXISTING MAJOR ROADWAYS

**Table 4-1** summarizes key characteristics of the major roadways within the study area.

**Table 4-1. Existing Major Roadway Characteristics**

Street	Start	End	Lanes	Posted Speed	Functional Class	Policy Access	Policy LOS
S. Virginia St	Longley Ln	I-580	4	45	Arterial	MAC	E
	I-580	Mt. Rose Hwy	6	55	Arterial	MAC	E
South Meadows Pkwy	S. Virginia St	Lauren Ct	6	35	Arterial	MAC	E
	Lauren Ct	Rio Wrangler Pkwy	4	35	Arterial	MAC	D
Veterans Pkwy	Greg St	South Meadows Pkwy	6	45	Arterial	HAC	E
	South Meadows Pkwy	Geiger Grade	4	45	Arterial	HAC	D
Damonte Ranch Pkwy	S. Virginia St	Steamboat Pkwy	6	45	Arterial	MAC	E
Double R Blvd	Double Diamond Pkwy	South Meadows Pkwy	4	45	Arterial	MAC	D
	South Meadows Pkwy	Lauren Ct	4	35	Arterial	MAC	D
	Lauren Ct	Damonte Ranch Pkwy	4	45	Arterial	MAC	D
Steamboat Pkwy	Damonte Ranch Pkwy	Rio Wrangler Pkwy	4	35	Arterial	MAC	D
Rio Wrangler Pkwy	Veterans Pkwy	Summer Glenn Dr	4	45	Arterial	MAC	D
	Summer Glenn Dr	South Meadows Pkwy	2	45	Arterial	MAC	D
Double Diamond Pkwy	Double R Blvd (north)	Double R Blvd (south)	4	35	Arterial	MAC	D
Arrowcreek Pkwy	Thomas Creek Rd	Rubblestone Dr	2	35	Arterial	MAC	D
	Rubblestone Dr	S. Virginia St	4	35	Arterial	MAC	D
Foothill Blvd	Broken Hill Rd	S. Virginia St	2	25	Collector	LAC	D
Geiger Grade	S. Virginia St	Equestrian Rd	4	45	Arterial	MAC	E
	Equestrian Rd	Storey County Line	2	45	Arterial	MAC	D
Equestrian Rd	Geiger Grade	Western Skies Dr	2	30	Collector*	--	D
Western Skies Dr	Geiger Grade	Rio Wrangler Pkwy	2	30	Collector*	--	D

Notes: HAC = High Access Control, MAC = Moderate Access Control, LAC = Low Access Control, \* Not identified in the 2040 RTP but functions as a collector  
Policy LOS “D” for roadway facilities carrying less than 27,000 ADT and LOS “E” for roadway facilities carrying more than 27,000 ADT.



### PLANNED IMPROVEMENTS

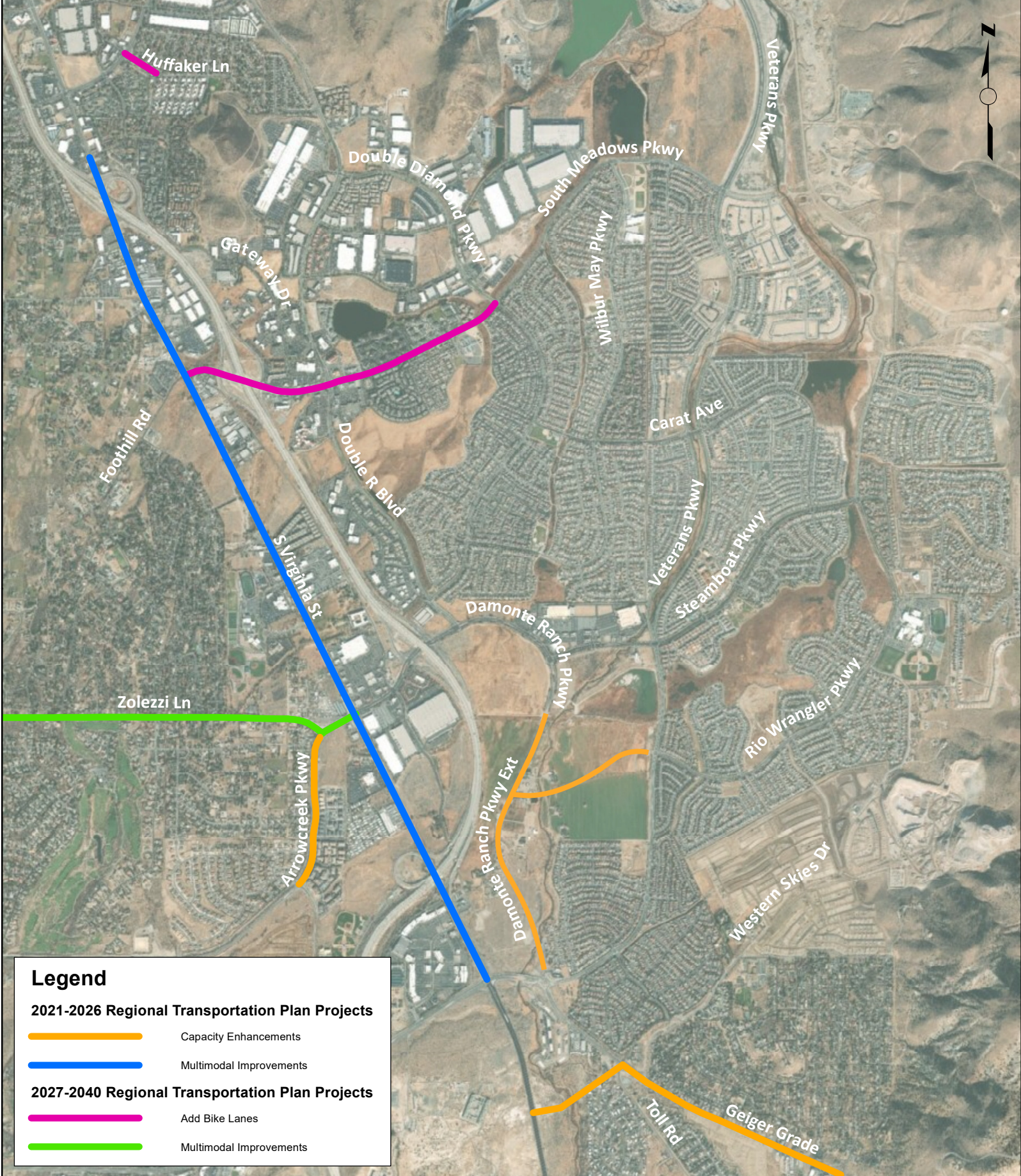
This section documents the previously planned improvements outlined in the RTC's 2040 Regional Transportation Plan (RTP) and 2017 Bicycle and Pedestrian Master Plan (BPMP).

#### 2040 Regional Transportation Plan

The RTC's 2040 Regional Transportation Plan (RTP) is the region's 20-year long range transportation plan. The plan defines the long range priorities for the future transportation system including transit, multimodal, and roadway capacity improvements. The 2040 RTP includes the funding for and priority of projects within Washoe County. **Figure 4-5** shows the projects currently programmed within the study area. As shown, there are multimodal improvements programmed on Huffaker Ln, Zolezzi Ln, S. Virginia Street, and South Meadows Parkway. Additionally, there are vehicular capacity enhancements programmed on Arrowcreek Parkway and Geiger Grade. Roadway extensions are anticipated on Damonte Ranch Parkway and Rio Wrangler Parkway. The extension of Rio Wrangler Parkway north to South Meadows Parkway is not included in the 2040 RTP but is planned with approved master-planned developments and should be shown in the next RTP.

#### Bicycle and Pedestrian Master Plan

The RTC's 2017 Bicycle and Pedestrian Master Plan (BPMP) is a guiding document that supports the prioritization of projects to support walking and bicycling within Washoe County. **Figure 4-6** shows the Bicycle Project Priorities within the South Meadows area. Currently, there are only two bicycle projects planned in the study area. Low priority improvements are listed on S. Virginia Street and South Meadows Parkway. **Figure 4-7** shows the Pedestrian Project Priorities within the South Meadows area. As shown, the highest priorities per the 2017 BPMP are walkability improvements on S. Virginia Street. Medium priority projects are included on Zolezzi Lane, Double R Boulevard, Double Diamond Parkway, and Gateway Drive.



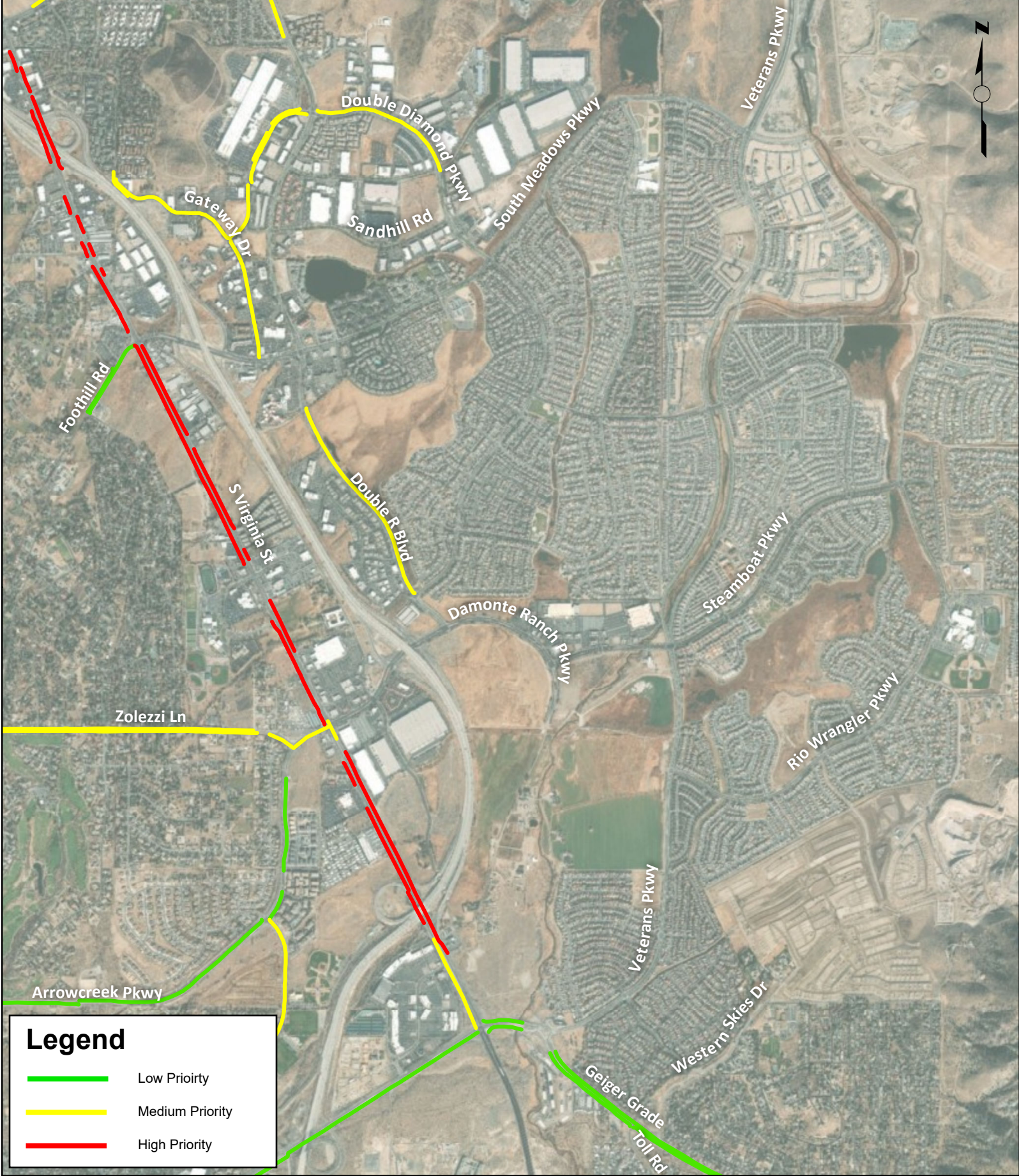
**FIGURE 4-5. CURRENTLY PLANNED IMPROVEMENTS PER 2040 REGIONAL TRANSPORTATION PLAN**





**FIGURE 4-6. BPMP BICYCLE PROJECT PRIORITY**





**FIGURE 4-7. BPMP PEDESTRIAN PROJECT PRIORITY**





## CHAPTER 5 - EXISTING CONDITIONS LEVEL OF SERVICE ANALYSIS

This chapter presents the findings of an existing conditions intersection level of service analysis and roadway segment analysis for the South Meadows area. This existing conditions analysis has been prepared to document existing traffic operations and to identify any poor level of service conditions. The selection methodology and full list of study intersections and roadway segments is provided in *Chapter 3 – Study Focus Areas*.

### ANALYSIS METHODOLOGY

Level of service (LOS) is a term commonly used by transportation practitioners to measure and describe the operational characteristics of intersections, roadway segments, and other facilities. This term equates seconds of delay per vehicle at intersections to letter grades “A” through “F” with “A” representing optimum conditions and “F” representing breakdown or over capacity flows.

#### Level of Service Policy

The 2040 Regional Transportation Plan (RTP) establishes level of service criteria for regional roadway facilities in the City of Reno, City of Sparks, and Washoe County. The current level of service policy is:

- “All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon – LOS D or better.”
- “All regional roadway facilities projected to carry 27,000 or more ADT at the latest RTP horizon – LOS E or better.”
- “All intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting corridors”.

In general, the roadways within the study area currently carry less than 27,000 ADT except for select roadway segments immediately adjacent to I-580.

#### Intersections

The complete methodology for intersection level of service analysis is established in the Highway Capacity Manual (HCM) 2010, published by the Transportation Research Board (TRB). **Table 5-1** presents the delay thresholds for each level of service grade at signalized and unsignalized intersections.

**Table 5-1: Level of Service Definition for Intersections**

Level of Service	Brief Description	Average Delay (seconds per vehicle)	
		Signalized Intersections	Unsignalized Intersections
A	Free flow conditions.	0-10	0-10
B	Stable conditions with some affect from other vehicles.	>10-20	>10-15
C	Stable conditions with significant affect from other vehicles.	>20-35	>15-25
D	High density traffic conditions still with stable flow.	>35-55	>25-35
E	At or near capacity flows.	>55-80	>35-50
F	Over capacity conditions.	> 80	> 50

Source: Highway Capacity Manual (2010), Chapters 18 through 21

Level of service calculations were performed for the study intersections using the PTV Vistro software package with analysis and results reported in accordance with HCM 2010 methodology.



### Roadway Segments

Roadway segments were analyzed using the Generalized Daily Service Volumes for Urban Street Facilities (Exhibit 16-14) of the Highway Capacity Manual 2010. Using this methodology, level of service is determined by comparing average daily traffic volumes to the LOS threshold values shown in **Table 5-2**. The level of service table is based on number of lanes and roadway speed and not based off class like past regional transportation plans.

Note that the values listed under Posted Speed = 45 mi/hr are most appropriate to the roadways in this study since the signal spacing assumptions (1,500 feet) and access spacing assumptions (10 access points per mile) better represent the arterial roadways in this study than the 30 mi/hr values with tighter spacing of signals and more access points.

**Table 5-2. Level of Service Thresholds for Roadway Segments**

Facility Type	Maximum Service Flow Rate (Daily for Given Service Level)				
# of Lanes	LOS A	LOS B	LOS C	LOS D	LOS E
<b>Posted Speed = 30 mi/hr</b>					
2	N/A	N/A	4,800	12,700	16,400
4	N/A	N/A	9,300	25,900	31,300
6	N/A	N/A	13,500	38,300	44,800
<b>Posted Speed = 45 mi/hr</b>					
2	N/A	N/A	8,500	15,400	16,400
4	N/A	N/A	17,700	30,700	31,300
6	N/A	N/A	26,300	44,500	44,800

General assumptions: K-Factor – 0.1, D-Factor – 0.6, Peak Hour Factor – 0.92, Base Saturation Flow Rate – 1,900 pc/h/ln

### LEVEL OF SERVICE ANALYSIS

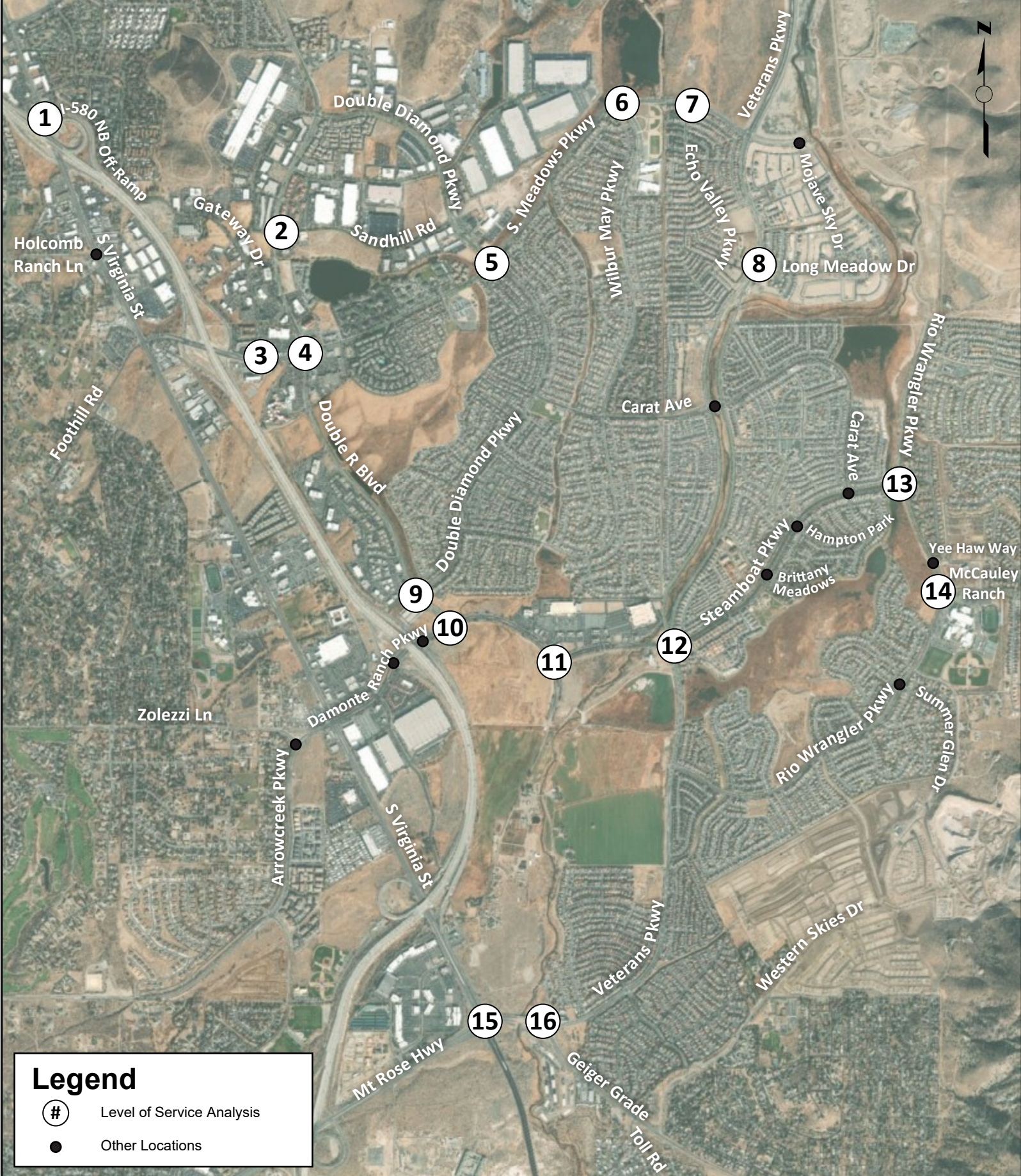
This section reports the findings of the existing conditions level of service analysis.

#### Existing Traffic Volumes

Turning movement counts were collected at the 16 primary study intersections (shown on **Figure 5-1**) on a typical mid-week day, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. This data was used to identify the highest morning and evening traffic conditions. Full turning movement data is provided in **Appendix B**. At each of the study intersections, the one-hour period with the highest traffic volumes (referred to as the peak hour) was determined from the morning and evening data. Existing daily traffic volume data (2018/2019) for all the study roadways within the South Meadows study area was obtained from the Nevada Department of Transportation (NDOT).

#### Intersections

Existing conditions intersection level of service analysis was performed for the study intersections using existing lane configurations and controls (shown on **Figure 5-2**), existing signal timings, and the existing AM and PM peak hour traffic volumes (shown on **Figure 5-3** and **Figure 5-4**). **Table 5-3** shows the AM and PM peak hour level of service results at the study intersections.



