

## TECHNICAL MEMORANDUM

**DATE:** 9/14/07  
**TO:** Mayor Scott Harbertson, Farmington City  
Members of the Farmington City Council  
Members of the Farmington Planning Commission  
**FROM:** Timothy Taylor, PE, PTOE  
**RE:** LEGACY NORTH TO LEGACY CONNECTION EVALUATION STUDY

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### Introduction

The purpose of this technical memorandum is to summarize findings and recommendations related to the Legacy North to Legacy Connection Evaluation Study.

This study was initiated by Farmington City in an effort to obtain an independent assessment of the ongoing effort by the Utah Department of Transportation to preserve a corridor for a future Legacy Parkway to North Legacy Highway corridor connection through the City.

UDOT's efforts include the preparation of a North Legacy to Legacy Connection Corridor Preservation Study (UDOT Study, June 14, 2007, Horrocks Engineers – See **Appendix A**) that identifies and analyzes four corridor preservation alignments as well as the alignment option currently identified in Farmington's current Master Transportation Plan (November 2005). Option 3 of this study is UDOT's preferred option.

It is important to note that the City did not intend for this study to provide additional technical analysis beyond that completed by UDOT.

This study focuses on the following key assessment elements/ issues related to UDOT's Corridor Preservation Study effort:

- a) Review of UDOT traffic model volume projections.
- b) Assessment of UDOT corridor alignment options two, three and four.
- c) Assessment of the City's current MTP alignment option as a viable UDOT option.
- d) Identification and assessment of additional corridor alignment options.
- e) Assessment of Park Lane capacity and safety considerations.

### Findings and Recommendations

Based on our assessment, we present the following key findings and recommendations.

- 1) The process utilized by UDOT to develop traffic model projections for purposes of forecasting corridor preservation level traffic volumes appears to be reasonable.

However, it is important to note that the UDOT Corridor Preservation Study process doesn't require establishment of purpose and need, but seeks only to establish the most

viable corridor so that preservation efforts can be carried out and key right-of-way preserved until the time that a formal environmental document can be prepared.

Refer to **Appendix B** for additional information.

- 2) Of the four alignment options considered by UDOT, each represents a potentially viable option *when considering only the four UDOT study criteria*. However, there are numerous additional issues that cannot be adequately addressed in a corridor preservation study but will require the preparation of a formal environmental document. A sampling of these issues includes:
  - Obtaining formal input from the Army Corp of Engineers on wetland issues (primarily related to Option 2).
  - Additional detailed transportation system operations analysis (to include Park Lane and the surrounding transportation network in a holistic approach).
  - Analysis to address public concerns related to potential noise, air quality and socio-economic impacts of an additional freeway corridor through the City.

*Based on the lack of technical information provided in the UDOT Corridor Preservation Study, we recommend that the City wait to consider UDOT's request to amend the Master Transportation Plan to include a preservation corridor until UDOT completes an Environmental Assessment (EA) or Environmental Impact Statement (EIS).*

Refer to **Appendix C** for additional information.

- 3) Based on our review of the technical analysis performed by Horrocks Engineers, we concur that the North Legacy to Legacy connection option currently in the master transportation plan is not viable for UDOT based on its inability to reasonably accommodate 2040 traffic volumes.

*We recommend that the City consider an amendment to the Master Transportation Plan to remove this alignment option. This recommendation should be considered in conjunction with the recommendations in Appendix F related to a local access interchange at I-15/ Shepard Lane.*

Refer to **Appendix D** for additional information.

- 4) Based on our review of the process followed by Horrocks Engineers to identify preservation corridor options as a part of the UDOT Study, a full range of viable options was considered.

Our independent identification of additional options resulted only in modifications to or combinations of one or more of the four UDOT options. Although some of the additional options represented a perceived improvement as compared to the original option, none proved to address the primary issues of concern or resulted in the elimination of relevant questions better than any other option.

Refer to **Appendix E** for additional information.

- 5) Park Lane is unique in that it is located at the convergence of three freeway systems (US 89, I-15 and Legacy Parkway) and is the only current I-15 interchange serving the areas west of I-15 between 200 North/SR 273 in Kaysville ( $\pm$  4 miles to the north) and Parrish Lane in Centerville ( $\pm$  5 miles to the south).

General assessments of traffic operating conditions on Park Lane were provided by UDOT as a part of the corridor preservation options considered in the UDOT study. However, capacity and safety issues related to Park Lane exist independent of the UDOT corridor preservation effort.

Although our assessment considered multiple solutions to issues on Park Lane, the primary solution to capacity and safety issues, now and into the future, appears to be the provision for additional I-15 interchanges that provide direct access to areas west of I-15 between Parrish Lane and SR 273.