### Legend

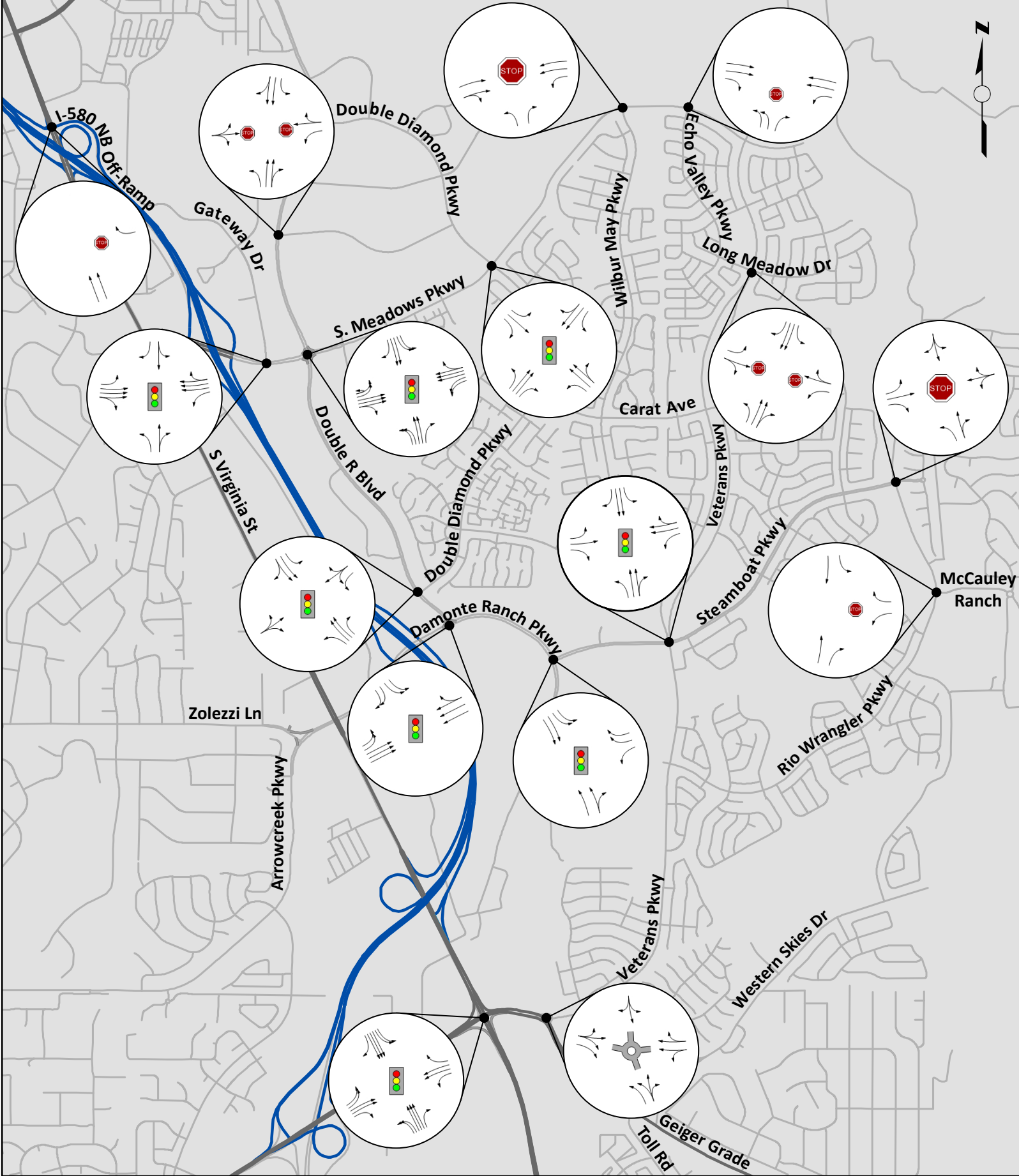
- # Level of Service Analysis
- Other Locations



**FIGURE 5-1. STUDY INTERSECTIONS**

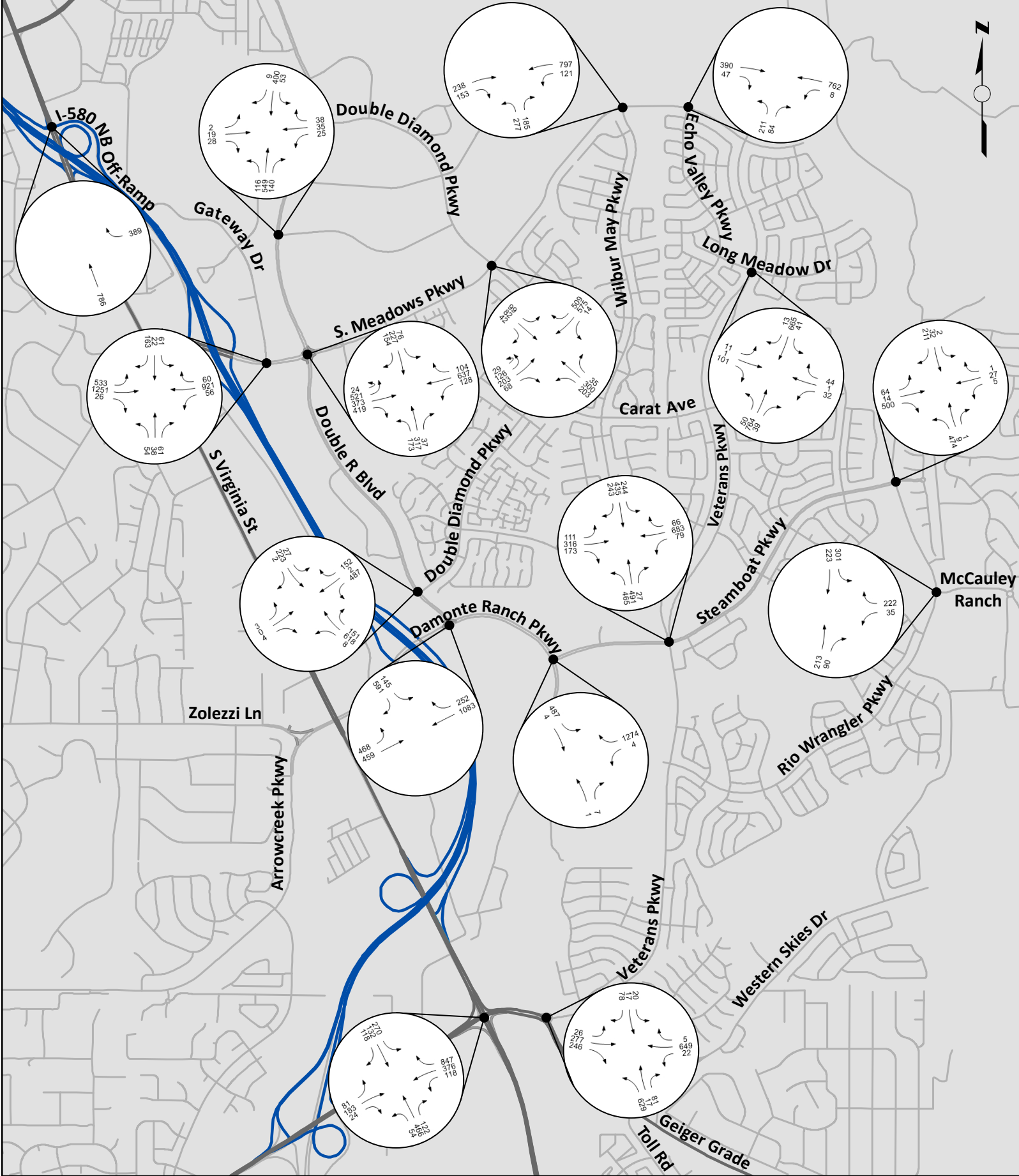






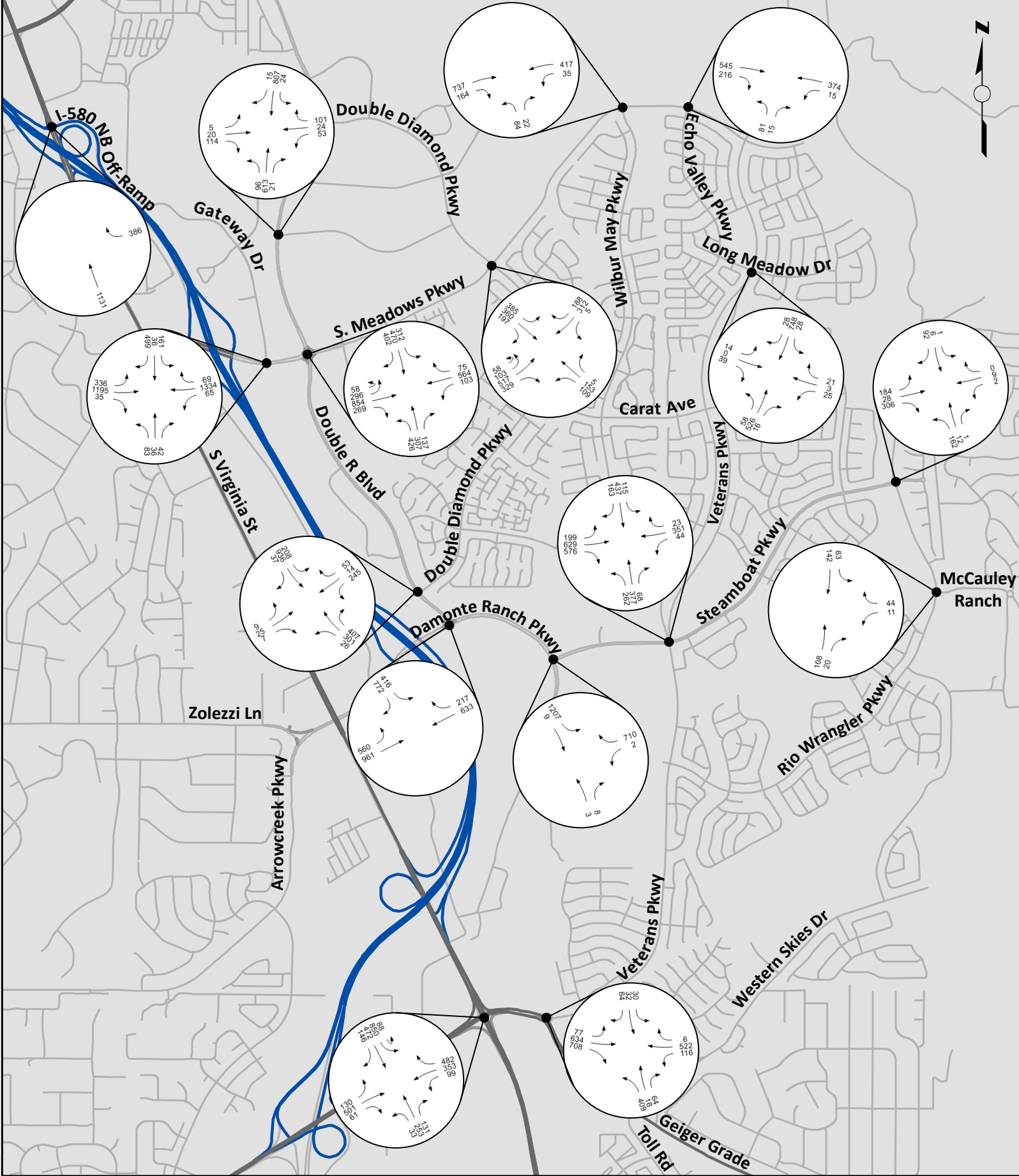
**FIGURE 5-2. EXISTING LANE CONFIGURATIONS AND CONTROLS**





**FIGURE 5-3. EXISTING AM PEAK HOUR TRAFFIC VOLUMES**





**FIGURE 5-4. EXISTING PM PEAK HOUR TRAFFIC VOLUMES**

**Table 5-3. Existing Conditions Level of Service Analysis**

ID	Intersection	Intersection Control	Movement	Existing Conditions			
				AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	S. Virginia St / I-580 NB Off-Ramp	Side-Street STOP	Westbound Approach	D	30.3	E	49.3
2	Double R Blvd / Sandhill Rd	Side-Street STOP	Northbound Left	A	8.9	B	11.2
			Southbound Left	A	9.9	A	9.4
			Eastbound Approach	E	45.5	F	144.3
			Westbound Left	F	110.3	F	>300
		Signal	Overall	B	11.9	B	13.9
3	S. Meadows Pkwy / Gateway Dr	Signal	Overall	C	30.7	D	39.8
4	S. Meadows Pkwy / Double R Blvd	Signal	Overall	D	39.6	D	46.3
5	S. Meadows Pkwy / Double Diamond Pkwy	Signal	Overall	C	23.9	C	22.6
6	S. Meadows Pkwy / Wilbur May Pkwy	All-Way STOP	Overall	F	87.8	D	26.8
7	S. Meadows Pkwy / Echo Valley Pkwy	Side-Street STOP	Northbound Left	C	24.4	C	20.7
			Northbound Right	B	10.1	B	10.3
			Westbound Left	A	8.2	A	8.8
8	Veterans Pkwy / Long Meadow Dr	Side-Street STOP	Northbound Left	B	10.4	A	9.8
			Southbound Left	A	9.7	A	8.8
			Eastbound Left	F	63.3	E	43.5
			Eastbound Through-Right	B	13.2	B	11.5
			Westbound Left	F	143.0	E	40.2
			Westbound Through-Right	B	13.9	B	14.6
9	Double R Blvd / Double Diamond Pkwy	Signal	Overall	C	29.1	E	58.1
10	Damonte Ranch Pkwy / Double R Blvd	Signal	Overall	D	54.4	D	51.6
11	Damonte Ranch Pkwy / Steamboat Pkwy	Signal	Overall	A	2.9	A	3.8
12	Veterans Pkwy / Steamboat Pkwy	Signal	Overall	C	38.1	C	32.8
13	Steamboat Pkwy / Rio Wrangler Pkwy	All-Way STOP	Overall	F	98.9	B	11.6
14	Rio Wrangler Pkwy / McCauley Ranch Blvd	Side-Street STOP	Southbound Left	A	9.8	A	7.6
			Westbound Left	F	63.6	B	11.5
			Westbound Right	B	12.8	A	9.1
15	S. Virginia St / Veterans Parkway	Signal	Overall	C	24.2	C	26.9
16	Veterans Pkwy / Geiger Grade	Roundabout	Overall	B	13.9 (0.64 v/c)	C	17.2 (0.79 v/c)
			North Leg	C	17.1 (0.36 v/c)	B	10.6 (0.25 v/c)
			South Leg	B	13.9 (0.57 v/c)	C	16.3 (0.49 v/c)
			East Leg	C	19.1 (0.64 v/c)	B	10.6 (0.25 v/c)
			West Leg	A	6.8 (0.34 v/c)	C	21.1 (0.79 v/c)



As shown in **Table 5-3**, the following intersections currently operate at poor level of service conditions during a peak hour:

- S. Virginia Street / I-580 NB Off-Ramp
- Double R Boulevard / Sandhill Road
- S. Meadows Parkway / Wilbur May Parkway
- Veterans Parkway / Long Meadow Drive
- Double R Boulevard / Double Diamond Parkway
- Steamboat Parkway / Rio Wrangler Parkway
- Rio Wrangler Parkway / McCauley Ranch Boulevard

A traffic signal is planned at the Double R Boulevard / Sandhill Road intersection and that intersection will operate at Level of Service “B” when signalized.

### Roadway Segments

Existing conditions road segment level of service analysis was performed for the regional roadway segments using the latest NDOT count data. The existing roadway segment volumes and levels of service are shown on **Figure 5-5**. All the study roadway segments currently operate at Level of Service “C” or better except for one section of S. Virginia Street near the I-580 NB Off-Ramp (Longley Lane to I-580 SB Ramps at LOS “F”). The segment level or service analysis is based on average daily traffic volumes and congestion may occur during the peak hours with high one-directional flows.

### OTHER STUDY INTERSECTIONS

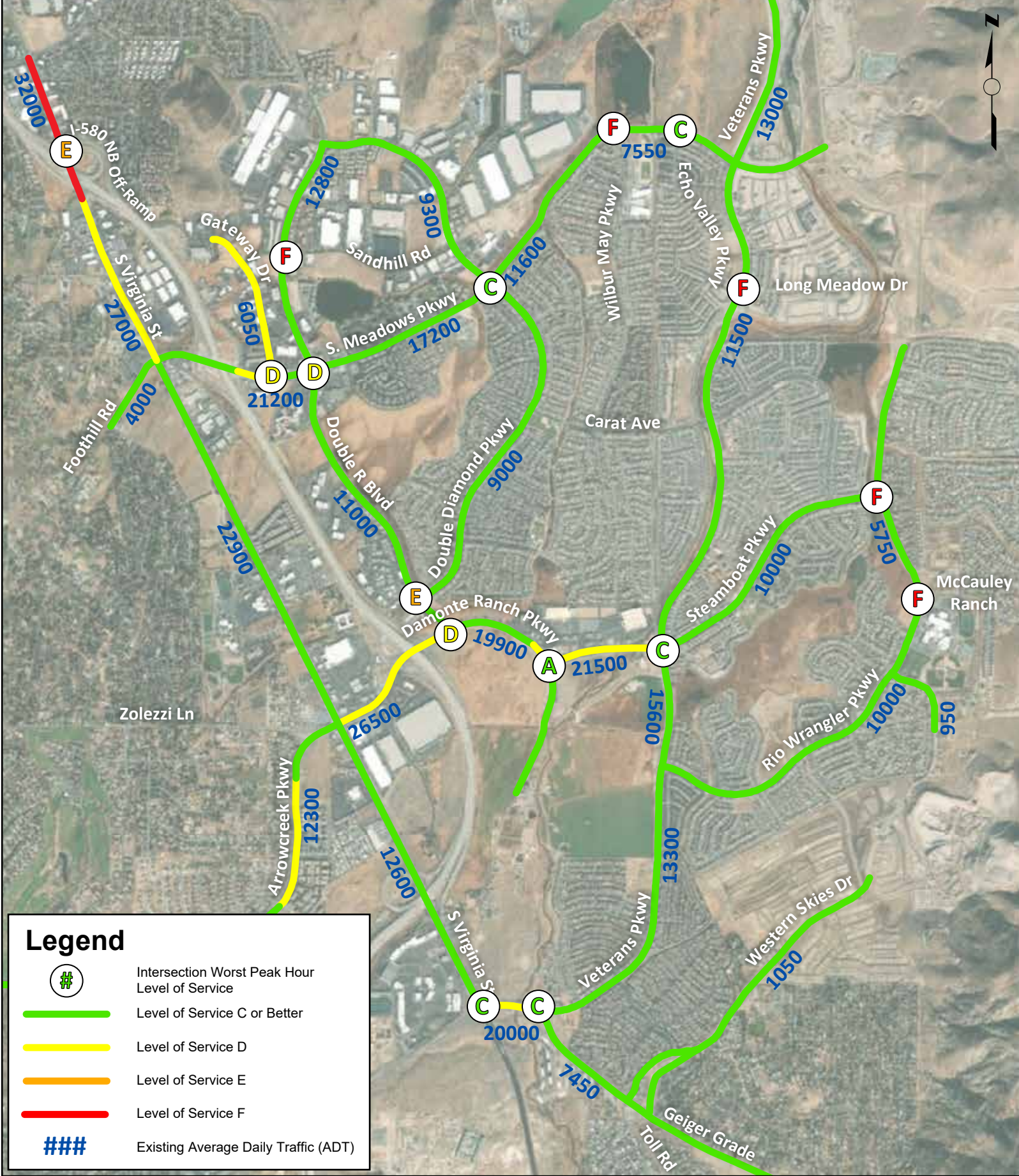
Citizen comments and concerns were voiced related to numerous intersections other than the 16 primary study intersections. This section summarizes the findings from field visits and safety review observations. Detailed level of service was not performed for these additional locations.

#### Damonte Ranch Parkway Interchange

Many comments were received asking about the lane configuration and controls at westbound Damonte Ranch Parkway to the northbound on-ramp at the Damonte Ranch/I-580 interchange. There are two right-turn lanes on Damonte Ranch Parkway onto the ramp, but only the outside lane is allowed to make a right turn on red. This configuration causes lane imbalance and queuing in the outside lane and drivers perceive this control as being inefficient.

The RTC, NDOT, and City of Reno worked together to improve the lane striping a couple years ago and improved the striping and signal controls for improved efficiency at both the Damonte Ranch and South Meadows interchanges. Right turn on red was considered for both right turn lanes at that time but was deemed not acceptable for safety reasons, unacceptable vehicular and pedestrian conflicts that would result, and due to state laws governing traffic controls. The intersection is currently in the best configuration possible given the current number of lanes and geometrics.

Other comments were made about the lane configuration at eastbound Damonte Ranch Parkway to the northbound on-ramp at the Damonte Ranch/I-580 interchange. Only the inside travel lane can use the dual eastbound left-turn lanes. For this reason, there are lane imbalances and queuing beginning at the southbound ramps. Lane configurations and striping improvements could be made so that two travel lanes can use dual lefts onto the northbound ramp. A potential striping improvement is listed in the vehicular improvements table (Table 8-5).



**FIGURE 5-5. EXISTING AVERAGE DAILY TRAFFIC AND LEVEL OF SERVICE**





### S. Virginia Street / Holcomb Ranch Lane

Numerous comments were received suggesting the addition of a “free right turn movement” from Holcomb Ranch Lane to S. Virginia Street to improve the right turn movement that is currently STOP controlled. The intersection was reviewed to determine if this suggested modification is feasible. An eastbound to southbound free right turn movement cannot be implemented at Holcomb Ranch Lane because the free movement would create an inappropriate weave with the southbound right turn lane to Sierra Manor Drive located only 300 feet to the south. The safety benefit of a deceleration lane to Sierra Manor Drive takes precedence over a potential minor reduction to side street right turn delay. However, it is possible that access management or a traffic signal may be needed to prevent left-turn conflicts with the high number of access points in this area. Improvements for this location are listed in the safety improvements table (Table 8-3).

### South Meadows Parkway / Mojave Sky Drive

South Meadows Parkway currently ends at Steamboat Creek just east of Mojave Sky Drive and a temporary cul-de-sac has been constructed at its terminus to enable U-turns until the roadway is extended further east with future approved development projects. The Mojave Sky Drive approach has ¾ access permitting all movements except the left turn out. This intersection was constructed in accordance with the Access Management Standards established in the Regional Transportation Plan for access to an arterial roadway. Adding a left turn out movement, as suggested by local community members, is not appropriate from Mojave Sky Drive given the intersection proximity to Veterans Parkway.

### Veterans Parkway / Carat Avenue

A few comments were received reporting delay, capacity, and potential signal coordination issues at the Veterans Parkway / Carat Avenue intersection. While divided intersections of this style are generally less efficient than a single intersection, field observation indicates the two traffic signals appear to be coordinated. Perceived delay is most likely attributable to the lane configurations on Carat Avenue which have shared through/right-turn movements. The eastbound and westbound right turns are blocked at this pair of intersections by through vehicles at the stop bar. It is recommended that eastbound and westbound right-turn lanes should be constructed on Carat Avenue at Veterans Parkway (Table 8-5).

### Arrowcreek Parkway / Zolezzi Lane

This intersection was recently modified to improve the intersection geometrics, reduce speeds on the westbound right turn from Arrowcreek Parkway to Zolezzi Lane, and provide more spacing between the adjacent driveway just west on Zolezzi Lane. Comments received from local residents suggest existing congestion issues and a restricted sight line from the eastbound right turn channel. Field review indicates adequate sight lines from the eastbound right turn lane yield point. The intersection already has dual left-turn lanes from Zolezzi Lane to Arrowcreek Parkway and has effectively already been built to the maximum number of reasonable lanes. No improvements are recommended at this location.

### Rio Wrangler Parkway / Spring Flower Drive / Summer Glen Drive

Comments from concerned citizens suggest the northbound merge, from two lanes to one, on Rio Wrangler Parkway between Spring Flower Drive/Summer Glen Drive and Western Skies Drive does not have clear signing and striping. The consultant team field review confirmed the signage is aging, somewhat obscured by overgrown landscaping, and could generally be improved. This comment/concern has been forwarded to the City of Reno for earlier action than would be



provided by this regional level study and improvement programming. Consideration should be given to extending the two northbound lanes Western Skies Drive with the outside lane ending as a right turn lane (shown in Table 8-5).

### Rio Wrangler Parkway / Yee Haw Way

The Rio Wrangler Parkway/Yee Haw Way intersection was recently widened to include a new southbound left-turn lane from Rio Wrangler to Yee Haw Way. The comments received concerning this intersection indicate congestion during school hours. One of the main access points for Damonte Ranch High School (McCauley Ranch Boulevard) is located about 600 feet south of the Yee Haw Way intersection. Higher degrees of traffic congestion are typical surrounding schools during the peak arrival and dismissal periods and should be expected. Intersection improvements (either an all-way stop, traffic signal, or roundabout) are programmed within this study for the McCauley Ranch Boulevard/Rio Wrangler Parkway intersection. That improvement would create gaps in traffic on Rio Wrangler that would also create longer gaps at the Yee Haw Way intersection and thereby create a modest operational improvement at Yee Haw Way. No improvements are recommended at this location.

### Steamboat Parkway / Carat Avenue / Kentfield Place

Several comments were received indicating difficulty making left turns out from the minor street approaches at the Carat Avenue and Kentfield Place intersection with Steamboat Parkway. Left turn movements are often challenging across major arterial roadways, particularly during peak travel hours. Similar conditions exist at countless intersections throughout the urban area because it is not reasonable or appropriate to construct traffic signals or roundabouts at every intersection. The Carat Avenue/Kentfield Place intersection is located only 1,000 feet from Rio Wrangler Parkway and therefore the intersection would not meet regional standards for the spacing of traffic signals. A traffic signal may ultimately be constructed at the Hampton Park Drive intersection with Steamboat Parkway and would create gaps in eastbound traffic that would potentially ease the left-out movements from Carat Avenue and Kentfield Place. A signal at Hampton Park Drive would also serve the northbound left-turn demand, just at another location further west in the neighborhood. Landscaping in the intersection sight triangles should be regularly trimmed to ensure drivers have adequate visibility of approaching vehicles.

### Steamboat Parkway / Brittany Meadows Drive / Piper Peak Lane

Community members reported difficulty making left-turns from the side-street approaches of Brittany Meadows Drive and Piper Peak Lane to Steamboat Parkway. The intersection is large, has growing traffic volumes, and a high number of eastbound to westbound U-turns were observed during field visits. Left turns are often challenging across major arterial roadways and this intersection does pose a complex driving situation for outbound left turning maneuvers. Review of this intersection, the Steamboat Parkway/Hampton Park Drive intersection, and the Steamboat/Carat/Kentfield intersection indicate a traffic signal will probably be needed in the future at the Hampton Park intersection with Steamboat Parkway. Landscaping in the intersection sight triangles of the Brittany Meadows/Piper Peak intersection should be regularly trimmed to ensure drivers have adequate visibility of approaching vehicles.





## Steamboat Parkway / Hampton Park Drive

Review of the Steamboat Parkway corridor between Veterans Parkway and Rio Wrangler Parkway indicates a traffic signal will ultimately be necessary within this segment to serve left-turns and U-turns from the numerous stop-controlled side-streets along Steamboat Parkway. The Hampton Park intersection appears to be the best from an overall network perspective, will serve the greatest number of local residents (as it is located central to the neighborhoods), and would improve the intersection having the most restricted sight triangles associated with roadway/intersection geometrics. A traffic signal at Hampton Park is included in the potential improvement list (shown in Table 8-5). It should be noted that a signal would not be installed until an engineering study verifies the appropriateness of a signal and satisfaction of applicable justification criteria known as traffic signal warrants.



## CHAPTER 6 - TRAFFIC FORECASTING

This chapter presents the methodology for forecasting future intersection and roadway volumes in the South Meadows area. A 21-year horizon (2040 build-out) scenario was chosen for future conditions analysis as this is the furthest horizon scenario in the RTC travel demand model and projecting realistic turn movements at intersections would be difficult beyond this time frame.

### FORECASTING METHODOLOGY

With significant continued development and land use intensification, traffic volumes in the South Meadows area are anticipated to substantially increase over the next 20 years. 2040 build-out traffic volumes were developed using the following approach:

- Obtain the most recent (2018/2019) average daily traffic volumes (ADT) from Nevada Department of Transportation (NDOT).
- Retrieve daily traffic volume outputs from RTC’s travel demand model for the 2020 and horizon (2040 build-out) scenarios.
- Apply the “Difference Adjustment Method” prescribed in NCHRP Report 255 procedures (consistent with NDOT’s Traffic Forecasting Guidelines).
- Calculate the growth difference between the 2020 and 2040 build-out daily traffic volumes. Determine the percent change, and percent per year change, over the 20-year model range, by roadway segment.
- Review the growth trends and make adjustments for general consistency throughout the roadway segments.
- Apply the growth difference and trends to the existing ADT to obtain 2040 build-out ADT by roadway segment.

### 2040 MODEL VOLUMES

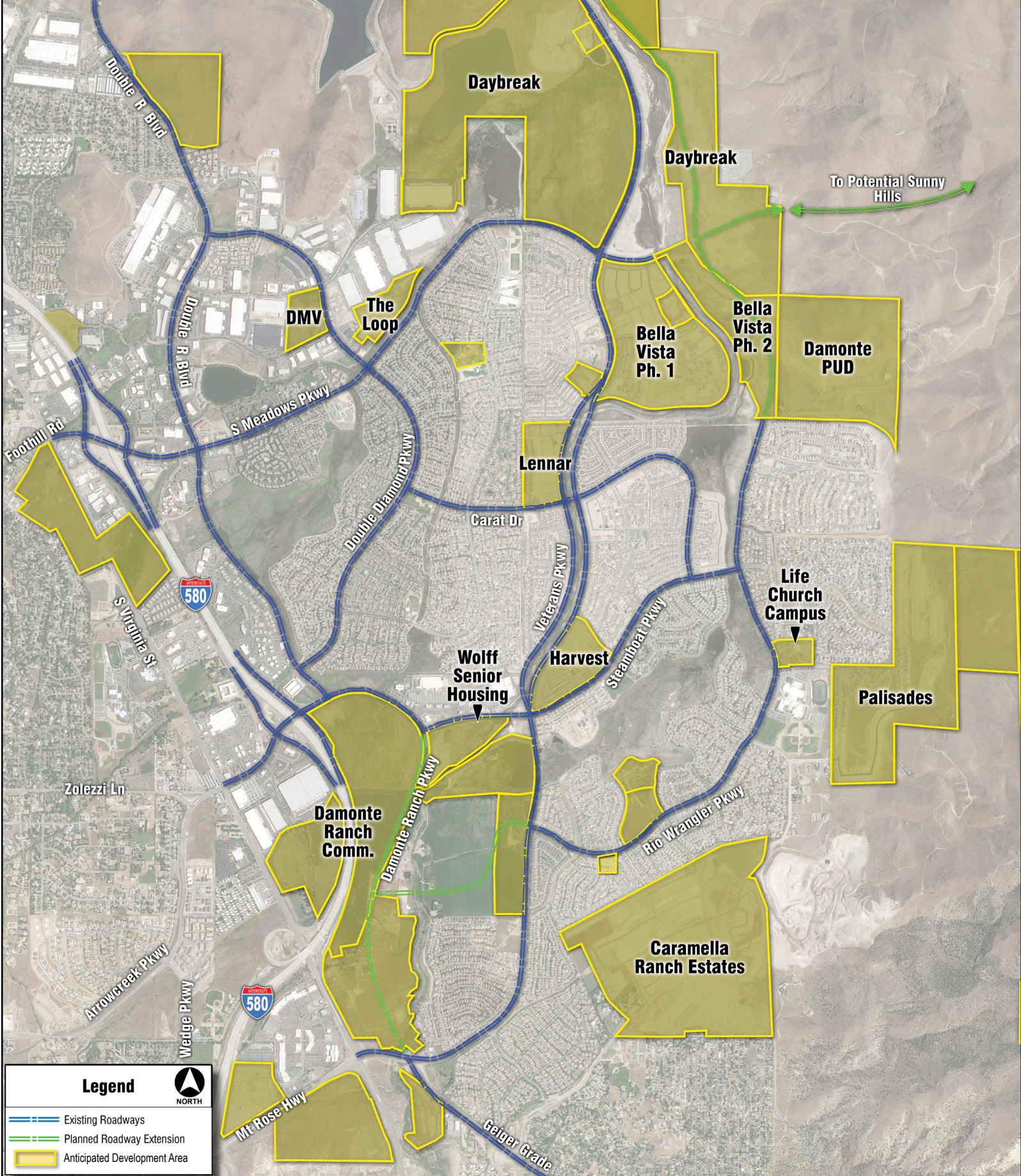
For this study, a “special run” was conducted in the 2040 RTC travel demand model that included all the anticipated and approved but unbuilt development projects in the South Meadows area. It is recognized that this 2040 build-out scenario is conservative compared to the consensus forecast and that all developments may not be fully built out by the 2040 horizon year. **Table 6-1** shows a comparison between the 2040 consensus forecast and the 2040 build-out scenario.

**Table 6-1. 2040 Forecast Comparison**




Model Forecast	Households	Population	Employment
2040 Consensus	22,635	55,829	32,879
2040 Build-Out	40,784	102,713	36,656


However, the analysis provides a more complete representation of the total growth that is anticipated within the South Meadows and is valuable for long-term planning. **Figure 6-1** shows the anticipated and approved development that was included in the 2040 build-out traffic demand model.

The final 2040 build-out ADT’s and growth rates/factors for each study roadway segment are shown in **Table 6-2**. On average, traffic volumes are estimated to grow at a rate between 2.5% to 5.0% per year. This correlates to a 21-year growth factor between 1.5 and 2.0 (double existing) on many segments in the study area.



**Legend**

-  Existing Roadways
-  Planned Roadway Extension
-  Anticipated Development Area

 NORTH



**FIGURE 6-1. ANTICIPATED DEVELOPMENT AREAS**



# Table 6.2 - 2040 Build-Out Traffic Volume Forecasts

Location -->	Exit-51 NB Ramp	S. Virginia	Gateway	S. Meadows	S. Meadows	S. Meadows	Double R	Double R
	E/O Virginia	S/O Off-Ramp	N/O S. Meadows	W/O Gateway	E/O Gateway	E/O Double R	N/O S. Meadows	S/O S. Meadows
<b>2019 NDOT ADT</b>	4,000	32,000	6,050	32,150	21,200	17,200	12,800	11,000
<b>Demand Model Volumes</b>								
2020 RTC ADT	6,040	25,707	4,546	24,288	15,541	12,689	6,457	6,056
2040 RTC ADT	9,980	36,437	6,043	30,982	22,097	18,178	11,914	10,569
Model Difference 2040-2020	3,940	10,730	1,497	6,694	6,556	5,489	5,457	4,513
<b>Growth Rate Method</b>								
20 Years % Change	65%	42%	33%	28%	42%	43%	85%	75%
% per year	3.3%	2.1%	1.6%	1.4%	2.1%	2.2%	4.2%	3.7%
21 years growth factor	1.7	1.4	1.3	1.3	1.4	1.5	1.9	1.8
<b>2040 Adjusted Model ADT</b>	<b>6,800</b>	<b>46,100</b>	<b>8,200</b>	<b>41,500</b>	<b>30,600</b>	<b>25,100</b>	<b>24,200</b>	<b>19,700</b>
<b>Growth Difference Method</b>								
20 Years Increase	2,100	10,730	1,497	6,694	6,556	5,489	5,457	4,513
<b>2040 ADT</b>	<b>6,100</b>	<b>42,730</b>	<b>7,547</b>	<b>38,844</b>	<b>27,756</b>	<b>22,689</b>	<b>18,257</b>	<b>15,513</b>
2040 ADT-2019 NDOT ADT	2,100	10,730	1,497	6,694	6,556	5,489	5,457	4,513
% Change	53%	34%	25%	21%	31%	32%	43%	41%
% per year	2.5%	1.6%	1.2%	1.0%	1.5%	1.5%	2.0%	2.0%
21 years growth factor	<b>1.5</b>	<b>1.3</b>	<b>1.2</b>	<b>1.2</b>	<b>1.3</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>

Location -->	S. Meadows	S. Meadows	Double Diamond	Double Diamond	S. Meadows	S. Meadows	Wilbur May	Veterans
	W/O Double Diamond	E/O Double Diamond	N/O S. Meadows	S/O S. Meadows	E/O Wilbur May	E/O Echo Valley	S/O S. Meadows	N/O Long Meadows
<b>2019 NDOT ADT</b>	14,000	11,600	9,300	9,000	7,550	5,850	3,550	11,500
<b>Demand Model Volumes</b>								
2020 RTC ADT	8,928	4,722	8,785	11,631	5,844	3,374	1,122	14,683
2040 RTC ADT	15,189	17,562	15,189	11,901	20,306	16,426	2,413	27,346
Model Difference 2040-2020	6,261	12,840	6,404	270	14,462	13,052	1,291	12,663
<b>Growth Rate Method</b>								
20 Years % Change	70%	272%	73%	2%	247%	387%	115%	86%
% per year	3.5%	13.6%	3.6%	0.1%	12.4%	19.3%	5.8%	4.3%
21 years growth factor	1.7	3.9	1.8	1.0	3.6	5.1	2.2	1.9
<b>2040 Adjusted Model ADT</b>	<b>24,400</b>	<b>44,800</b>	<b>16,500</b>	<b>9,300</b>	<b>27,200</b>	<b>29,700</b>	<b>7,900</b>	<b>22,000</b>
<b>Growth Difference Method</b>								
20 Years Increase	6,261	9,744	6,404	945	14,462	13,052	1,291	12,663
<b>2040 ADT</b>	<b>20,261</b>	<b>21,344</b>	<b>15,704</b>	<b>9,945</b>	<b>22,012</b>	<b>18,902</b>	<b>4,841</b>	<b>24,163</b>
2040 ADT-2019 NDOT ADT	6,261	9,744	6,404	945	14,462	13,052	1,291	12,663
% Change	45%	84%	69%	11%	192%	223%	36%	110%
% per year	2.1%	4.0%	3.3%	0.5%	9.1%	10.6%	1.7%	5.2%
21 years growth factor	<b>1.4</b>	<b>1.8</b>	<b>1.7</b>	<b>1.1</b>	<b>2.9</b>	<b>3.2</b>	<b>1.4</b>	<b>2.1</b>

Location -->	Double R	Double R	Double Diamond	Damonte Ranch	Damonte Ranch	Damonte Ranch	Steamboat	Steamboat	Veterans
	N/O Damonte	N/Double Diamond	E/O Double R	W/O Double R	E/O Double R	S/O Steamboat	E/O Damonte Ranch	E/O Veterans	N/O Steamboat
<b>2019 NDOT ADT</b>	11,000	11,000	9,000	31,300	19,900	150	21,500	10,000	11,500
<b>Demand Model Volumes</b>									
2020 RTC ADT	13,734	8,890	7,744	32,269	23,582	91	22,437	7,344	16,090
2040 RTC ADT	20,325	15,347	7,986	46,403	35,868	2,536	34,077	14,853	26,764
Model Difference 2040-2020	6,591	6,457	242	14,134	12,286	2,445	11,640	7,509	10,674
<b>Growth Rate Method</b>									
20 Years % Change	48%	73%	3%	44%	52%	2687%	52%	102%	66%
% per year	2.4%	3.6%	0.2%	2.2%	2.6%	134.3%	2.6%	5.1%	3.3%
21 years growth factor	1.5	1.8	1.0	1.5	1.5	29.2	1.5	2.1	1.7
<b>2040 Adjusted Model ADT</b>	<b>16,600</b>	<b>19,400</b>	<b>9,300</b>	<b>45,700</b>	<b>30,800</b>	<b>4,400</b>	<b>33,300</b>	<b>20,800</b>	<b>19,600</b>
<b>Growth Difference Method</b>									
20 Years Increase	6,591	6,457	945	14,134	12,286	2,445	11,640	7,509	10,674
<b>2040 ADT</b>	<b>17,591</b>	<b>17,457</b>	<b>9,945</b>	<b>45,434</b>	<b>32,186</b>	<b>2,595</b>	<b>33,140</b>	<b>17,509</b>	<b>22,174</b>
2040 ADT-2019 NDOT ADT	6,591	6,457	945	14,134	12,286	2,445	11,640	7,509	10,674
% Change	60%	59%	11%	45%	62%	1630%	54%	75%	93%
% per year	2.9%	2.8%	0.5%	2.2%	2.9%	77.6%	2.6%	3.6%	4.4%
21 years growth factor	<b>1.6</b>	<b>1.6</b>	<b>1.1</b>	<b>1.5</b>	<b>1.6</b>	<b>17.3</b>	<b>1.5</b>	<b>1.8</b>	<b>1.9</b>

Location -->	Veterans	Steamboat	Rio Wrangler	Virginia St	Virginia St	Mt Rose	Geiger Grade	Veterans	Geiger Grade
	S/O Steamboat	W/O Rio Wrangler	S/O Steamboat	N/O Geiger Grade	S/O Geiger Grade	W/O Virginia	E/O Virginia	E/O Geiger Grade	S/O Veterans
<b>2019 NDOT ADT</b>	15,600	10,000	5,750	12,600	11,000	10,300	20,000	13,300	7,450
<b>Demand Model Volumes</b>									
2020 RTC ADT	14,445	7,817	5,062	27,829	14,159	10,341	17,690	10,367	9,435
2040 RTC ADT	23,850	15,611	10,953	43,345	22,340	19,348	33,999	21,460	18,849
Model Difference 2040-2020	9,405	7,794	5,891	15,516	8,181	9,007	16,309	11,093	9,414
<b>Growth Rate Method</b>									
20 Years % Change	65%	100%	116%	56%	58%	87%	92%	107%	100%
% per year	3.3%	5.0%	5.8%	2.8%	2.9%	4.4%	4.6%	5.4%	5.0%
21 years growth factor	1.7	2.0	2.2	1.6	1.6	1.9	2.0	2.1	2.0
<b>2040 Adjusted Model ADT</b>	<b>26,300</b>	<b>20,500</b>	<b>12,800</b>	<b>20,000</b>	<b>17,700</b>	<b>19,800</b>	<b>39,400</b>	<b>28,300</b>	<b>15,300</b>
<b>Growth Difference Method</b>									
20 Years Increase	9,405	7,794	5,891	10,319	8,181	9,007	16,309	11,093	9,414
<b>2040 ADT</b>	<b>25,005</b>	<b>17,794</b>	<b>11,641</b>	<b>22,919</b>	<b>19,181</b>	<b>19,307</b>	<b>36,309</b>	<b>24,393</b>	<b>16,864</b>
2040 ADT-2019 NDOT ADT	9,405	7,794	5,891	10,319	8,181	9,007	16,309	11,093	9,414
% Change	60%	78%	102%	82%	74%	87%	82%	83%	126%
% per year	2.9%	3.7%	4.9%	3.9%	3.5%	4.2%	3.9%	4.0%	6.0%
21 years growth factor	<b>1.6</b>	<b>1.8</b>	<b>2.0</b>	<b>1.8</b>	<b>1.7</b>	<b>1.9</b>	<b>1.8</b>	<b>1.8</b>	<b>2.3</b>