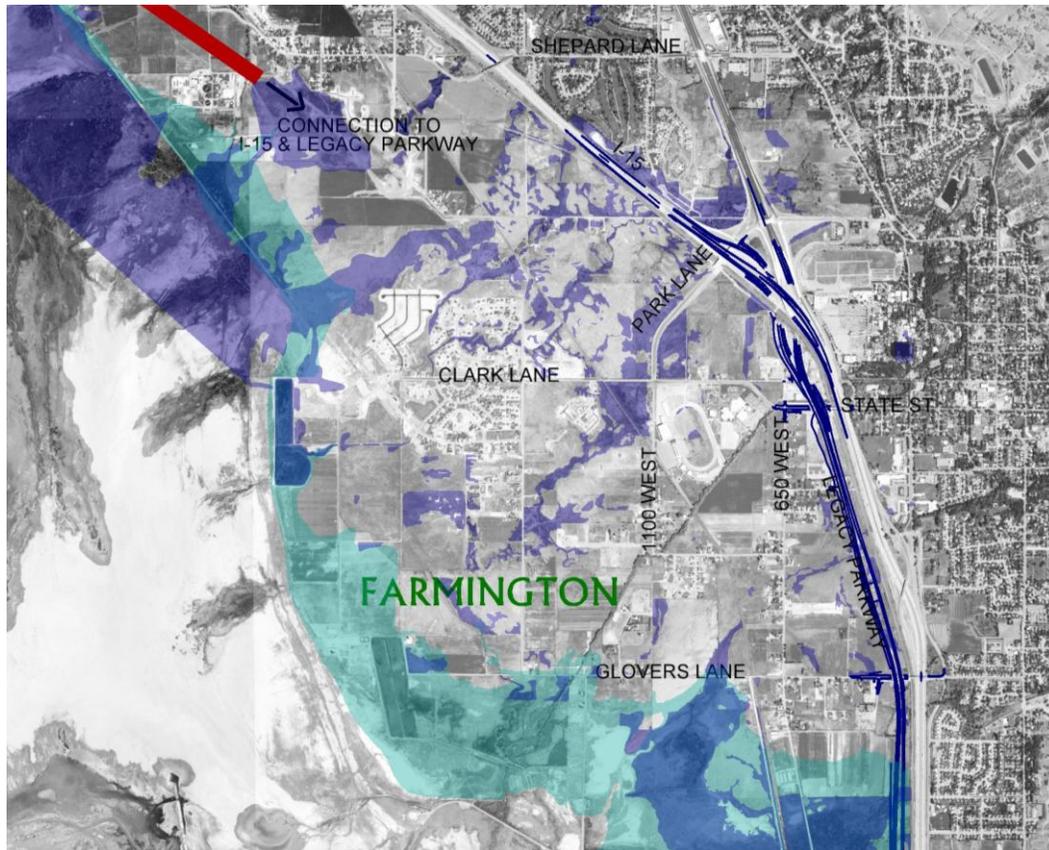
Based on our overall assessment of potential interchange locations, the most viable appears to be a new interchange at Shepard Lane. As such, we recommend the following:

- 1) *The City should initiate an effort to look at the development potential west of I-15 and quantify the magnitude of traffic, identify and analyze key traffic access and circulation issues, and study the feasibility for a local access Shepard Lane interchange.*
- 2) *If a local access interchange at this location is feasible, the City pursue an amendment to the Master Transportation Plan to include a future I-15 interchange at Shepard Lane with connections to only the local roadway network east and west of I-15 in conjunction with removing the City's current North Legacy Connection alignment option (See Appendix D).*

Refer to **Appendix F** for additional information.

**APPENDIX A**  
**North Legacy to Legacy Connection Corridor Preservation Study**  
**(UDOT Study, June 14, 2007, Horrocks Engineers)**

# North Legacy to Legacy Connection Corridor Preservation Study



**UDOT Project S-0067(13)0**  
**June 14, 2007**

## Executive Summary

The scope of this study was to examine potential corridors for a future connection between the existing Legacy Parkway and the future North Legacy Highway. The selected corridor will be used in land use planning and corridor preservation activities. The selected concept must be a “continuation of the Legacy Parkway” and must meet the following four criteria:

- Provide a direct connection to I-15,
- Provide a direct connection to the Legacy Parkway,
- Provide a local access connection to the Legacy/North Legacy Parkway, and
- Meet the transportation needs based on 2040 traffic predictions.

Four scenarios were developed and analyzed for this review

Option 1 follows the Denver & Rio Grande alignment with system interchanges north and south of Park Lane. It impacts wildlife and wetlands at the south system interchange. Traffic demands are met through 2030, with congestion and delays evident by 2040. Local access is provided via a grade separated interchange near Park Lane. Overall this option ranked second in meeting the selection criteria, and has an estimated planning level cost of \$330 million.