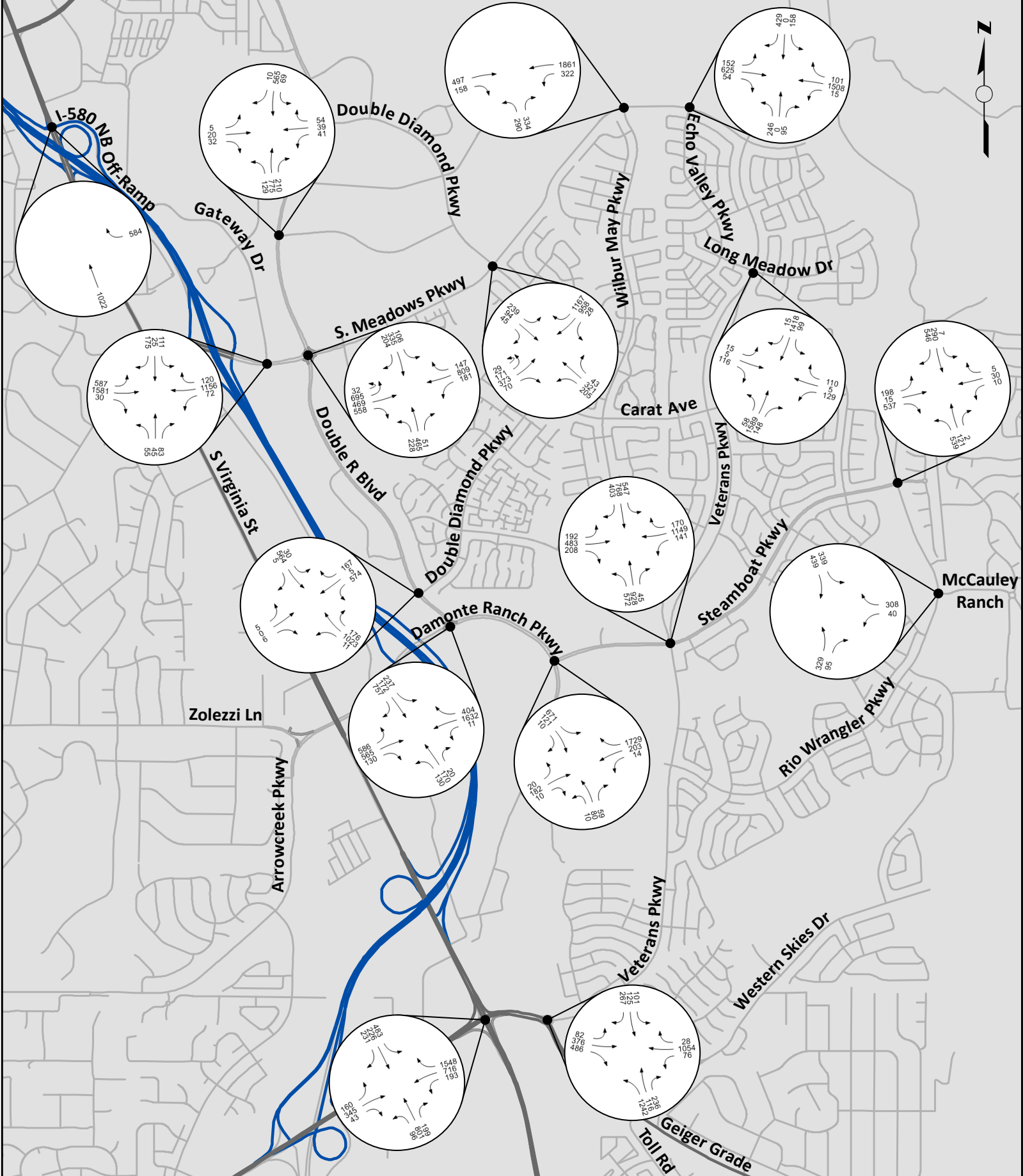
Manually Adjusted  
2040 Design Volumes





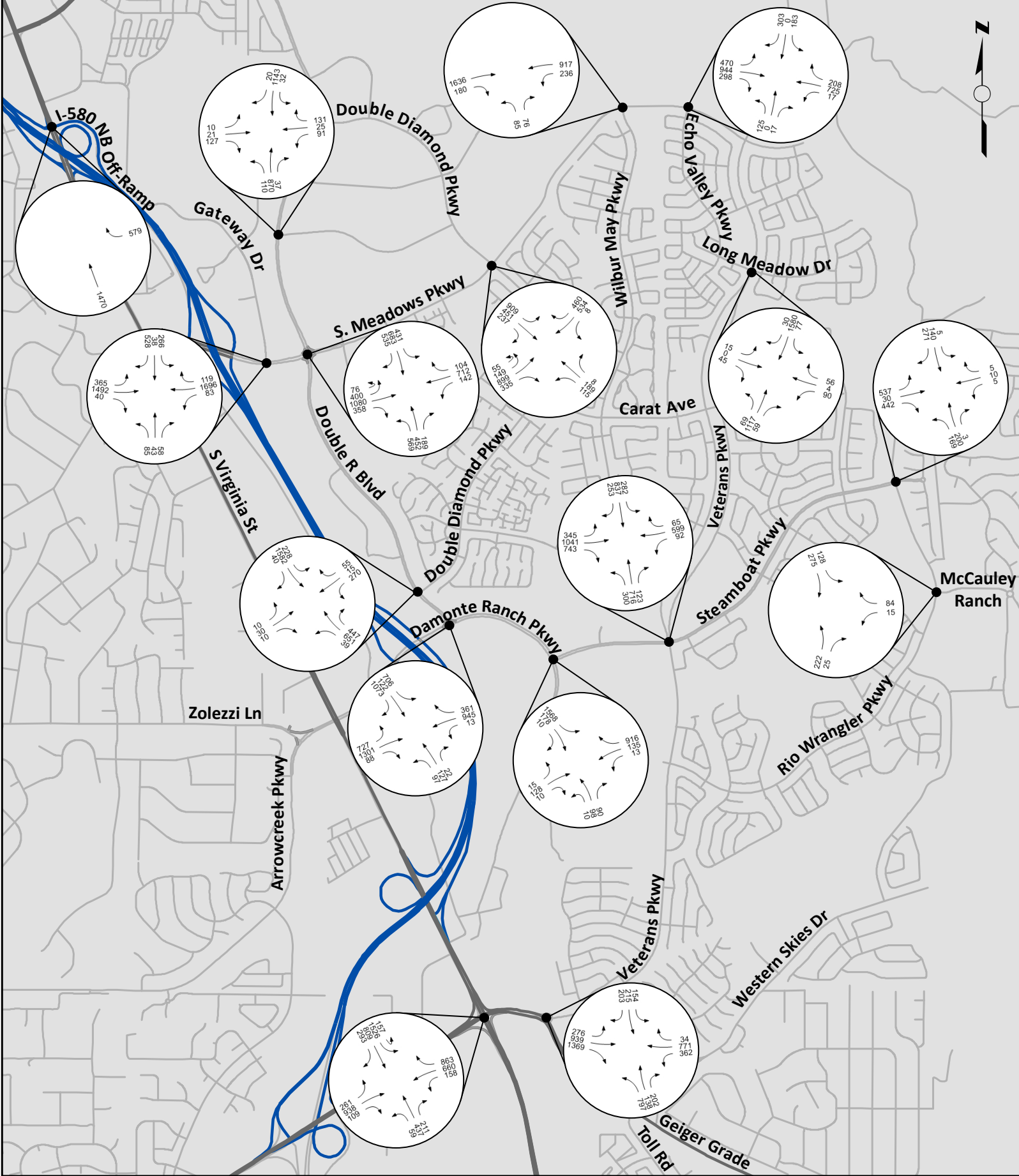
### 2040 Intersection Volumes

2040 peak hour turning movement volumes were estimated by combining the forecasting methodology described earlier with NCHRP Report 255 procedures. NCHRP Report 255, Highway Traffic Data for Urbanized Area Project Planning and Design, is a document published by the Federal Highway Administration that discusses post processing of travel demand model outputs and developing turning movement volumes. NCHRP 255 has standardized procedures to translate travel demand outputs into information to support project development decisions. These procedures account for variance in the detail and precision of forecasts and uncertainty in land-use forecasts by improving consistency and analytic quality of input data and output forecasts. The growth rates (**Table 6-2**) were further refined by applying these principles in developing peak hour turning movement counts. To develop 2040 build-out peak hour turning movements, Turns W32, a turning movement volumes balancing tool that incorporates NCHRP 255 procedures, was used. 2040 build-out peak hour turning movements were developed based on existing turning movement counts and the growth rates obtained through the daily volume forecasts. Turns W32 calculates future year turning movement volumes and balances future turning movement distribution based on current turning movement counts and the growth rates on all the approaches of intersection. The resulting 2040 build-out AM and PM peak hour turning movement volumes are shown in **Figure 6-2** and **Figure 6-3**.



**FIGURE 6-2. 2040 AM PEAK HOUR TRAFFIC VOLUMES**





**FIGURE 6-3. 2040 PM PEAK HOUR TRAFFIC VOLUMES**





### CHAPTER 7 - FUTURE CONDITIONS (2040) LEVEL OF SERVICE ANALYSIS

This chapter evaluates the future year (2040 build-out) traffic operations at the study roadway segments and intersections if no improvements were made by public agencies. Intersection and roadway improvements that are already anticipated to be made by private development projects are as follows:

- Double R Boulevard/Sandhill Road Traffic Signal
- S. Meadows Parkway/Echo Valley Parkway Traffic Signal
- Rio Wrangler Parkway Extension north to South Meadows Parkway (2 Lanes)
- Damonte Ranch Parkway Extension to Veterans Parkway (2 Lanes)
- Western Skies Drive Connection north to Rio Wrangler Parkway (2 Lanes)
- South Meadows Parkway Extension to Storey County Line (4 Lanes)
- Rio Wrangler Extension west to Damonte Ranch Parkway (2 Lanes)

The anticipated 2040 Build-Out (no improvements) lane configurations and controls are shown in **Figure 7-1**. The 2040 AM Peak Hour and PM Peak Hour traffic volumes are shown in *Chapter 6 – Traffic Forecasting*.

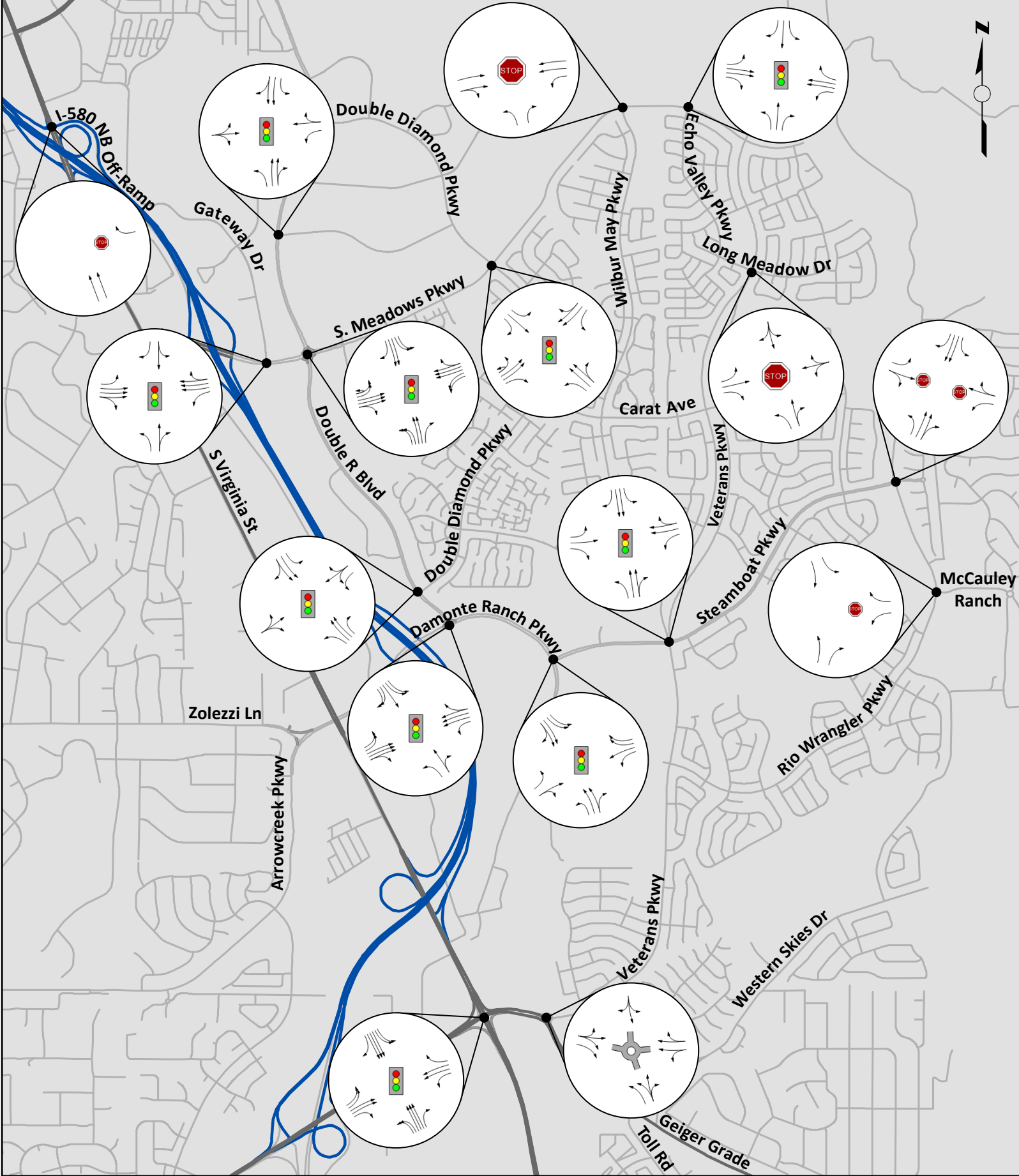
#### 2040 BUILD-OUT TRAFFIC OPERATIONS

This section reports the findings of the 2040 “no improvements” level of service analysis. The level of service methodology for roadway segments and intersections is described in Chapter 5.

#### 2040 Build-Out Intersection Level of Service

2040 conditions intersection level of service analysis was performed for the study intersections considering already programmed improvements and modifications by developers and the projected 2040 AM and PM peak hour traffic volumes. With the increase in regional traffic, the peak hour factor (PHF) was increased to 0.95 at all intersections and traffic signal timing was optimized. A 120 second cycle length with proper pedestrian crossing times was used at most of the study intersections unless a longer cycle length was present in existing signal timings. **Table 7-1** shows the 2040 AM and PM peak hour level of service results at the study intersections.





**FIGURE 7-1. 2040 (NO IMPROVEMENTS)  
LANE CONFIGURATION & CONTROLS**





**Table 7-1. 2040 Intersection Level of Service (Without Improvements)**

ID	Intersection	Intersection Control	Movement	2040 Conditions			
				AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	S. Virginia St / I-580 NB Off-Ramp	Side-Street STOP	Westbound Approach	F	160.6	F	>300
2	Double R Blvd / Sandhill Rd	Signal	Overall	B	12.0	B	14.9
3	S. Meadows Pkwy / Gateway Dr *	Signal	Overall	D	36.6	D	53.2
4	S. Meadows Pkwy / Double R Blvd	Signal	Overall	D	43.6	E	58.2
5	S. Meadows Pkwy / Double Diamond Pkwy	Signal	Overall	F	161.5	F	152.1
6	S. Meadows Pkwy / Wilbur May Pkwy	All-Way STOP	Overall	F	>300	F	>300
7	S. Meadows Pkwy / Echo Valley Pkwy	Signal	Overall	C	27.7	C	32.1
8	Veterans Pkwy / Long Meadow Dr	Side-Street STOP	Northbound Left	B	14.7	C	16.6
			Southbound Left	C	21.6	B	12.5
			Eastbound Left	F	>300	F	>300
			Eastbound Through-Right	F	>300	F	>300
			Westbound Left	F	>300	F	>300
			Westbound Through-Right	F	>300	F	>300
9	Double R Blvd / Double Diamond Pkwy	Signal	Overall	C	27.0	D	54.9
10	Damonte Ranch Pkwy / Double R Blvd	Signal	Overall	F	117.0	E	74.6
11	Damonte Ranch Pkwy / Steamboat Pkwy *	Signal	Overall	B	18.3	C	20.4
12	Veterans Pkwy / Steamboat Pkwy	Signal	Overall	F	126.5	F	100.2
13	Steamboat Pkwy / Rio Wrangler Pkwy	All-Way STOP	Overall	F	273.4	F	75.9
14	Rio Wrangler Pkwy / McCauley Ranch Blvd	Side-Street STOP	Southbound Left	A	9.8	A	8.1
			Westbound Left	F	80.3	C	16.8
			Westbound Right	B	14.7	B	10.0
15	S. Virginia St / Veterans Parkway	Signal	Overall	C	33.1	F	137.6
16	Veterans Pkwy / Geiger Grade	Roundabout	Overall	F	166.2 (1.82 v/c)	F	344.3 (2.11 v/c)
			North Leg	F	412.2 (1.82 v/c)	F	465.7 (1.95 v/c)
			South Leg	F	172.4 (1.31 v/c)	F	98.7 (1.11 v/c)
			East Leg	F	179.1 (1.31 v/c)	F	134.6 (1.20 v/c)
			West Leg	B	11.3 (0.55 v/c)	F	520.1 (2.11 v/c)

\*Improvements required where intersection operates at acceptable overall LOS

As shown in **Table 7-1**, many study intersections are expected to operate at poor levels of service with build-out of the South Meadows. The number of intersections operating at poor levels of service conditions is shown to increase from 6 intersections under existing conditions to 10 intersections under 2040 conditions.



The intersections that are expected to operate at poor LOS and require capacity improvements are:

- S. Virginia Street / I-580 NB Off-Ramp
- S. Meadows Parkway / Double Diamond Parkway
- S. Meadows Parkway / Wilbur May Parkway
- Veterans Parkway / Long Meadow Parkway
- Damonte Ranch Parkway / Double R Boulevard
- Veterans Parkway / Steamboat Parkway
- Steamboat Parkway / Rio Wrangler Parkway
- Rio Wrangler Parkway / McCauley Ranch Boulevard
- S. Virginia Street / Veterans Parkway
- Veterans Parkway / Geiger Grade (Roundabout)
- South Meadows Parkway / Gateway Drive
  - The eastbound left turn queue extends outside the pocket and onto S. Meadows Parkway. A longer eastbound left turn pocket will store more vehicles. Dual left turn lanes are not viable at this location as Gateway Drive has only one receiving lane.
- Damonte Ranch Parkway / Steamboat Parkway
  - Due to the high southbound left turn volume, a triple southbound left is recommended to process more vehicles during the peak hours.

### 2040 Build-Out Roadway Segment Level of Service

2040 conditions road segment level of service analysis was performed for the study roadway segments using the projected 2040 volumes from Chapter 6 – Traffic Forecasting. The 2040 roadway segment volumes and levels of service are shown on **Figure 7-2**. The majority of the study roadway segments are expected to currently operate at acceptable level of service conditions. The roadway segments that are anticipated to operate at poor level of service conditions are:

- S. Virginia Street – from Longley Lane to Holcomb Ranch Lane
- Damonte Ranch Parkway – from I-580 to Double R Boulevard
- Damonte Ranch Parkway – from Promenade Way to Steamboat Parkway
- Steamboat Parkway – from Damonte Ranch Parkway to Veterans Parkway
- Veterans Parkway – from S. Virginia Street to Damonte Ranch Extension



**FIGURE 7-2. 2040 AVERAGE DAILY TRAFFIC AND LEVEL OF SERVICE (BUILD-OUT SCENARIO WITH NO IMPROVEMENTS)**





## CHAPTER 8 - POTENTIAL IMPROVEMENTS

This chapter identifies a significant number of potential improvements that could be implemented to expand a safe and efficient multimodal transportation system in the South Meadows area. These potential improvements are a culmination of reviewing prior RTC planning documents, conducting the 2040 traffic analysis, and considering thousands of comments made by local residents. The improvements are divided into three timeframes: short-term, mid-term, and long-term. The priority of projects were determined by prior planning documents, urgency to resolve existing concerns, and throughout the public engagement process. The suggested priority of improvements is listed by timeframe, not by ID number. The ID number is only for cross referencing with the corresponding figure.