Option 2 aligns the road to the west, parallel to the Great Salt Lake Shoreline. It has the greatest impact to wildlife and wetlands of any of the reviewed options. Regional traffic demands are met through 2030, with increasing delays and congestion through 2040. This alignment does little to alleviate severe congestion at the Park Lane interchange. Overall this option ranked fourth in meeting the selection criteria, and has an estimated planning level cost of \$310 million.

Option 3 follows the Denver & Rio Grande alignment with a combined system interchange between State Street and Glovers Lane. Regional traffic is served adequately through the 2040 design year. Local access is provided via a grade separated interchange near Park Lane. Operating characteristics of I-15 and the Legacy Parkway make this the most favorable to the local transportation system. Overall this option ranked first in meeting the selection criteria, and has an estimated planning level cost of \$260 million.

Option 4 parallels the I-15 corridor near Lund Lane, extends over Park Lane and the Station Park commercial center with an elevated structure and connects to I-15 and Legacy Parkway between State Street and Glovers Lane. Local access is potentially served with an interchange between Lund Lane and Park Lane. This local connection provides access, but does little to improve congestion on the local street network. Traffic demands are met through 2040 for this connection, although other parts of the local and regional network have increased congestion when compared to other concepts. Overall this option ranked third in meeting the selection criteria, and has an estimated planning level cost of \$410 million.

After reviewing these four options, our technical analysis concluded that Option 3 best met the study criteria provided. A subjective review of the impacts to wetlands, wildlife, residences, businesses and other socioeconomic issues was outside of the scope of this study, and was not performed. A planning level estimate of costs for construction, right-of-way, and environmental mitigations is included in the report.

## Study Scope

The scope of this study was to examine potential corridors for a future connection between the existing Legacy Parkway and the future North Legacy Highway. The selected corridor will be used in land use planning and corridor preservation activities. The following criteria were used in the selection of concepts:

1. Provide a direct connection to I-15. This condition requires a system to system interchange, which is characterized by high-speed, free-flow ramps connecting the individual traffic movements.
2. Provide a direct connection to the Legacy Parkway. This condition requires a system to system interchange, which is characterized by high-speed, free-flow ramps connecting the individual traffic movements.
3. Provide local access connections to the Legacy/North Legacy Parkway. This condition would provide access by means of a grade separated interchange. The type and size of the interchange would be determined by future operational studies.
4. Meet the transportation needs based on 2040 traffic predictions. Traffic volumes are based on existing traffic counts and historical trends for growth along the Wasatch Front. Existing and proposed land uses and the Wasatch Front Regional Council (WFRC) travel demand model were also used to generate traffic volumes for the design year of 2040.

The selected concept is intended to function as a continuation of the existing Legacy Parkway. It is anticipated that design principles and decisions from the Legacy Parkway would be carried forward in the design of the North Legacy Parkway. The estimated right-of-way 'footprint' is expected to be 300 feet, with a divided median. Right-of-way requirements would be greater at the system to system interchanges, and at grade-separated interchanges with local streets. Specific right-of-way requirements and cost estimates were outside of the scope of this study. Estimates for costs are based on construction costs only, based on current costs.

## Examination of Concepts

The study area for the connection between Legacy Parkway, I-15, and North Legacy lies within the municipal boundaries of Farmington City. This area was chosen due to the convergence of the individual highway alignments. Legacy Parkway and I-15 parallel each other as they extend toward the north, currently terminating at the I-15/US-89 interchange. Proceeding northward, the existing I-15 and planned North Legacy alignments diverge, making an interchange connection more disruptive to existing homes and businesses. The large amount of undeveloped land facilitates the construction of an interchange system with fewer impacts to existing properties. Additionally, the Utah Transit Authority (UTA) is constructing the *FrontRunner* Commuter Rail with a station to be built near the Park Lane interchange at I-15. The location of this station provides an additional multi-modal connection that would complement a Legacy/North Legacy/I-15 interchange.

## Option 1 – Rio Grande Split Interchanges Alignment



*Option #1*

Denver & Rio Grande Alignment  
I-15 Connection near Shepard Lane  
Legacy Parkway Connection near Lund Lane

*North Legacy Connection*

## **Review of the selection criteria for Option 1, Rio Grande Split Interchanges Alignment:**

1. *Provide a direct connection to I-15.* Connection to I-15 is provided at the north end of the study area near Lund Lane. A collector/distributor system is developed north of the Park Lane interchange to allow for movements to the North Legacy Parkway. Operationally, these connections continue to function with acceptable levels of service through 2030, but could potentially degrade to unacceptable delays by 2040. Points of potential congestion will be the system connection to I-15 due to the tight radii of the ramps. Traffic with a destination of North Legacy will continue to move through the I-15/Park Lane/US-89 interchange, causing it to suffer with the increasing traffic.
2. *Provide a direct connection to the Legacy Parkway.* Connection to the existing Legacy Parkway is made at the south end of the study area, south of Glovers Lane. This connection will result in impacts to adjoining wetlands, and the Great Salt Lake floodplain.
3. *Provide local access connections to the Legacy/North Legacy Parkway.* It is expected that local access will be made by connecting to the existing Park Lane.
4. *Meet the transportation needs based on 2040 traffic predictions.* Overall, this option will function at adequate levels, but it is anticipated that the study area will be at or near failure by the design year of 2040.

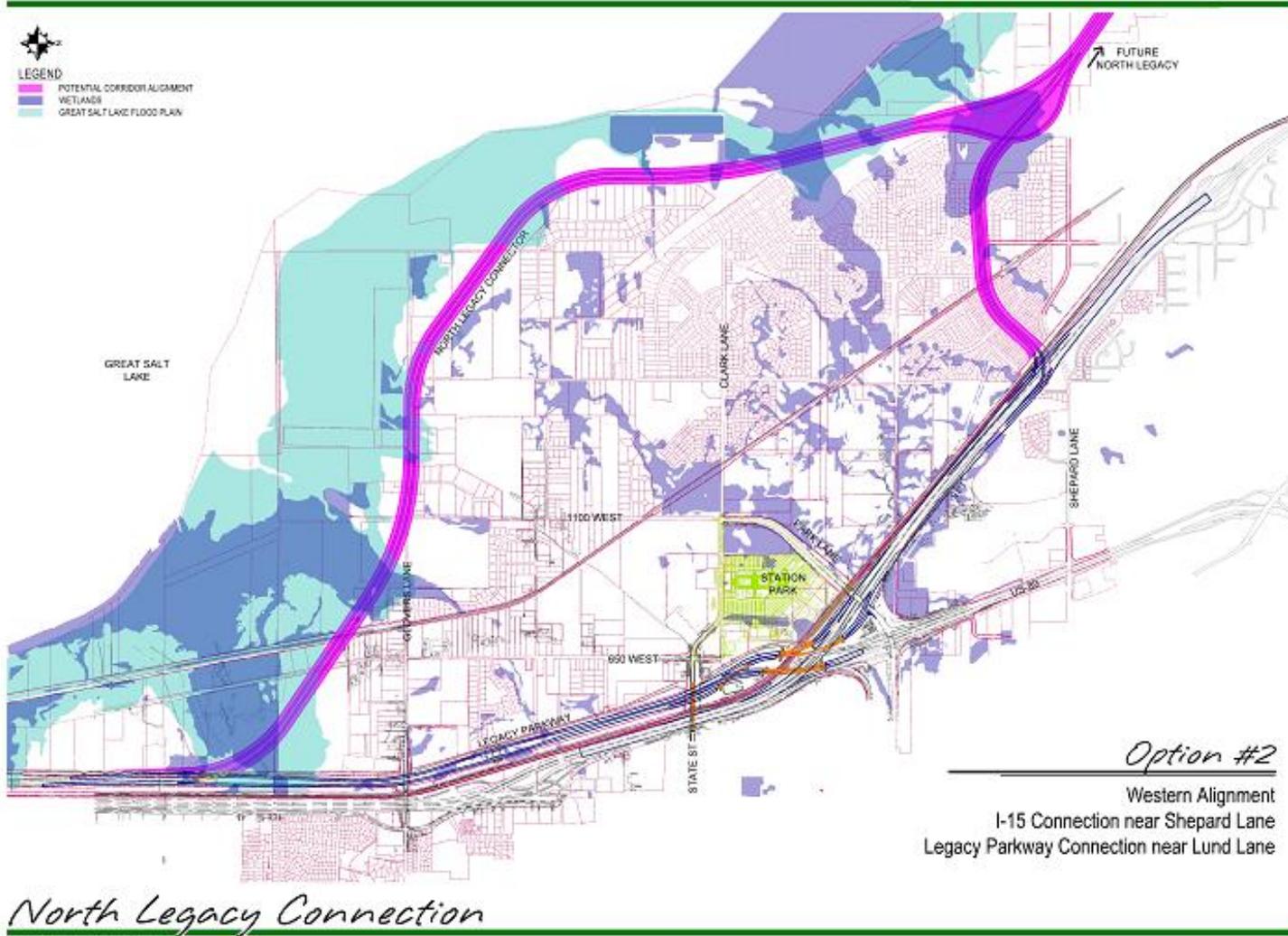
By providing local access to Park Lane near the commercial developments, some traffic will be encouraged to use Legacy Parkway, drawing traffic away from the I-15 Park Lane interchange. However, all users whose ultimate destination is SB I-15 will continue to use the Park Lane ramps to access I-15, since the North Legacy/I-15 system interchange is sited north of the commercial development.