### POTENTIAL BICYCLE AND PEDESTRIAN IMPROVEMENTS

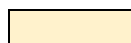
The bicycle and pedestrian improvements were developed by reviewing the projects listed in the 2040 RTP, the 2017 Bicycle and Pedestrian Masterplan (BPMP), and key areas of concerns identified by the public comment process. The priority of projects listed in the BPMP was carried over to this study for general consistency between the documents.

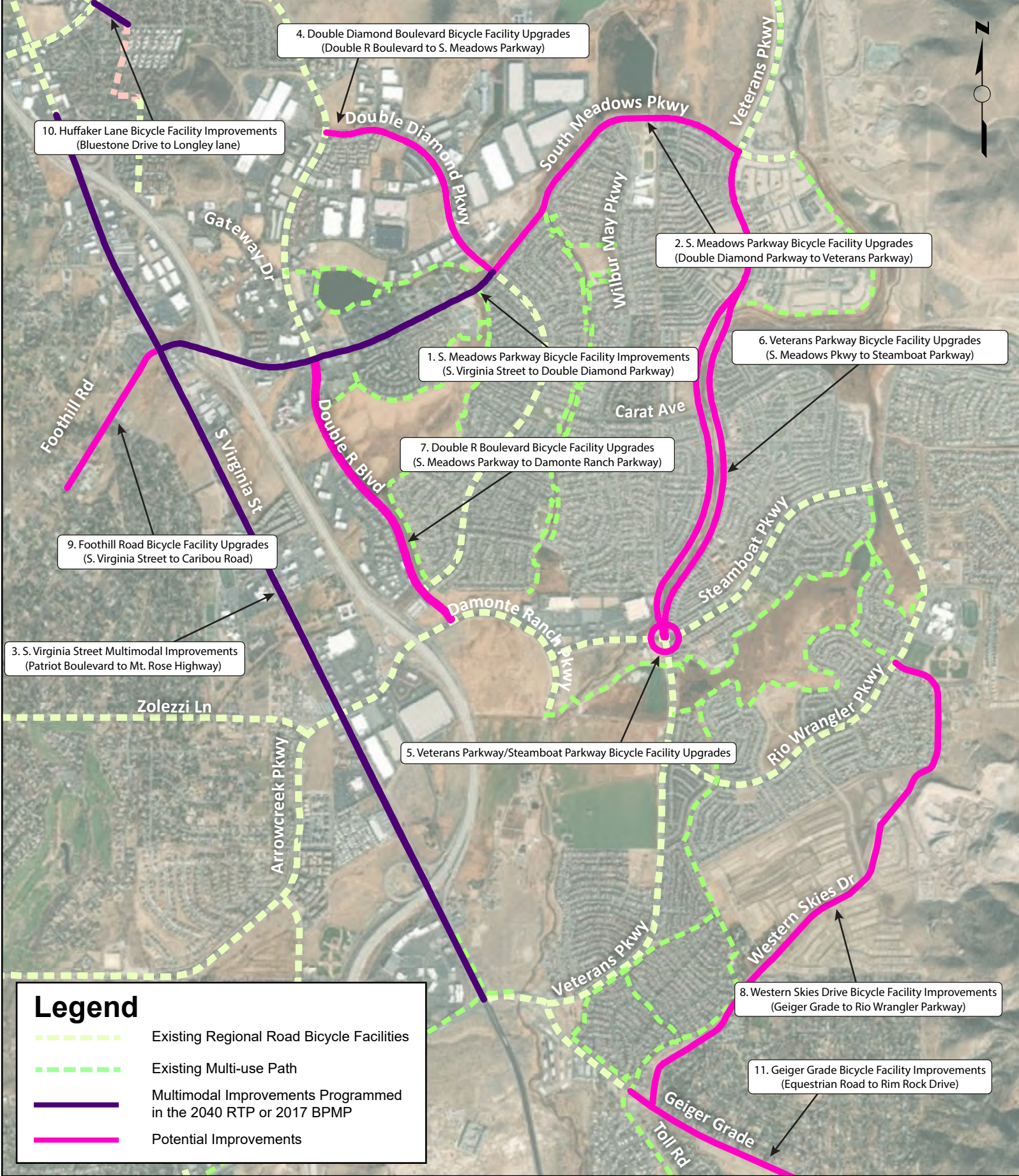
It should be noted that many of the bicycle and pedestrian projects can, and should, be combined with each other and with other projects for cost efficiency. For example, a multi-use path built with a roadway widening project could serve as the improvement listed for bicycle and pedestrian modes.

The potential bicycle improvements are shown in **Table 8-1** and graphically on **Figure 8-1**.

**Table 8-1. Potential Bicycle Improvements**

ID	Potential Improvement
<i>Near Term</i>	
1	S. Meadows Parkway Bicycle Facility Improvements (S. Virginia Street to Double Diamond Parkway)
2	S. Meadows Parkway Bicycle Facility Upgrades (Double Diamond Parkway to Veterans Parkway)
3	S. Virginia Street Multimodal Improvements (Patriot Boulevard to Mt. Rose Highway)
4	Double Diamond Boulevard Bicycle Facility Upgrades (Double R Boulevard to S. Meadows Parkway)
5	Veterans Parkway/Steamboat Parkway Bicycle Facility Upgrades
<i>Mid Term</i>	
6	Veterans Parkway Bicycle Facility Upgrades (S. Meadows Pkwy to Steamboat Parkway)
7	Double R Boulevard Bicycle Facility Upgrades (S. Meadows Parkway to Damonte Ranch Parkway)
8	Western Skies Drive Bicycle Facility Improvements (Geiger Grade to Rio Wrangler Parkway)
<i>Long Term</i>	
9	Foothill Road Bicycle Facility Upgrades (S. Virginia Street to Caribou Road)
10	Huffaker Lane Bicycle Facility Improvements (Bluestone Drive to Longley lane)
11	Geiger Grade Bicycle Facility Improvements (Equestrian Road to Rim Rock Drive)

 Programmed in the 2040 RTP



**FIGURE 8-1. POTENTIAL BICYCLE IMPROVEMENTS**



The potential pedestrian improvements are shown in **Table 8-2** and graphically on **Figure 8-2**.

**Table 8-2. Potential Pedestrian Improvements**

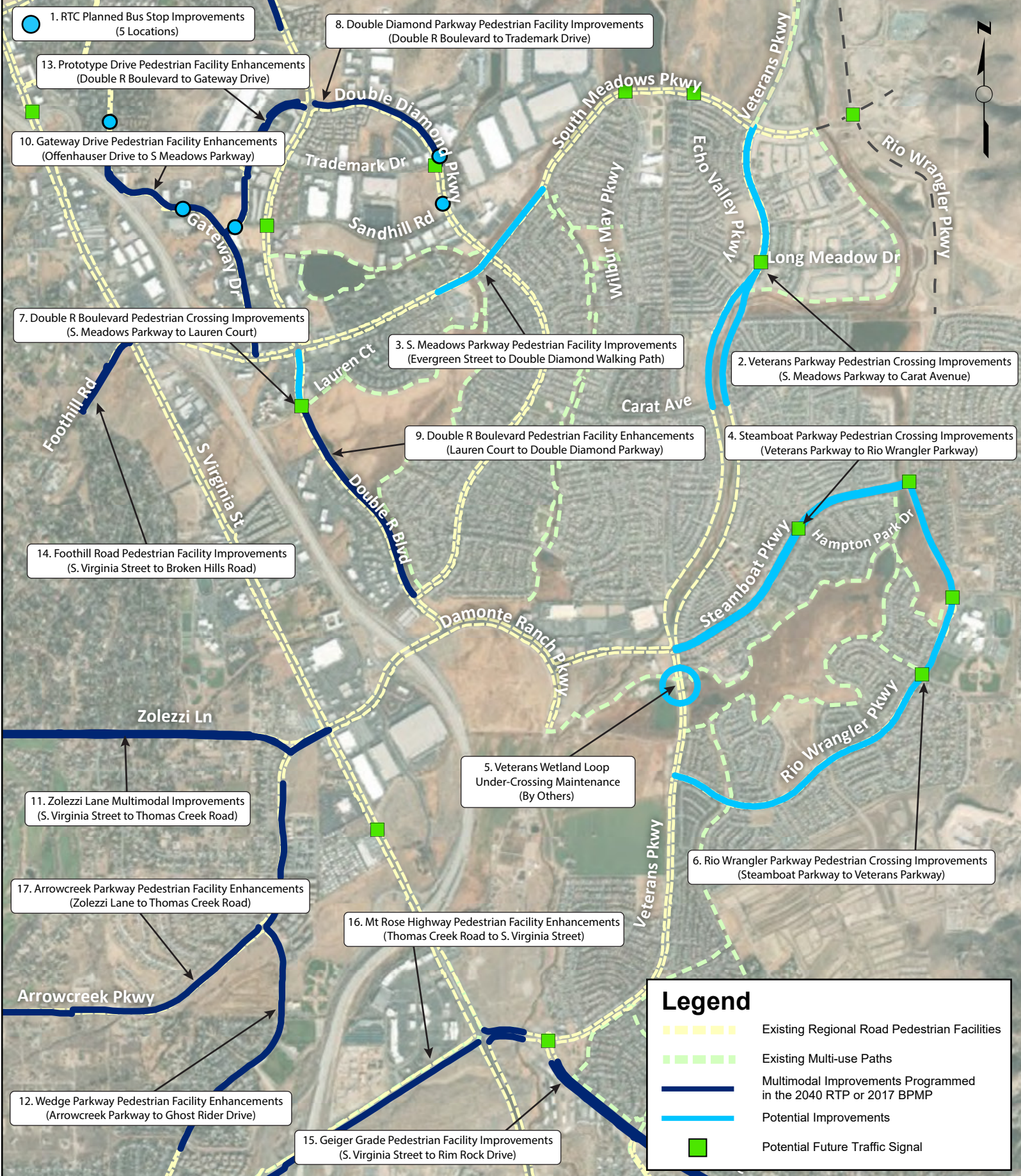
ID	Potential Improvement
<i>Near Term</i>	
1	RTC Planned Bus Stop Improvements (5 Locations)
2	Veterans Parkway Pedestrian Crossing Improvements (S. Meadows Parkway to Carat Avenue)
3	S. Meadows Parkway Pedestrian Facility Improvements (Evergreen Street to Double Diamond Walking Path)
4	Steamboat Parkway Pedestrian Crossing Improvements (Veterans Parkway to Rio Wrangler Parkway)
5	Veterans Wetland Loop Under-Crossing Maintenance (By Others)
<i>Mid Term</i>	
6	Rio Wrangler Parkway Pedestrian Crossing Improvements (Steamboat Parkway to Veterans Parkway)
7	Double R Boulevard Pedestrian Crossing Improvements (S. Meadows Parkway to Lauren Court)
8	Double Diamond Parkway Pedestrian Facility Enhancements (Double R Boulevard to Trademark Drive)
9	Double R Boulevard Pedestrian Facility Enhancements (Lauren Court to Double Diamond Parkway)
10	Gateway Drive Pedestrian Facility Enhancements (Offenhauser Drive to S. Meadows Parkway)
11	Zolezzi Lane Multimodal Improvements (S. Virginia Street to Thomas Creek Road)
12	Wedge Parkway Pedestrian Facility Enhancements (Arrowcreek Parkway to Ghost Rider Drive)
13	Prototype Drive Pedestrian Facility Enhancements (Double R Boulevard to Gateway Drive)
<i>Long Term</i>	
14	Foothill Road Pedestrian Facility Improvements (S. Virginia Street to Broken Hills Road)
15	Geiger Grade Pedestrian Facility Improvements (S. Virginia Street to Rim Rock Drive)
16	Mt. Rose Highway Pedestrian Facility Enhancements (Thomas Creek Road to S. Virginia Street)
17	Arrowcreek Parkway Pedestrian Facility Enhancements (Zolezzi Lane to Thomas Creek Road)

	Programmed in the 2040 RTP
	Identified in the 2017 BPMP

The exact locations and types of bicycle and pedestrian projects will be determined when the potential improvement project reaches the design stage. **Figure 8-3A** and **Figure 8-3B** shows examples of bicycle and pedestrian treatments that could be implemented. In certain cases, a traffic signal will serve as a pedestrian crossing treatment. Note that the potential traffic signal locations are shown in **Figure 8-2**.

Several bicycle and pedestrian improvements are shown on South Meadows Parkway. The South Meadows Parkway right-of-way is constrained and serious consideration should be given to replacing the existing on-street bike lanes with a multi-use path. As discussed elsewhere in this study, on-street bike lanes are not as effective as multi-use paths on Arterial roadways.

Some pedestrian and bicycle improvements along future project frontages could be conditioned and constructed by private development projects. This improvement list or the cost analysis does not identify or consider which project may or could be constructed by private developments.



1. RTC Planned Bus Stop Improvements (5 Locations)

8. Double Diamond Parkway Pedestrian Facility Improvements (Double R Boulevard to Trademark Drive)

13. Prototype Drive Pedestrian Facility Enhancements (Double R Boulevard to Gateway Drive)

10. Gateway Drive Pedestrian Facility Enhancements (Offenhauser Drive to S Meadows Parkway)

7. Double R Boulevard Pedestrian Crossing Improvements (S. Meadows Parkway to Lauren Court)

3. S. Meadows Parkway Pedestrian Facility Improvements (Evergreen Street to Double Diamond Walking Path)

2. Veterans Parkway Pedestrian Crossing Improvements (S. Meadows Parkway to Carat Avenue)

9. Double R Boulevard Pedestrian Facility Enhancements (Lauren Court to Double Diamond Parkway)

4. Steamboat Parkway Pedestrian Crossing Improvements (Veterans Parkway to Rio Wrangler Parkway)

14. Foothill Road Pedestrian Facility Improvements (S. Virginia Street to Broken Hills Road)

5. Veterans Wetland Loop Under-Crossing Maintenance (By Others)

11. Zolezzi Lane Multimodal Improvements (S. Virginia Street to Thomas Creek Road)

6. Rio Wrangler Parkway Pedestrian Crossing Improvements (Steamboat Parkway to Veterans Parkway)

17. Arrowcreek Parkway Pedestrian Facility Enhancements (Zolezzi Lane to Thomas Creek Road)

16. Mt Rose Highway Pedestrian Facility Enhancements (Thomas Creek Road to S. Virginia Street)

12. Wedge Parkway Pedestrian Facility Enhancements (Arrowcreek Parkway to Ghost Rider Drive)

15. Geiger Grade Pedestrian Facility Improvements (S. Virginia Street to Rim Rock Drive)

**Legend**

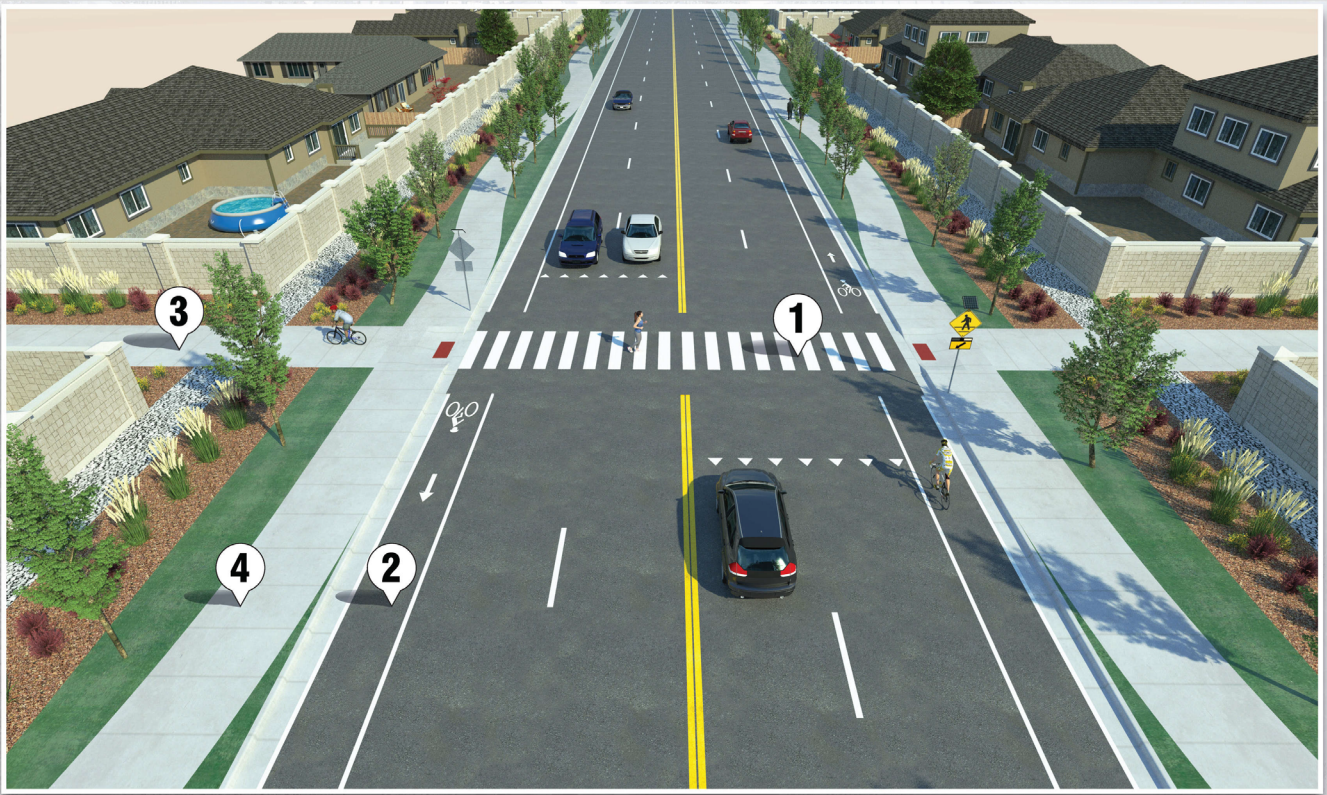
- - - Existing Regional Road Pedestrian Facilities
- - - Existing Multi-use Paths
- Multimodal Improvements Programmed in the 2040 RTP or 2017 BPMP
- Potential Improvements
- Potential Future Traffic Signal



**FIGURE 8-2. POTENTIAL PEDESTRIAN IMPROVEMENTS**







**FIGURE 8-3A. EXAMPLE PEDESTRIAN AND BICYCLE IMPROVEMENTS (LOW-SPEED LOW-VOLUME)**





**Enhanced Pedestrian Crossing**



**New Bike Facilities**



**Multi-Use Path Connections**



**Sidewalk Gap Closures and Improvements**



**FIGURE 8-3B. EXAMPLE PEDESTRIAN AND BICYCLE IMPROVEMENTS (HIGH-SPEED HIGH VOLUME)**



## POTENTIAL SAFETY IMPROVEMENTS

The following potential safety improvements were developed by identifying major safety concerns based on public comment and considering typical safety practices such as sight lines and safe routes to school. Additionally, the RTC is coordinating with other agencies and horse advocate groups to address the safety of motorists and horses within South Meadows. The potential safety improvements are shown in **Table 8-3** and graphically on **Figure 8-4**. Locations around schools and high pedestrian generators are considered the highest priority projects.