There is some concern that the wide right-of-way will have negative impacts on adjacent neighborhoods, acting as a wall between neighborhoods. The impacts to wildlife and wetlands would likely face similar challenges experienced by the construction of the Legacy Parkway.

### Planning Level Cost Estimates:

- Construction: \$200 million.
- Right-of-Way: \$100 million.
- Environmental Mitigation: \$30 million.
- Total cost: \$330 million.

## Option 2 – Great Salt Lake Shoreline Alignment



**Review of the selection criteria for Option 2, Great Salt Lake Shoreline Alignment:**

1. *Provide a direct connection to I-15.* Connection to I-15 is provided at the north end of the study area near Lund Lane. A collector/distributor system is developed north of the Park Lane interchange to allow for the movements to Legacy Parkway. Operationally, these connections continue to function with acceptable levels of service through 2030, but could potentially degrade to unacceptable delays by 2040. Points of potential congestion will be the system connection to I-15 due to the tight radii of the ramps. Traffic with a destination of North Legacy will continue to move through the I-15/Park Lane/US-89 interchange, causing it to experience additional delays with the increasing traffic.
2. *Provide a direct connection to the Legacy Parkway.* Connection to the existing Legacy Parkway is made south of Glovers Lane. This connection will result in major impacts to adjoining wetlands, and the Great Salt Lake floodplain.
3. *Provide local access connections to the Legacy/North Legacy Parkway.* Potential local access connections could be available at 1100 West, or at Clark Lane. Further study would be required to determine the best option for the local street network. The location of this corridor far away from the major commercial areas in Farmington would discourage the use of Legacy Parkway as an alternative to I-15. The increase in travel time necessary to access Legacy Highway would likely result in a disproportionate percentage of traffic choosing to use the I-15 corridor. Traffic on the local street network could also increase as drivers search for multiple alternate paths to access I-15 at points other than the Park Lane interchange.
4. *Meet the transportation needs based on 2040 traffic predictions.* Our review indicates that this option would result in increased traffic on I-15 and an under-utilized Legacy Parkway through the study area. It is likely that the Park Lane interchange would fail sooner with this option than when compared to the other studied concepts.

This concept has fewer impacts on neighborhoods as a dividing force. The impacts to wildlife and wetlands would likely face similar challenges experienced by the construction of the Legacy Parkway. Obtaining permits from Federal and State agencies with environmental oversight would be a long and expensive process. Impacts to the local transportation system are somewhat unfavorable. Operational characteristics for the regional network are the least desirable of all the concepts reviewed.

**Planning Level Cost Estimates:**

- Construction: \$200 million.
- Right-of-Way: \$50 million.
- Environmental Mitigation: \$60 million.
- Total cost: \$310 million.

### Option 3 – Rio Grande South Interchange Alignment



*Option #3*  
Denver & Rio Grande Alignment  
I-15 & Legacy Parkway Connection  
at the 200 West Interchange