**Table 8-3. Potential Safety Improvements**

ID	Potential Improvement
<i>Near Term</i>	
1	School Zone Safety/Safe Routes to School (Depaoli, Double Diamond, Poulakidas)
2	Veterans Parkway/Geiger Grade Striping/Signage Upgrades
3	Interagency Coordination for Wild Horse Issue
4	S. Virginia Street Safety Improvements (Arrowcreek Pkwy to I-580 Interchange)
5	S. Virginia St / Holcomb Ranch Ln Safety Improvements (Signal or Access Management)
<i>Mid Term</i>	
6	Geiger Grade Operations and Safety Improvements (Toll Road to Rim Rock Drive)
7	School Zone Safety/Safe Routes to School (Locations TBD)
8	Sight Triangle Identification Program
9	Spot Location Safety Improvements (Locations TBD)
<i>Long Term</i>	
10	Spot Location Safety Improvements (Locations TBD)

## POTENTIAL PARK & RIDE IMPROVEMENTS

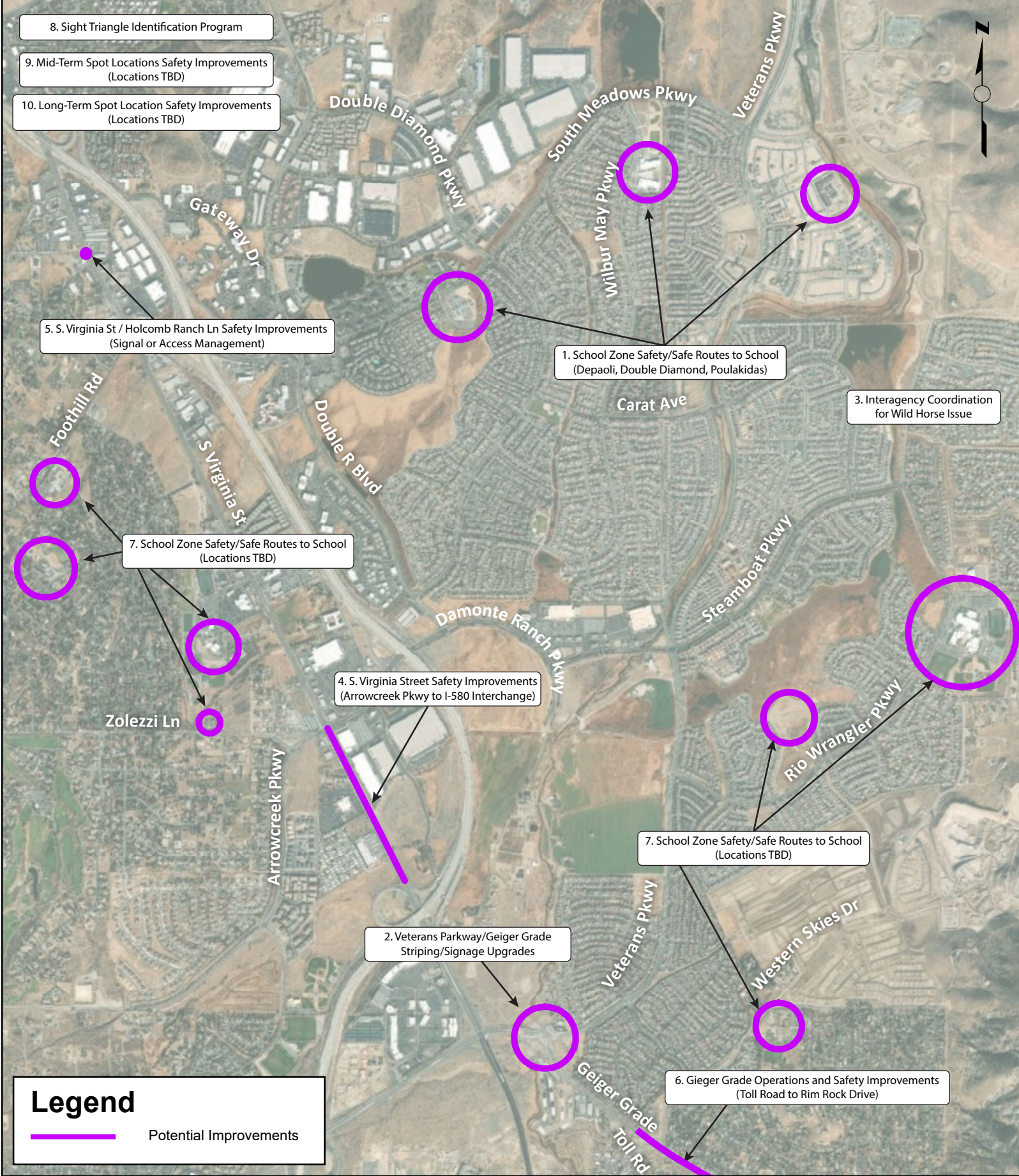
Adding new Park & Ride locations is a key concept in reducing reliance on single-occupant vehicles within the South Meadows region. The Park & Ride conceptual locations were developed exclusively by preferred locations identified through public comments. The potential location will have to be vetted with property owners and adjustments to this concept will be necessary. The potential Park & Ride improvements are shown in **Table 8-4** and graphically on **Figure 8-5**.

**Table 8-4. Potential Park & Ride Improvements**

ID	Potential Improvement
<i>Near Term</i>	
1	Veterans Parkway/S. Meadows Park & Ride
2	Damonte Ranch Park & Ride
<i>Mid Term</i>	
3	Veterans Parkway/Geiger Grade Park & Ride
4	S. Meadows Parkway/Double R Boulevard Park & Ride

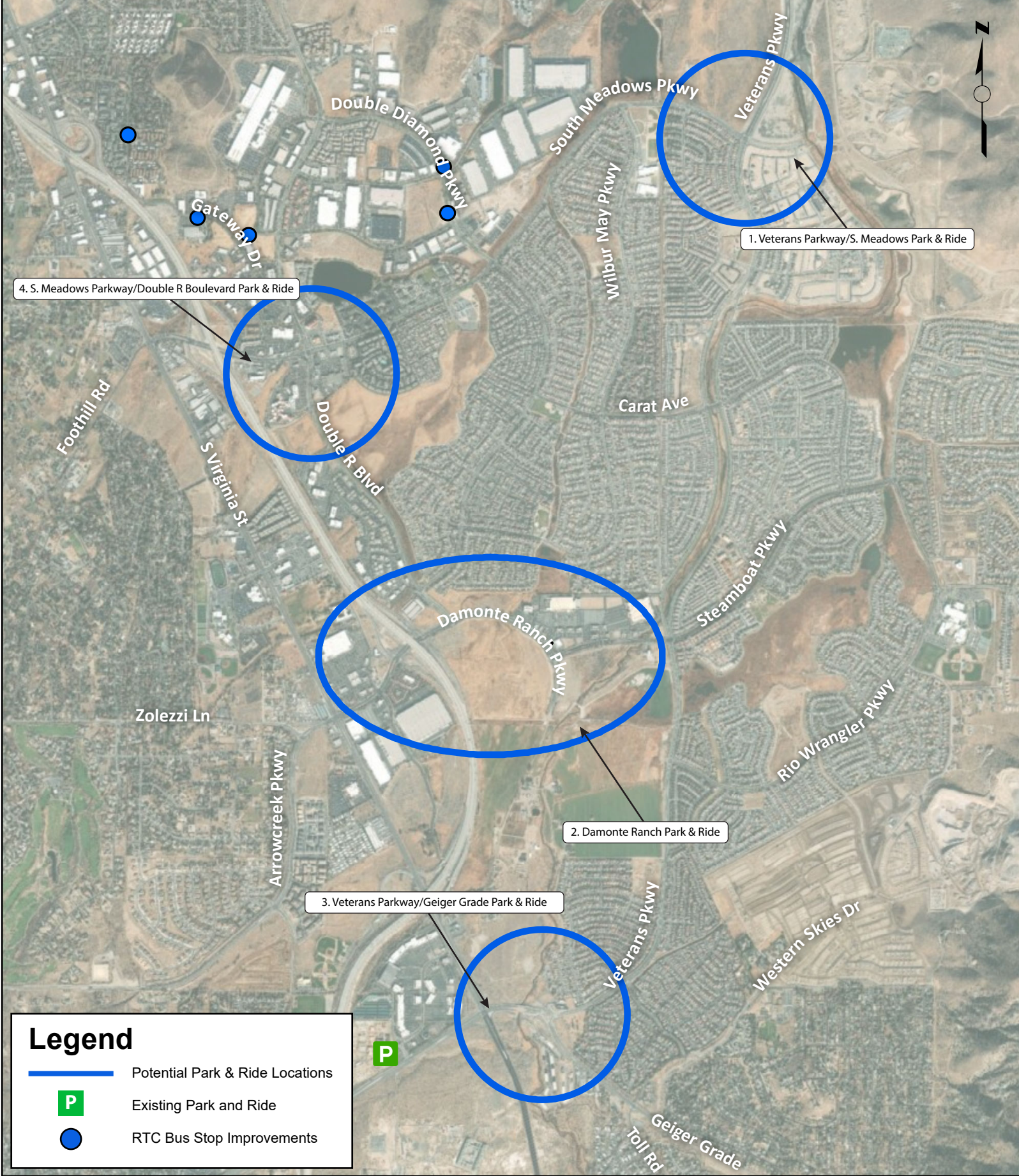
## POTENTIAL VEHICULAR IMPROVEMENTS

Potential vehicular improvements were developed by reviewing the projects listed in the 2040 RTP and through the traffic analysis described in previous chapters. The potential vehicular improvements are shown in **Table 8-5** and graphically on **Figure 8-6**. Several regional roadway projects and intersection improvements are conditioned to be constructed by private developments. These projects are highlighted in gold within the vehicular improvements list. It is important to note that



**FIGURE 8-4. POTENTIAL SAFETY IMPROVEMENTS**





**FIGURE 8-5. POTENTIAL PARK & RIDE IMPROVEMENTS**



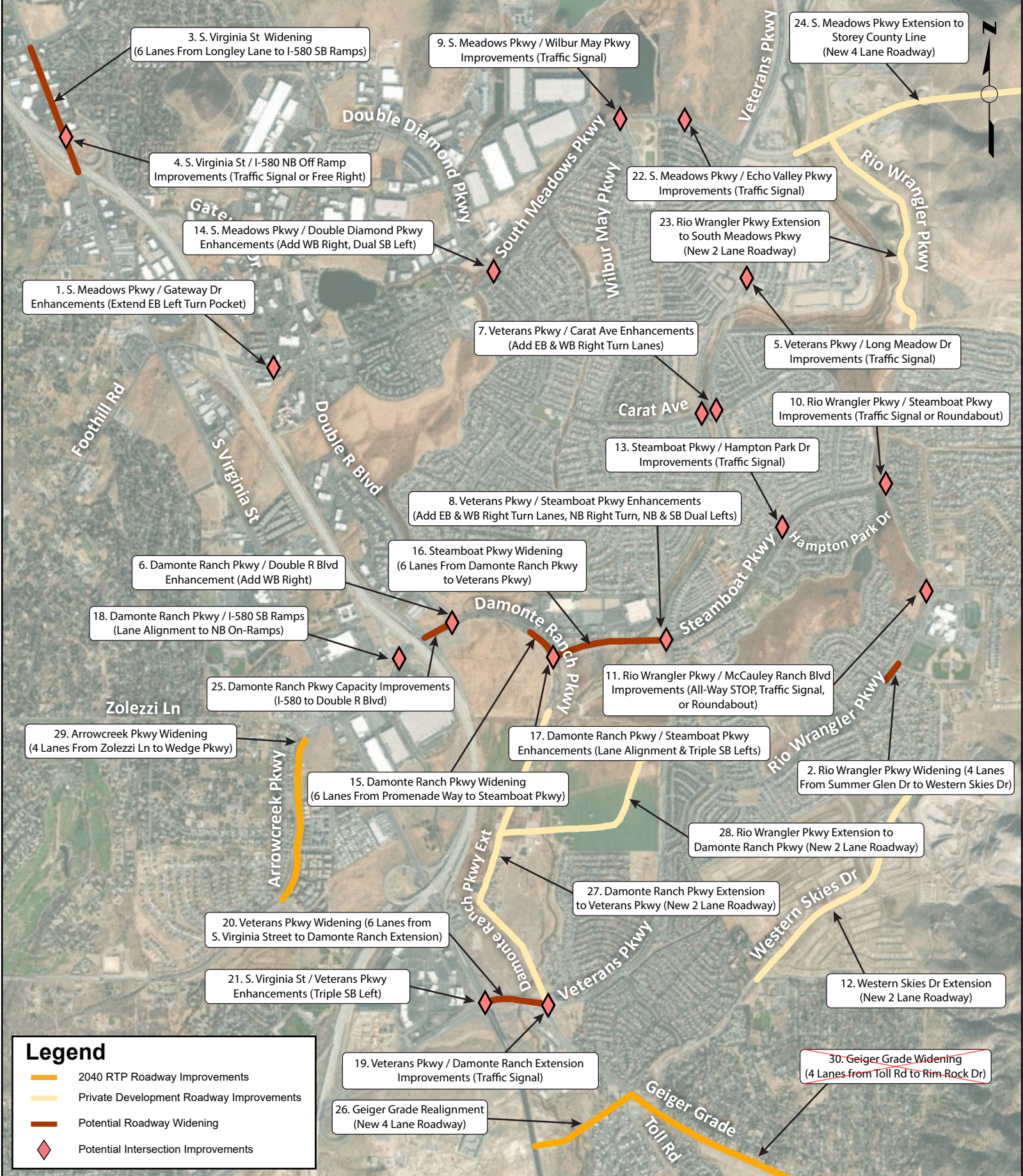


this study recommends removing the Geiger Grade roadway widening from the current RTP project list. In addition, this study also found that the Arrowcreek widening and Geiger Grade realignment are necessary in the future. The Geiger Grade Roundabout will need major modifications or potentially be converted to a traffic signal. The roundabout and Geiger Grade realignment will require a focused future study to identify the proper improvements and mitigations. Priority (timeframe) is based on the operating conditions and urgency to resolve significant existing or anticipated congestion. Intersections currently operating at poor level of service conditions have been grouped into the near term improvements. Timeframes are also dependent on funding levels and difficulty of implementation.

**Table 8-5. Potential Vehicular Improvements**

ID	Potential Improvement
<i>Near Term</i>	
1	S. Meadows Pkwy / Gateway Dr Enhancements (Extend EB Left Turn Pocket)
2	Rio Wrangler Pkwy Widening (4 Lanes From Summer Glen Dr to Western Skies Dr)
3	S. Virginia St Widening (6 Lanes From Longley Lane to I-580 SB Ramps)
4	S. Virginia St / I-580 NB Off Ramp Improvements (Traffic Signal or Free Right)
5	Veterans Pkwy / Long Meadow Dr Improvements (Traffic Signal)
6	Damonte Ranch Pkwy / Double R Blvd Enhancements (Add WB Right)
7	Veterans Pkwy / Carat Ave Enhancements (Add EB & WB Right Turn Lanes)
8	Veterans Pkwy / Steamboat Pkwy Enhancements (Add EB & WB Right Turn Lanes, NB Right Turn, NB & SB Dual Lefts)
9	S. Meadows Pkwy / Wilbur May Pkwy Improvements (Traffic Signal)
10	Rio Wrangler Pkwy / Steamboat Pkwy Improvements (Traffic Signal or Roundabout)
11	Rio Wrangler Pkwy / McCauley Ranch Blvd Improvements (All-Way STOP, Traffic Signal, or Roundabout)
12	Western Skies Dr Extension (New 2 Lane Roadway)
<i>Mid Term</i>	
13	Steamboat Pkwy / Hampton Park Dr Improvements (Traffic Signal)
14	S. Meadows Pkwy / Double Diamond Pkwy Enhancements (Add WB Right, Dual SB Left)
15	Steamboat Pkwy Widening (6 Lanes From Damonte Ranch Pkwy to Veterans Pkwy)
16	Damonte Ranch Pkwy Widening (6 Lanes From Promenade Way to Steamboat Pkwy)
17	Damonte Ranch Pkwy / Steamboat Pkwy Enhancements (Lane Alignment & Triple SB Lefts)
18	Damonte Ranch Pkwy / I-580 SB Ramps (Lane Alignment to NB On-Ramps)
19	Veterans Pkwy / Damonte Ranch Extension Improvements (Traffic Signal)
20	Veterans Pkwy Widening (6 Lanes from S. Virginia St to Damonte Ranch Extension)
21	S. Virginia St / Veterans Pkwy Enhancements (Triple SB Left)
22	S. Meadows Pkwy / Echo Valley Pkwy Improvements (Traffic Signal)
23	Rio Wrangler Pkwy Extension to South Meadows (New 2 Lane Roadway)
24	S. Meadows Pkwy Extension to Storey County Line (New 4 Lane Roadway)
<i>Long Term</i>	
25	Damonte Ranch Pkwy Capacity Improvements (I-580 to Double R Blvd)
26	Geiger Grade Realignment (New 4 Lane Roadway)
27	Damonte Ranch Pkwy Extension to Veterans Parkway (New 2 Lane Roadway)
28	Rio Wrangler Pkwy Extension to Damonte Ranch Parkway (New 2 Lane Roadway)
29	Arrowcreek Pkwy Widening (4 Lanes From Zolezzi Ln to Wedge Pkwy)
<del>30</del>	Geiger Grade Widening (4 Lanes from Toll Rd to Rim Rock Dr)

- Programmed in the 2040 RTP
- Remove from future RTP
- Funded by Private Developments



**FIGURE 8-6. POTENTIAL VEHICLE CAPACITY IMPROVEMENTS**





Preliminary concepts were created for three key projects in the South Meadows study area as follows:

- S. Virginia Street / I-580 NB Off-Ramp Improvement (**Figure 8-7**)
- Steamboat Parkway / Rio Wrangler Parkway Roundabout (**Figure 8-8**)
- Veterans Parkway / Steamboat Parkway Improvement (**Figure 8-9**)

NDOT has considered installing a traffic signal with two westbound right turn lanes at the S. Virginia Street / I-580 NB Off-Ramp (Exit 61) intersection. The dual right turns would run concurrently with the southbound left turns onto southbound I-580. Both the free-right and traffic signal improvements should be considered at this location.

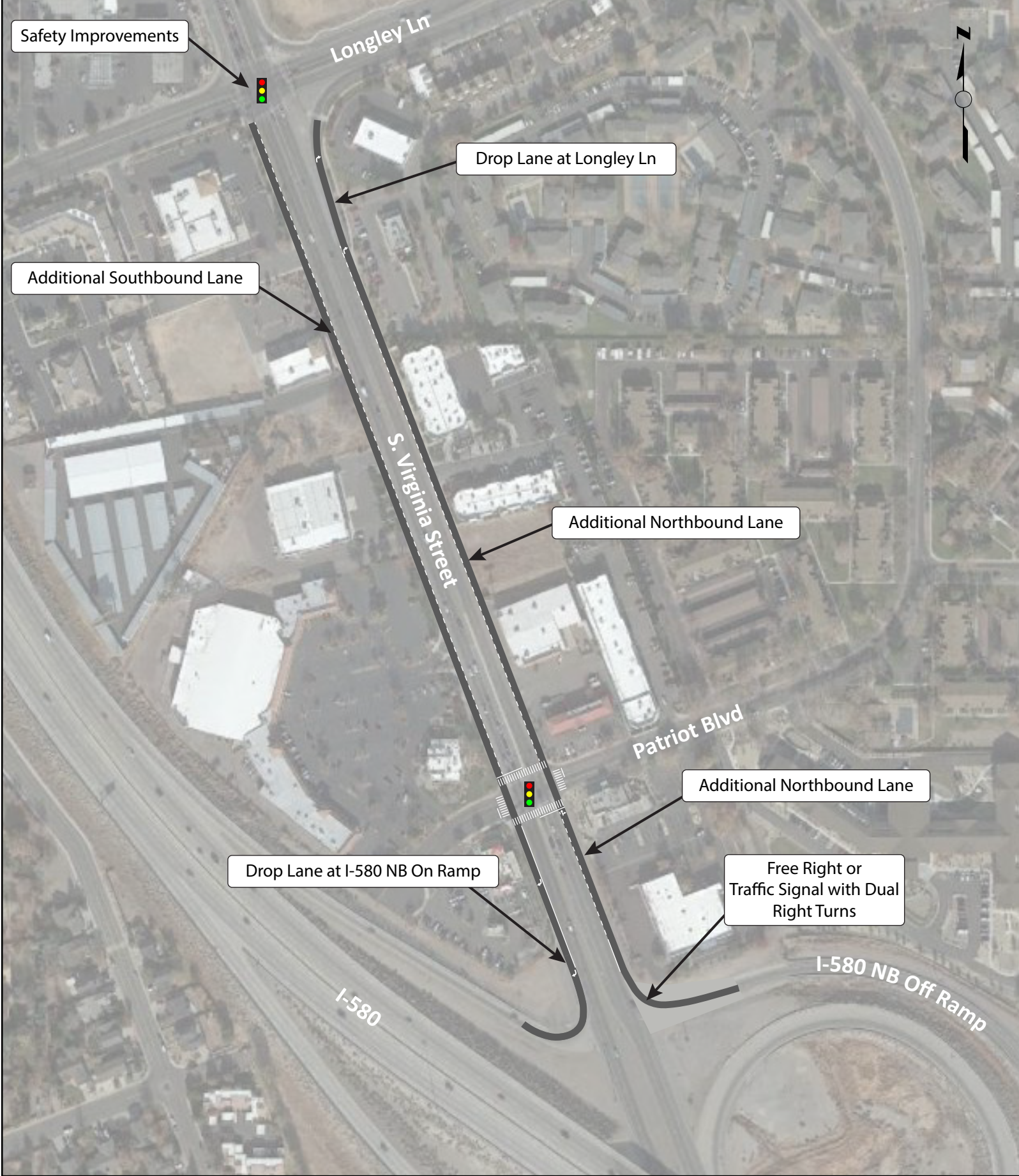
With the construction of the vehicular improvements outlined in **Figure 8-6**, all studied intersections and roadways are anticipated to operate at acceptable levels of service. The anticipated level of service for each study intersection is shown in **Table 8-6** and the improved lane configurations and controls are shown in **Figure 8-10**.

All roadway segments except for S. Virginia Street between I-580 and Holcomb Ranch Lane will operate at LOS “D” or better as shown in **Figure 8-11**. No additional capacity improvements are recommended for this segment of S. Virginia Street as the volume only slightly exceeds the LOS “E” upper threshold. Level of service calculations for all scenarios are shown in **Appendix C**.