*North Legacy Connection*

### **Review of the selection criteria for Option 3, Rio Grande South Interchange Alignment:**

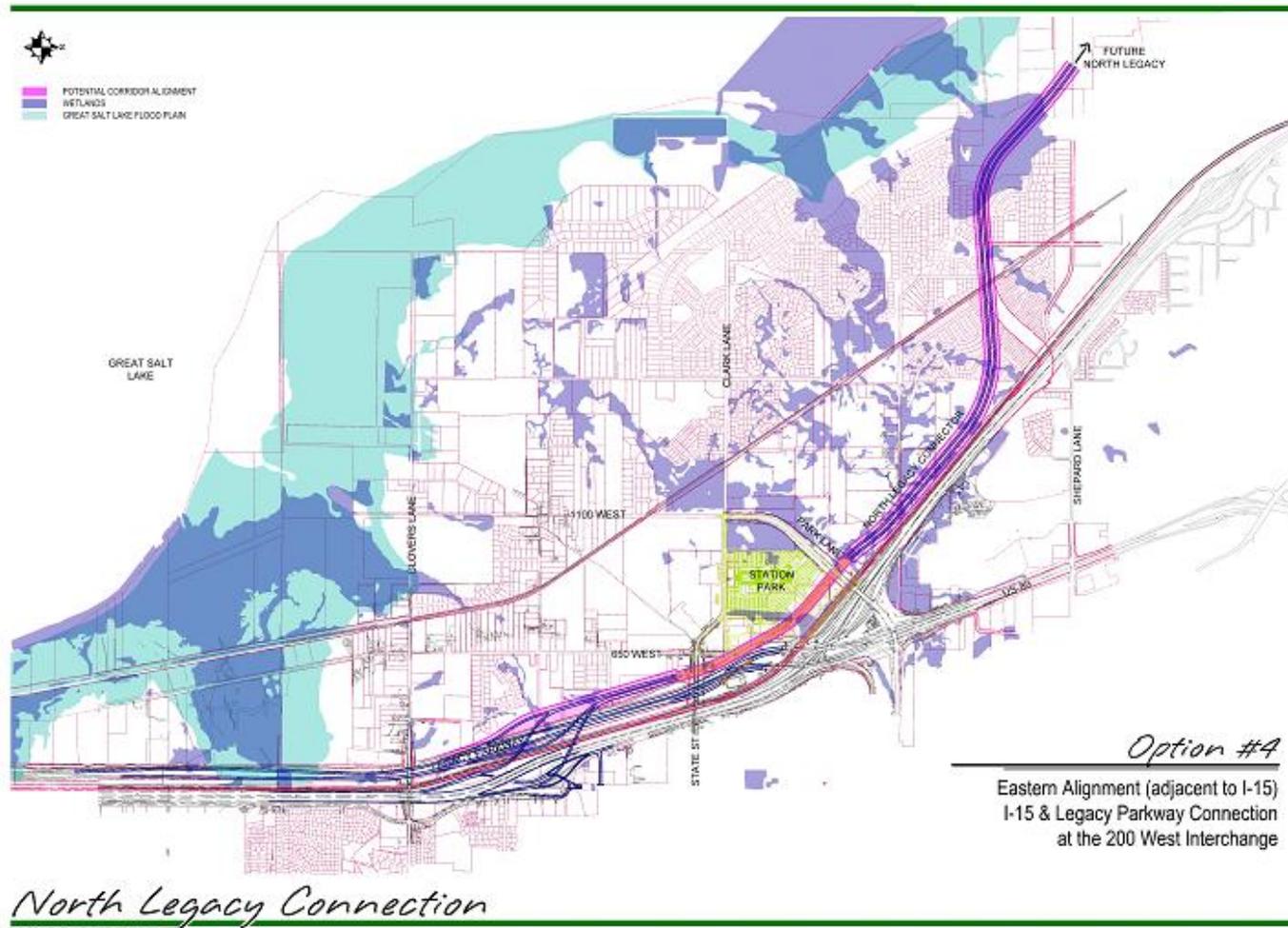
1. *Provide a direct connection to I-15.* Direct connection to I-15 is made between Glovers Lane and State Street. This option has the advantage of routing traffic bound for the North Legacy Parkway away from the Park Lane interchange. The ramps at this south interchange have a higher design speed than the north interchange option.
2. *Provide a direct connection to the Legacy Parkway.* Direct connection to the Legacy Parkway is made at the same system interchange with I-15. Overall land impacts are somewhat less by combining both direct connections in the same area. Wetland/wildlife impacts are reduced by creating this connection north of Glovers Lane.
3. *Provide local access connections to the Legacy/North Legacy Parkway.* It is expected that local access will be made to connect to the existing Park Lane. Local access provided to this street will encourage the use of Legacy due to the close proximity to commercial development, and the ability to avoid the Park Lane interchange by using the Legacy interchange.
4. *Meet the transportation needs based on 2040 traffic predictions.* Our review of this concept indicates that the system interchanges function well to the 2040 design year. Traffic at the Park Lane interchange is congested, although the availability to use the Legacy Parkway helps to alleviate some of this traffic.

Similar to Option 1, there is concern that the wide right-of-way will have negative impacts on adjacent neighborhoods, acting as a wall between neighborhoods. The impacts to wildlife and wetlands are less than the first two options, but not entirely avoided. This option is the most favorable to the local transportation system, and has the best operational characteristics for the regional network.

#### **Planning Level Cost Estimates:**

- Construction: \$150 million.
- Right-of-Way: \$100 million.
- Environmental Mitigation: \$10 million.
- Total cost: \$260 million.