**Table 8-6. 2040 Mitigated Level of Service**

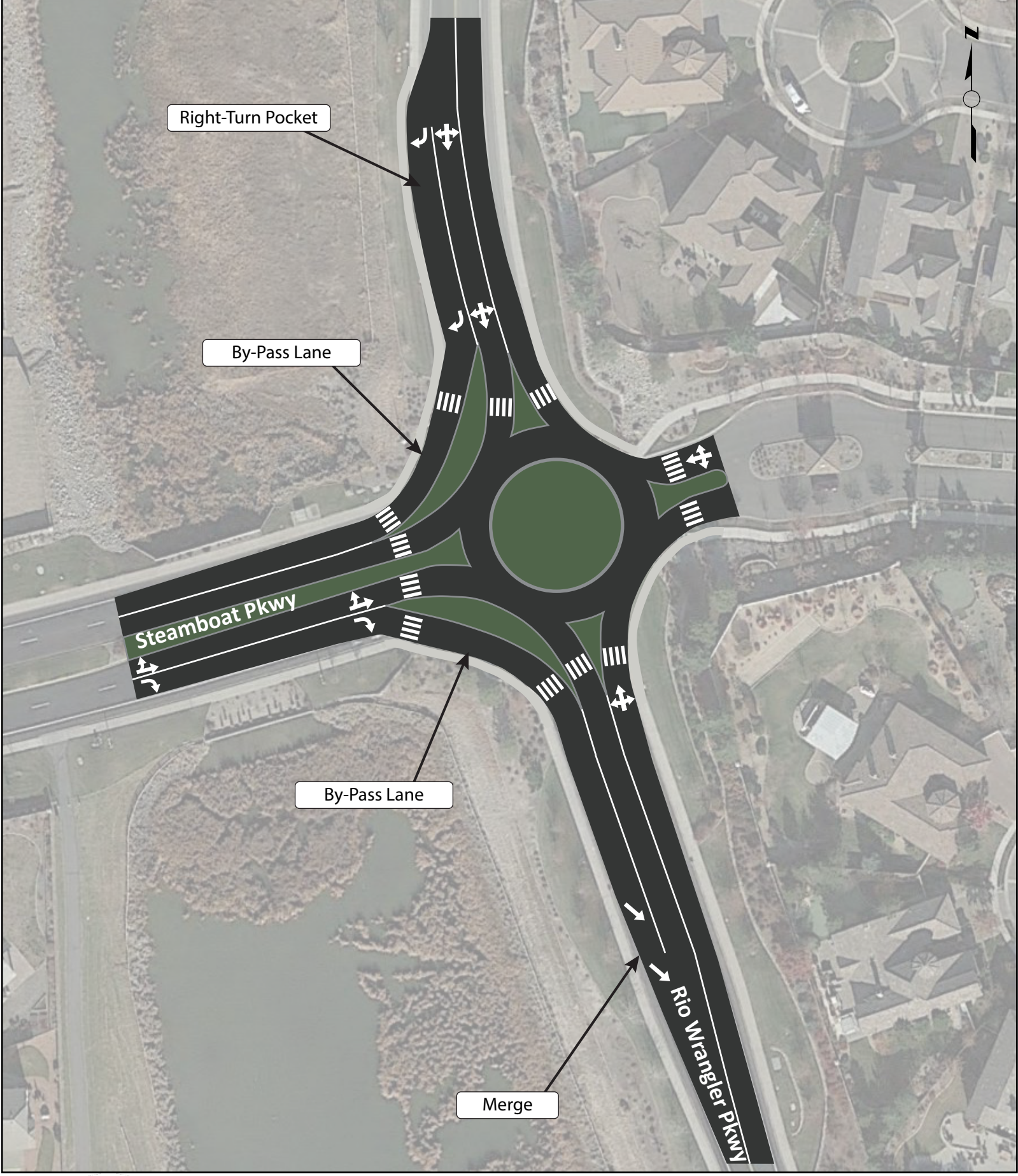
ID	Intersection	Intersection Control	Movement	2040 Mitigated Conditions			
				AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	S. Virginia St / I-580 NB Off-Ramp	Signal	Overall	C	25.8	C	25.9
2	Double R Blvd / Sandhill Rd	Signal	Overall	B	12.0	B	14.9
3	S. Meadows Pkwy / Gateway Dr	Signal	Overall	D	36.6	D	53.2
4	S. Meadows Pkwy / Double R Blvd	Signal	Overall	D	43.6	E	58.2
5	S. Meadows Pkwy / Double Diamond Pkwy	Signal	Overall	D	37.5	C	27.5
6	S. Meadows Pkwy / Wilbur May Pkwy	Signal	Overall	C	27.5	C	20.5
7	S. Meadows Pkwy / Echo Valley Pkwy	Signal	Overall	C	27.7	C	32.1
8	Veterans Pkwy / Long Meadow Dr	Signal	Overall	D	51.3	B	14.0
9	Double R Blvd / Double Diamond Pkwy	Signal	Overall	C	27.0	D	54.9
10	Damonte Ranch Pkwy / Double R Blvd	Signal	Overall	E	76.5	E	68.7
11	Damonte Ranch Pkwy / Steamboat Pkwy	Signal	Overall	B	17.6	B	17.5
12	Veterans Pkwy / Steamboat Pkwy	Signal	Overall	D	48.5	D	40.6
13	Steamboat Pkwy / Rio Wrangler Pkwy	Signal or RAB	Overall (Signal)	C	27.1	B	14.6
			Overall (RAB)	A	9.2 (0.79 v/c)	A	9.0 (0.66 v/c)
14	Rio Wrangler Pkwy / McCauley Ranch Blvd	Signal, AWS, or RAB	Overall (Signal)	B	18.7	A	9.3
			Overall (AWS)	D	26.6	B	10.4
			Overall (RAB)	C	15.1 (0.77 v/c)	A	6.8 (0.39 v/c)
15	S. Virginia St / Veterans Pkwy	Signal	Overall	C	29.9	E	60.6
16	Veterans Pkwy / Geiger Grade	Signal	Overall	D	52.4	E	56.8





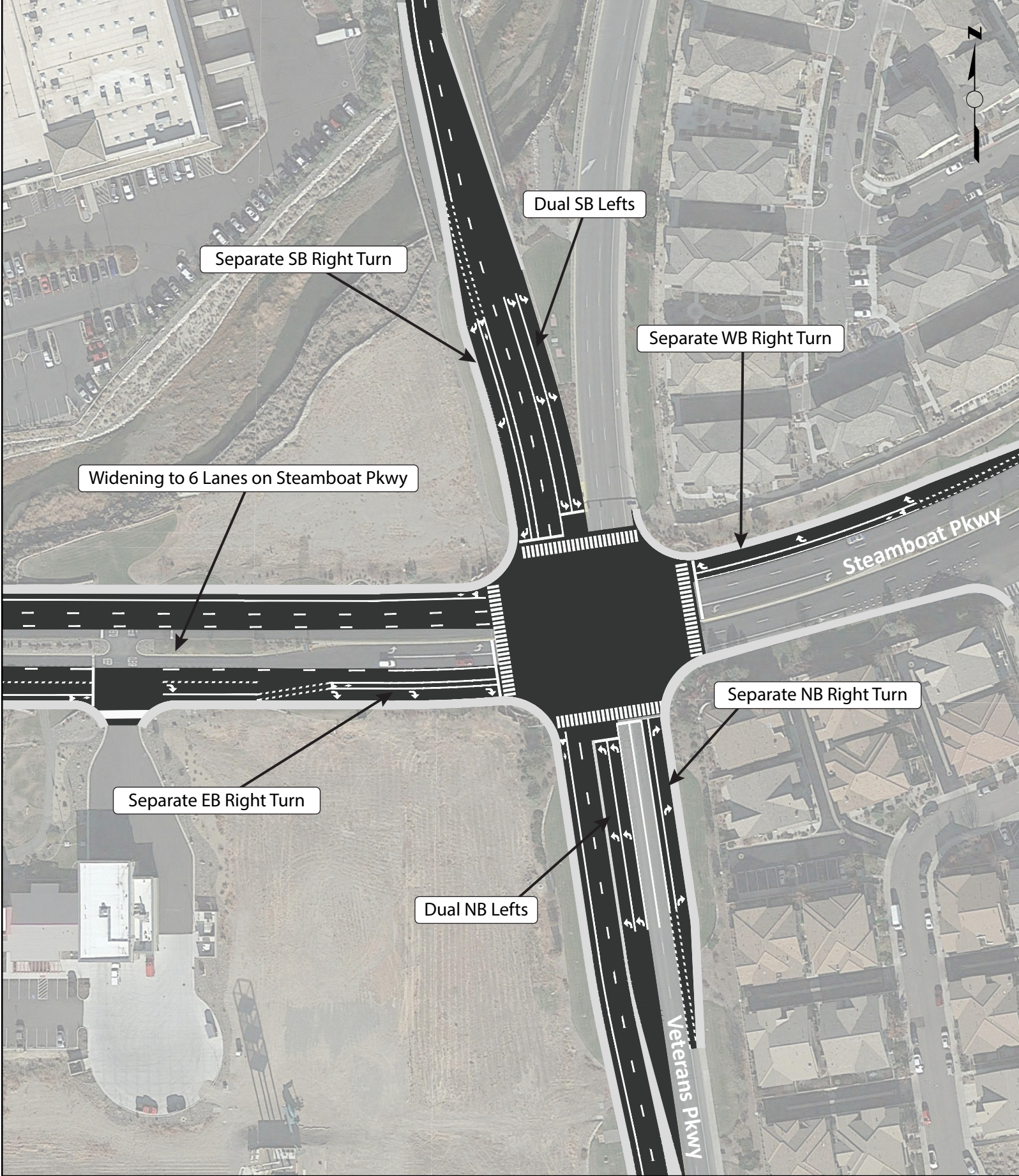
**FIGURE 8-7. S. VIRGINIA STREET / I-580 NB OFF-RAMP IMPROVEMENT CONCEPT**





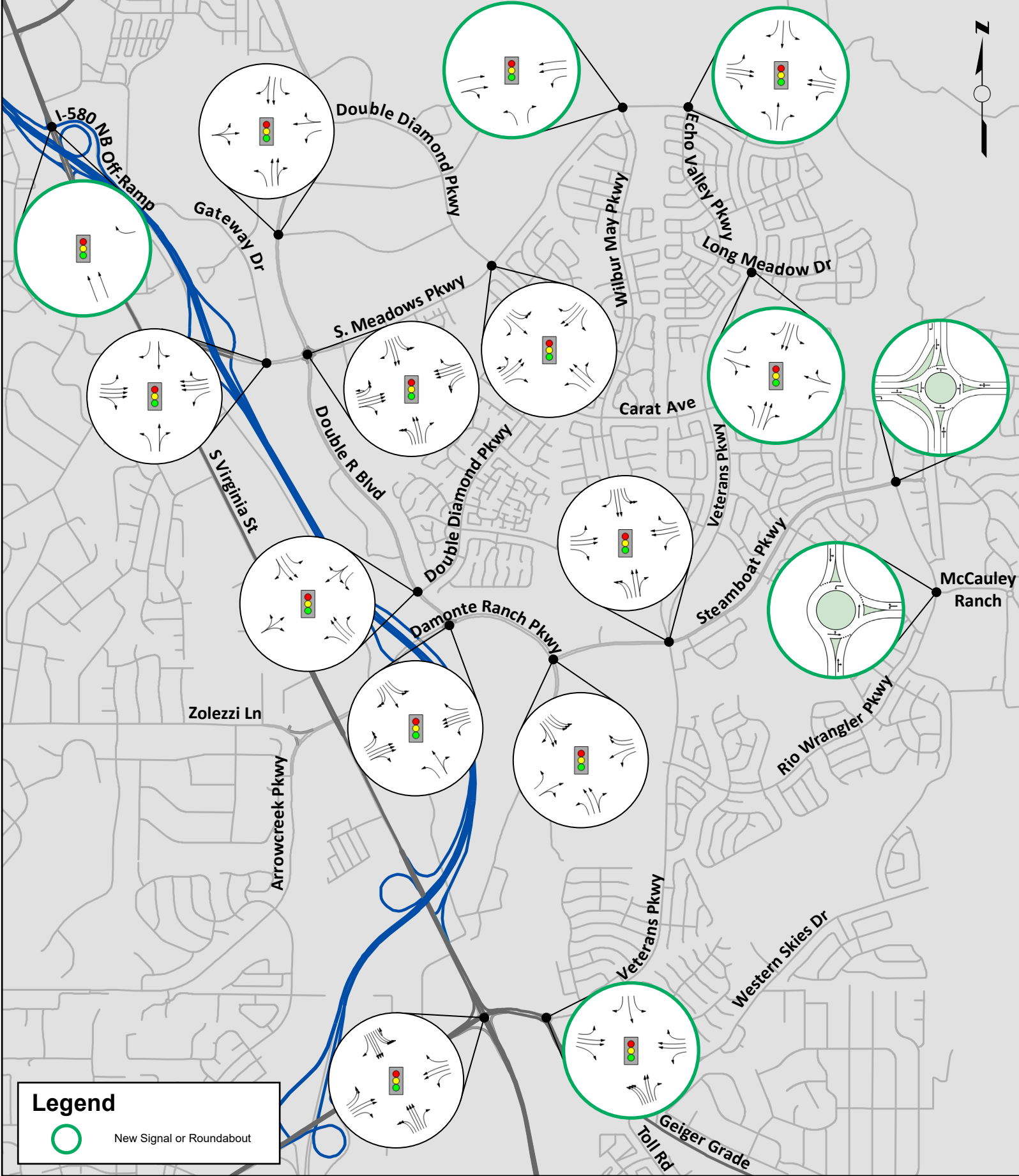
**FIGURE 8-8. STEAMBOAT PKWY / RIO WRANGLER PKWY ROUNDABOUT CONCEPT**





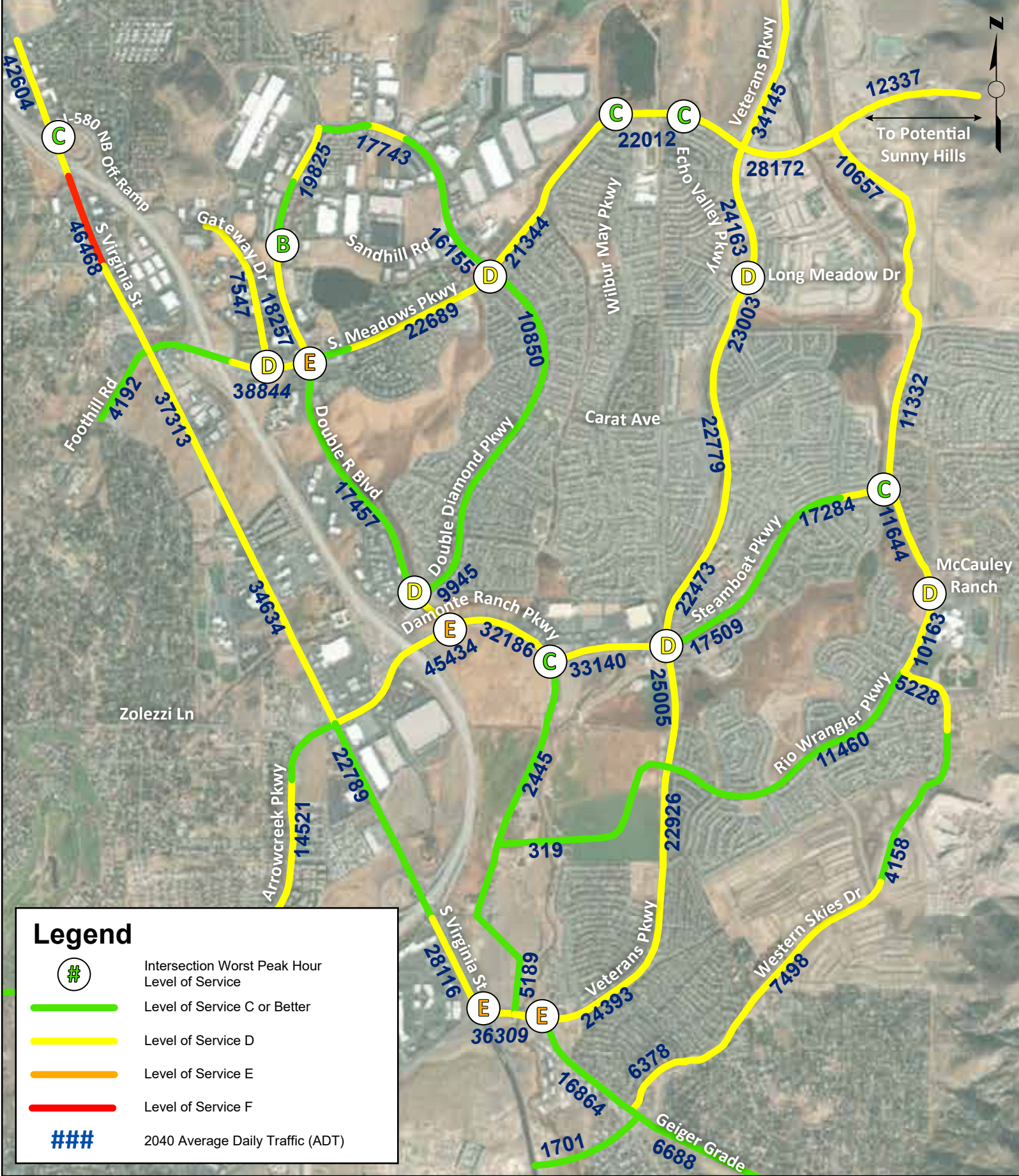
**FIGURE 8-9. VETERANS PARKWAY / STEAMBOAT PARKWAY IMPROVEMENT CONCEPT**





**FIGURE 8-10. 2040 MITIGATED LANE CONFIGURATION & CONTROLS**





**FIGURE 8-11. 2040 AVERAGE DAILY TRAFFIC AND LEVEL OF SERVICE (BUILD-OUT SCENARIO WITH IMPROVEMENTS)**





**COST ESTIMATES**

This section presents planning level cost estimates for the broad range of potential improvements. The quantities and costs have been generalized based on planning level conceptual designs. It is not feasible at this time to address all the specific items that would be included in construction ready documents. Soft costs (engineering, specialty consultant services, construction administration, etc.) and contingency were added to the total to complete the budget. Should these prices be extended into future years, it would be advisable to include a 3% per year increase to allow for inflation and other pricing fluctuations. The following tables present planning level cost estimates for the five different project types (Bicycle, Pedestrian, Safety, Park & Ride, and Vehicular Capacity). Additional detail is provided in **Appendix D**.

**Table 8-7. Potential Bicycle Improvements Cost Estimates**

ID	Improvement	Total Cost
<i>Near Term</i>		
1	S. Meadows Parkway Bicycle Facility Improvements (S. Virginia Street to Double Diamond Parkway)	\$ 6,700,000
2	S. Meadows Parkway Bicycle Facility Upgrades (Double Diamond Parkway to Veterans Parkway)	\$ 1,750,000
3	S. Virginia Street Multimodal Improvements (Patriot Boulevard to Mt. Rose Highway)	\$ 18,000,000
4	Double Diamond Boulevard Bicycle Facility Upgrades (Double R Boulevard to S. Meadows Parkway)	\$ 1,250,000
5	Veterans Parkway/Steamboat Parkway Bicycle Facility Upgrades	\$ 100,000
<i>Mid Term</i>		
6	Veterans Parkway Bicycle Facility Upgrades (S. Meadows Pkwy to Steamboat Parkway)	\$ 3,000,000
7	Double R Boulevard Bicycle Facility Upgrades (S. Meadows Parkway to Damonte Ranch Parkway)	\$ 1,600,000
8	Western Skies Drive Bicycle Facility Improvements (Geiger Grade to Rio Wrangler Parkway)	\$ 200,000
<i>Long Term</i>		
9	Foothill Road Bicycle Facility Upgrades (S. Virginia Street to Caribou Road)	\$ 1,000,000
10	Huffaker Lane Bicycle Facility Improvements (Bluestone Drive to Longley lane)	\$ 200,000
11	Geiger Grade Bicycle Facility Improvements (Equestrian Road to Rim Rock Drive)	\$ 1,500,000

As outlined in **Table 8-7**, the total cost estimate for the potential bicycle improvements is \$35,300,000.