## Option 4 – I-15 Parallel Alignment



### **Review of the selection criteria for Option 4, I-15 Parallel Alignment:**

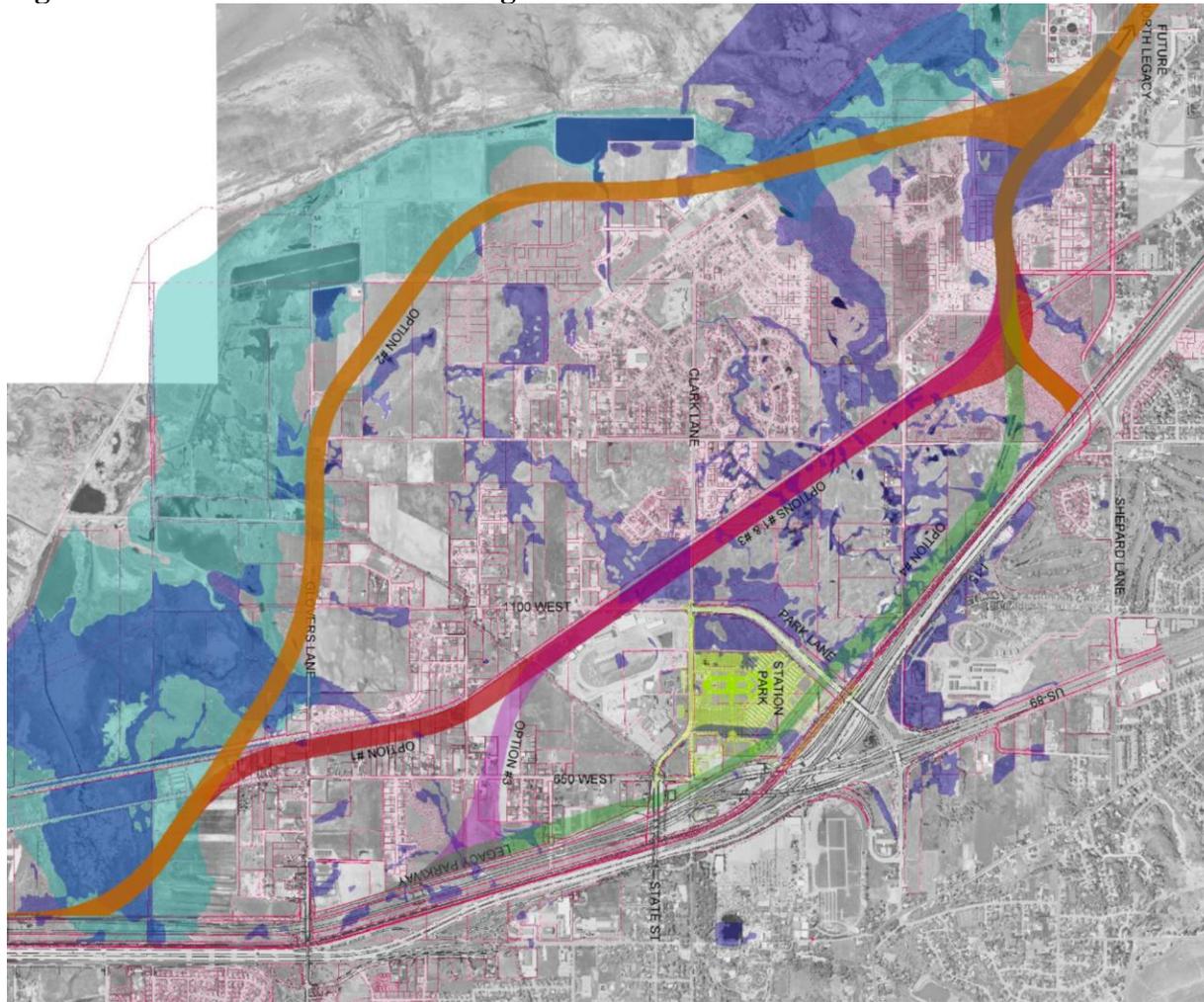
1. *Provide a direct connection to I-15.* Although this proposed alignment parallels I-15 near Lund Lane, the actual connection with I-15 occurs between State Street and Glovers Lane. To extend between Park Lane and State Street, the Parkway Connection must be elevated above Park Lane and the Station Park commercial development.
2. *Provide a direct connection to the Legacy Parkway.* Direct connection to the existing Legacy Parkway is in the same location as the I-15 connection.
3. *Provide local access connections to the Legacy/North Legacy Parkway.* This option provides the least favorable local access connections to the Legacy Parkway. A local connection could potentially be constructed somewhere between Lund Lane and Park Lane. However, this connection would not function well as a means to draw traffic away from the Park Lane interchange.
4. *Meet the transportation needs based on 2040 traffic predictions.* Our review indicates that this option will operate at an adequate level of service through the 2040 design year.

This option will incur major impacts over the Station Park commercial development with the construction of the elevated structure over Park Lane and Station Park. This option is the least favorable of all options for the local transportation system, although the regional system functions adequately with this option.