**Table 8-8. Potential Pedestrian Improvements Cost Estimates**

ID	Improvement	Total Cost
<i>Near Term</i>		
1	RTC Planned Bus Stop Improvements (5 Locations)	\$ 500,000
2	Veterans Parkway Pedestrian Crossing Improvements (S. Meadows Parkway to Carat Avenue)	\$ 750,000
3	S. Meadows Parkway Pedestrian Facility Improvements (Evergreen Street to Double Diamond Walking Path)	\$ 250,000
4	Steamboat Parkway Pedestrian Crossing Improvements (Veterans Parkway to Rio Wrangler Parkway)	\$ 750,000
5	Veterans Wetland Loop Under-Crossing Maintenance (By Others)	Private
<i>Mid Term</i>		
6	Rio Wrangler Parkway Pedestrian Crossing Improvements (Steamboat Parkway to Veterans Parkway)	\$ 750,000
7	Double R Boulevard Pedestrian Crossing Improvements (S. Meadows Parkway to Lauren Court)	\$ 750,000
8	Double Diamond Parkway Pedestrian Facility Enhancements (Double R Boulevard to Trademark Drive)	\$ 400,000
9	Double R Boulevard Pedestrian Facility Enhancements (Lauren Court to Double Diamond Parkway)	\$ 1,700,000
10	Gateway Drive Pedestrian Facility Enhancements (Offenhauser Drive to S. Meadows Parkway)	\$ 1,000,000
11	Zolezzi Lane Multimodal Improvements (S. Virginia Street to Thomas Creek Road)	\$ 10,500,000
12	Wedge Parkway Pedestrian Facility Enhancements (Arrowcreek Parkway to Ghost Rider Drive)	\$ 700,000
13	Prototype Drive Pedestrian Facility Enhancements (Double R Boulevard to Gateway Drive)	\$ 500,000
<i>Long Term</i>		
14	Foothill Road Pedestrian Facility Improvements (S. Virginia Street to Caribou Road)	\$ 500,000
15	Geiger Grade Pedestrian Facility Improvements (S. Virginia Street to Rim Rock Drive)	\$ 1,000,000
16	Mt Rose Highway Pedestrian Facility Enhancements (Thomas Creek Road to S. Virginia Street)	\$ 1,700,000
17	Arrowcreek Parkway Pedestrian Facility Enhancements (Zolezzi Lane to Thomas Creek Road)	\$ 1,500,000

As outlined in **Table 8-8**, the total cost estimate for the potential pedestrian improvements is \$23,250,000.

**Table 8-9. Potential Safety Improvements Cost Estimates**

ID	Improvement	Total Cost
<i>Near Term</i>		
1	School Zone Safety/Safe Routes to School (Depaoli, Double Diamond, Poulakidas)	\$ 500,000
2	Veterans Parkway/Geiger Grade Striping/Signage Upgrades	\$ 100,000
3	Interagency Coordination for Wild Horse Issue	\$ 100,000
4	S. Virginia Street Safety Improvements (Arrowcreek Pkwy to I-580 Interchange)	\$ 5,000,000
5	S. Virginia St / Holcomb Ranch Ln Safety Improvements (Signal or Access Management)	\$ 750,000
<i>Mid Term</i>		
6	Geiger Grade Operations and Safety Improvements (Toll Road to Rim Rock Drive)	\$ 15,000,000
7	School Zone Safety/Safe Routes to School (Locations TBD)	\$ 500,000
8	Sight Triangle Identification Program	\$ 500,000
9	Spot Location Safety Improvements (Locations TBD)	\$ 2,000,000
<i>Long Term</i>		
10	Spot Location Safety Improvements (Locations TBD)	\$ 2,000,000

As outlined in **Table 8-9**, the total cost estimate for the potential safety improvements is \$26,450,000.



**Table 8-10. Potential Park & Ride Improvements Cost Estimates**

ID	Improvement	Total Cost
<i>Near Term</i>		
1	Veterans Parkway/S. Meadows Park & Ride	\$ 2,000,000
2	Damonte Ranch Park & Ride	\$ 2,000,000
<i>Mid Term</i>		
3	Veterans Parkway/Geiger Grade Park & Ride	\$ 2,000,000
4	S. Meadows Parkway/Double R Boulevard Park & Ride	\$ 2,000,000

As outlined in **Table 8-10**, the total cost estimate for the potential Park & Ride improvements is \$8,000,000.

**Table 8-11. Potential Vehicle Capacity Improvements Cost Estimates**

ID	Improvement	Total Cost
<i>Near Term</i>		
1	S. Meadows Pkwy / Gateway Dr Enhancements (Extend EB Left Turn Pocket)	\$ 500,000
2	Rio Wrangler Pkwy Widening (4 Lanes From Summer Glen Dr to Western Skies Dr)	\$ 750,000
3	S. Virginia St Widening (6 Lanes From Longley Lane to I-580 SB Ramps)	\$ 21,000,000
4	S. Virginia St / I-580 NB Off Ramp Improvements (Traffic Signal or Free Right)	\$ 500,000
5	Veterans Pkwy / Long Meadow Dr Improvements (Traffic Signal)	\$ 750,000
6	Damonte Ranch Pkwy / Double R Blvd Enhancements (Add WB Right)	\$ 500,000
7	Veterans Pkwy / Carat Ave Enhancements (Add EB & WB Right Turn Lanes)	\$ 1,000,000
8	Veterans Pkwy / Steamboat Pkwy Enhancements (Add EB & WB Right Turn Lanes, NB Right Turn, NB & SB Dual Lefts)	\$ 2,500,000
9	S. Meadows Pkwy / Wilbur May Pkwy Improvements (Traffic Signal)	\$ 750,000
10	Rio Wrangler Pkwy / Steamboat Pkwy Improvements (Traffic Signal or Roundabout)	\$ 3,000,000
11	Rio Wrangler Pkwy / McCauley Ranch Blvd Improvements (All-Way STOP, Traffic Signal, or Roundabout)	\$ 3,000,000
12	Western Skies Dr Extension (New 2 Lane Roadway)	Private
<i>Mid Term</i>		
13	Steamboat Pkwy / Hampton Park Dr Improvements (Traffic Signal)	\$ 750,000
14	S. Meadows Pkwy / Double Diamond Pkwy Enhancements (Add WB Right, Dual SB Left)	\$ 2,000,000
15	Damonte Ranch Pkwy Widening (6 Lanes From Promenade Way to Steamboat Pkwy)	\$ 100,000
16	Steamboat Pkwy Widening (6 Lanes From Damonte Ranch Pkwy to Veterans Pkwy)	\$ 4,000,000
17	Damonte Ranch Pkwy / Steamboat Pkwy Enhancements (Lane Alignment & Triple SB Lefts)	\$ 1,000,000
18	Damonte Ranch Pkwy / I-580 SB Ramps (Lane Alignment to NB On-Ramps)	\$ 5,000,000
19	Veterans Pkwy / Damonte Ranch Extension Improvements (Traffic Signal)	\$ 750,000
20	Veterans Pkwy Widening (6 Lanes from S. Virginia St to Damonte Ranch Extension)	\$ 5,000,000
21	S. Virginia St / Veterans Pkwy Enhancements (Triple SB Left)	\$ 9,000,000
22	S. Meadows Pkwy / Echo Valley Pkwy Improvements (Traffic Signal)	Private
23	Rio Wrangler Pkwy Extension (New 2 Lane Roadway from North End of Pavement to S. Meadows Pkwy)	Private
24	S. Meadows Pkwy Extension to Storey County Line	Private
<i>Long Term</i>		
25	Damonte Ranch Pkwy Capacity Improvements (I-580 to Double R Blvd)	\$ 10,000,000
26	Geiger Grade Realignment (New 4 Lane Roadway)	\$ 75,100,000
27	Damonte Ranch Pkwy Extension (New 2 Lane Roadway)	Private
28	Rio Wrangler Pkwy Extension (New 2 Lane Roadway from Veterans Pkwy to Damonte Ranch Pkwy Extension)	Private
29	Arrowcreek Pkwy Widening (4 Lanes From Zolezzi Ln to Wedge Pkwy)	\$ 8,300,000
30	Geiger Grade Widening (4 Lanes from Toll Road to Rim Rock Drive)	Remove

As outlined in **Table 8-11**, the total cost estimate for the potential vehicular capacity improvements is \$155,250,000.





## SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

Overall, it would cost approximately \$248,250,000 (current 2019 dollars) to construct every potential improvement identified in this study.

Note that many of the improvements should be combined during the design and implementation phase for construction cost efficiency.



## CHAPTER 9 - RECOMMENDATIONS

The thousands of comments received through this study demonstrate the wide variety of challenges that exists in managing a regional, multimodal, transportation system. The most common theme was complaints about traffic congestion and delay (evidence of a need for more vehicular capacity) but counter comments were offered that suggested speeds are too high, better pedestrian crossings are needed, that safety is a concern, and that more signals are needed (suggesting changes that calm roadways but generally reduce capacity). Questions were raised about how many lanes are appropriate, what the speed limits should be, the safety of bicycle lanes on high speed arterials, and where trucks belong.

The solution to all of these issues and competing interests is found in the concept of “roadway hierarchy”. In short, freeways, arterials, collectors, and local streets are intentionally designed and managed to serve different purposes. Freeways and arterials have the express purpose of moving large volumes of vehicular traffic across the region. Collectors and local streets serve the function of providing direct access and multimodal circulation for neighborhoods, schools, and commercial centers. The design of each roadway type (classification) must be different to best serve its purpose in the overall network.

### ROADWAY HIERARCHY AND CLASS

Roadway hierarchy and classification is established in the Regional Transportation Plan (RTP). Most of the “regional roads” within the South Meadows are currently classified as Moderate Access Control arterials. The 2040 RTP states “arterials that are direct connections between freeways and other arterials, insure continuity throughout the region and generally accommodate longer trips within the region, especially in the peak periods on high traffic volume corridors”. The primary purpose of these types of roadways is vehicular throughput and these roadways serve a vital role in the transportation network. Since it is almost impossible to add significant roadway capacity after a community is built, agencies must be extremely diligent in maintaining the capacity of their existing roadways. The City of Reno, RTC, and NDOT should strictly maintain the access management standards established in the RTP for all regional roadways as shown in **Table 9-1**.

**Table 9-1. 2040 RTP Access Management and Standards**

Access Management Standards-Arterials <sup>1</sup> and Collectors							
Access Management Class	Posted Speeds	Signals Per Mile and Spacing <sup>2</sup>	Median Type	Left From Major Street? (Spacing from signal)	Left From Minor Street or Driveway?	Right Decel Lanes at Driveways?	Driveway Spacing <sup>3</sup>
High Access Control	45-55 mph	2 or less Minimum spacing 2350 feet	Raised w/channelized turn pockets	Yes 750 ft. minimum	Only at signalized locations	Yes <sup>4</sup>	250 ft./500 ft.
Moderate Access Control	40-45 mph	3 or less Minimum spacing 1590 feet	Raised or painted w/turn pockets	Yes 500 ft. minimum	No, on 6- or 8-lane roadways w/o signal	Yes <sup>5</sup>	200 ft./300 ft.
Low Access Control	35-40 mph	5 or less Minimum spacing 900 feet	Raised or painted w/turn pockets or undivided w/painted turn pockets or two-way, left-turn lane	Yes 350 ft. minimum	Yes	No	150 ft./200 ft.
Ultra-Low Access Control	30-35 mph	8 or less Minimum spacing 560 feet	Raised or painted w/turn pockets or undivided w/painted turn pockets or two-way left-turn lane	Yes 350 ft. minimum	Yes	No	150 ft./200 ft. 100 ft./100 ft. <sup>6</sup>



## SPEED LIMITS

Speed limits are, and should continue to be, based on roadway classification as established in the RTP. As shown in **Table 9-1**, the posted speeds on “regional roads” should be between 45 and 55 mph for High Access Control facilities, 40 to 45 mph for Moderate Access Control facilities, 40 mph or less for Low Access Control streets, and 35 mph or less on Ultra Low Access Control facilities (typically Collectors). Local streets are typically posted at 25 mph, or as otherwise determined by the City of Reno or Washoe County.

Artificially low speed limits are ineffective, cause undesirable cut-thru traffic on lower hierarchy roadways (causing other more significant safety issues), and degrade the overall roadway network functionality.

## TRAFFIC SIGNAL LOCATIONS

As the South Meadows continues to build out, there will be a growing number of requests for new traffic signals. Traffic signals are important for managing high volume intersections but are not appropriate everywhere. The over-installation of traffic signals is commonly the most significant contributor to congested corridors, excessive delay, and regional travel time issues. Traffic signals should only be installed where justified by an engineering study.

The appropriate spacing of traffic signals is established in the RTP Access Management and Standards and should be strictly followed unless significantly unusual circumstances exist. Traffic signals must be strategically placed at high volume intersections or at locations that provide controlled pedestrian crossings, enable U-turns, or create gaps in otherwise unimpeded traffic flows. **Figure 9-1** is a recommended “traffic signal masterplan” for the South Meadows area showing the most appropriate locations for new traffic signals.

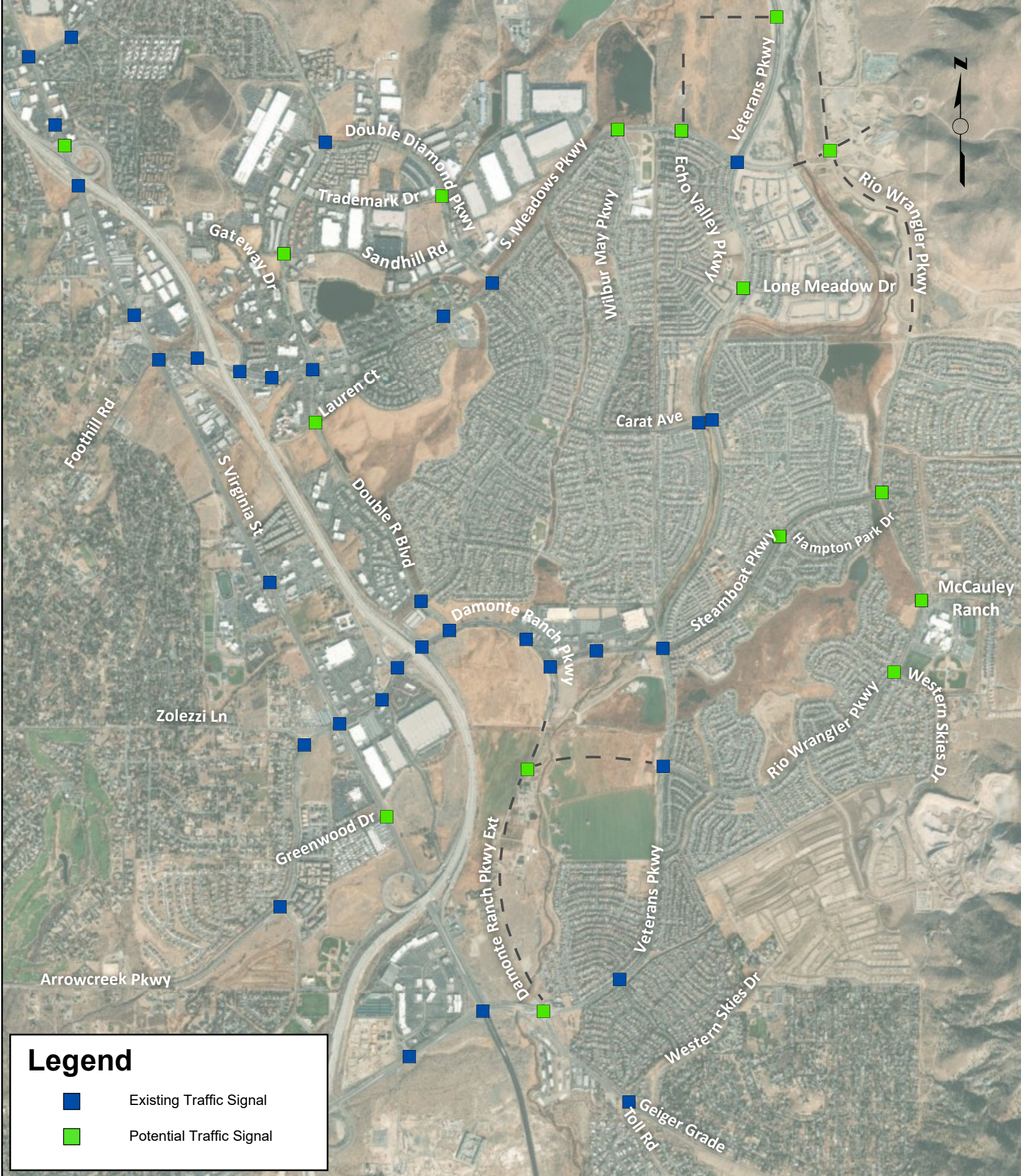
## TRUCK ROUTES

Trucks and other heavy vehicles are integral to the daily operation of businesses throughout the South Meadows area and the region as a whole. Truck traffic should be limited to the regional roadway system wherever possible and should be prohibited on local streets and collectors unless those roadways are the only route to/from the destination. Trucks should be allowed, expected, and designed for, on all Moderate and High Access Control arterials within the South Meadows as these roadways are the most appropriate for handling these types of vehicles. Where trucks are a concern on certain segments of Arterials, the roadway configuration and controls should be adjusted to better blend all users rather than prohibiting trucks from the arterial system.

## BETTER BICYCLE FACILITIES

Nationwide there is growing evidence that the placement of bike lanes on high speed arterial roadways is not effective in attracting bicycle ridership or shifting users to alternate modes. South Meadows residents echoed the national sentiment and commented that they feel unsafe using bike lanes on the major arterials within the study area. Data from the Truckee Meadows area, obtained through the RTC Bicycle and Pedestrian Data Collection Program, shows that the bicycle ridership declines as posted speeds increase.

Going forward, new roadways or those undergoing major widening or reconfiguration, to be posted with speed limits 35 mph or higher, should be constructed with separated multi-use paths rather than on-street bike lanes. Since it is critical to maintain roadway hierarchy and long-term capacity on arterials, the appropriate action is to provide additional separation between the various modes rather than lowering speed limits.



**FIGURE 9-1. TRAFFIC SIGNAL MASTERPLAN**





### MAINTAINING ROADWAY CAPACITY

At the time of this study, the South Meadows area has reached approximately 65% of its build-out potential (roughly 35% of the developable land is vacant). Considering the current traffic volumes and projected levels of traffic at build-out, the RTC and City of Reno should diligently preserve the capacity of arterials and regional roadways. The most important elements of capacity are the number of travel lanes, limiting the number of traffic signals, access management limiting the number of connection points, limiting enhanced crosswalks to the most appropriate locations, and maintaining appropriate speed limits.

### RECOMMENDED IMPROVEMENTS FOR ALL MODES

Chapter 8 of this study presents approximately seventy (70) potential improvements that could enhance vehicular, bicycle, and pedestrian circulation, improve safety for all roadway users, and encourage car/van pooling through park & ride facilities. This list of potential improvements should be forwarded to the Regional Transportation Plan update process where the projects will be vetted and prioritized in comparison to other regional transportation needs for future funding and implementation of the highest priority projects.

In general terms, the community has recommended the following distribution of funds by travel mode specifically in the South Meadows study area:

- Vehicular Capacity – 35%
- Safety Improvements – 25%
- Pedestrian Improvements – 13%
- Bicycle Improvements – 12%
- Transit – 10%
- Park & Ride Facilities – 5%

### FUTURE STUDIES

#### Geiger Grade and Veterans Parkway

An additional study is needed specifically of the Geiger Grade and Veterans Parkway area between S. Virginia Street and Western Skies Drive. Realignment of Geiger Grade is likely still necessary as programmed in the 2040 RTP, however, a holistic approach including Western Skies Drive and replacement of the existing roundabout with a higher capacity intersection is needed. Consideration of the planned Damonte Ranch Parkway extension to Veterans Parkway, Equestrian Road and Toll Road, alignment alternatives, and right-of-way will be key factors. This study should also identify the long-term configurations of Equestrian Road and Western Skies Drive and the alignment of Toll Road to Geiger Grade.

#### South Meadows Parkway Extension

This study assumes the extension of South Meadows Parkway, as a 4-lane arterial, east to the proposed Sunny Hills development and Storey County line. Approximately 1,500 single family homes within the Washoe County portion of Sunny Hills have been included in the land use and travel forecasting. At the time of this report, a coalition of land holders and developers have proposed a connection of South Meadows Parkway through Storey County to USA Parkway, approximately 17 miles to the east. The development coalition contemplates 4,000 residential units in Storey County and the proposed arterial as link between major employers in the Tahoe Reno Industrial Center and a significant and growing



population in south Reno. Evaluation of the potentially significant impacts on the South Meadows transportation network are beyond the scope of this particular study, but should be considered. In general terms, if South Meadows Parkway was extended into Storey County to serve significant residential development and/or to connect with USA Parkway, higher traffic volumes should be expected on South Meadows Parkway between Veterans Parkway and I-580 and on Veterans Parkway (both north and south of South Meadows Parkway) in particular. A future study should be conducted to evaluate the impacts and costs of expanding roadways in the South Meadows area to support the proposed new regional connection.

### S. Virginia / I-580 Interchange (Exit 57)

The proposed multi-modal improvements on South Virginia Street between Mt. Rose Highway and S. Meadows Parkway presents some challenges at the S. Virginia / I-580 Interchange (Exit 57). The interchange has multiple ramp locations with high-speed free vehicle movements. A future study should be conducted to analyze the conflicting movements between vehicles and pedestrians/bicycles. Options to consider would range from potential signals at the free-way ramps, grade separated crossings, or possibly changing the entire configuration of the interchange that would allow for safer multi-modal access.