#### Planning Level Cost Estimates:

- Construction: \$300 million.
- Right-of-Way: \$100 million.
- Environmental Mitigation: \$10 million.
- Total cost: \$410 million.

**Figure 1 – Corridor Preservation Alignments**



**Table 1 – Summary of Planning Level Estimates**

| Option                            | Construction Cost | Right-of-Way Cost | Environmental Mitigation Cost | Total Cost | Technical Ranking |
|-----------------------------------|-------------------|-------------------|-------------------------------|------------|-------------------|
| 1 – Rio Grande Split Interchanges | \$200M            | \$100M            | \$30M                         | \$330M     | 2 <sup>nd</sup>   |
| 2 – Great Salt Lake Shoreline     | \$200M            | \$50M             | \$60M                         | \$310M     | 4 <sup>th</sup>   |
| 3 – Rio Grande South Interchange  | \$150M            | \$100M            | \$10M                         | \$260M     | 1 <sup>st</sup>   |
| 4 – I-15 Parallel                 | \$300M            | \$100M            | \$10M                         | \$410M     | 3 <sup>rd</sup>   |

## Conclusions

The selection of corridors was based on existing development, proposed land use and zoning, and availability of land for corridor preservation. A summary of these corridors is shown in Figure 1, Corridor Preservation Alignments.

Option 1 follows the Denver & Rio Grande alignment with system interchanges north and south of Park Lane. It impacts wildlife and wetlands at the south system interchange. Traffic demands are met through 2030, with congestion and delays evident by 2040. Local access is provided via a grade separated interchange near Park Lane. Overall this option meets the criteria with a grade “B” rating, with an estimated planning level cost of \$330 million.

Option 2 aligns the road to the west, parallel to the Great Salt Lake Shoreline. It has the greatest impact to wildlife and wetlands of any of the reviewed options. Regional traffic demands are met through 2030, with increasing delays and congestion through 2040. This alignment does little to alleviate severe congestion at the Park Lane interchange. Overall this option meets the criteria with a grade “C” rating, with an estimated planning level cost of \$310 million.

Option 3 follows the Denver & Rio Grande alignment with a combined system interchange between State Street and Glovers Lane. Regional traffic is served adequately through the 2040 design year. Local access is provided via a grade separated interchange near Park Lane. Operating characteristics of I-15 and the Legacy Parkway make this the most favorable to the local transportation system. Overall this option meets the criteria with a grade “A” rating, with an estimated planning level cost of \$260 million.

Option 4 parallels the I-15 corridor near Lund Lane, extends over Park Lane and the Station Park commercial center with an elevated structure and connects to I-15 and Legacy Parkway between State Street and Glovers Lane. Local access is potentially served with an interchange between Lund Lane and Park Lane. This local connection provides access, but does little to improve congestion on the local street network. Traffic demands are met through 2040 for this connection, although other parts of the local and regional network have increased congestion when compared to other concepts. Overall this option meets the criteria with a grade “C” rating, with an estimated planning level cost of \$410 million.

After reviewing these four options, our technical analysis concluded that Option 3 best met the study criteria provided. A subjective review of the impacts to wetlands, wildlife, residences, businesses and other socioeconomic issues was outside of the scope of this study, and was not performed. A planning level estimate of costs for construction, right-of-way, and environmental mitigations is included in the report.

## **APPENDIX B**

### **Review of UDOT Traffic Volume Projections**

Several meetings were conducted with UDOT's consultant engineer (Horrocks Engineers) as well as a single meeting with the Wasatch Front Regional Council as a part of this review effort.

Horrocks utilized the 2030 Wasatch Front Regional Council (WFRC) Regional Travel demand model to develop the traffic forecasts for the corridor preservation study. Forecasts volumes were used to perform detailed analysis of the various corridor options to determine how well they accommodated future demands. The focus of the analysis was on mainline and ramp sections of I-15, Legacy Parkway and North Legacy Highway.

Key elements of the forecasting effort include:

- 1) Review of changes to North Legacy Highway corridor daily traffic volumes based on variations in facility type, facility speed, and number of lanes in the regional travel demand model. Horrocks found that demand increases significantly with a high-speed freeway corridor versus a two-lane arterial corridor. Horrocks based the corridor preservation study on a high-speed freeway corridor.
- 2) Manual projection of year 2030 traffic volume forecasts to represent year 2040 traffic volume forecasts. Horrocks applied reasonable growth trends for the area to 2030 traffic volume forecasts to develop 2040 traffic volumes used in the analysis.
- 3) No adjustments were made to the 2030 WFRC base land use and traffic analysis zone structure assumptions in the regional travel demand model. Some have questioned the need to account for specific land use characteristics and patterns that are not reflected in the base WFRC model.

The regional travel demand model maintained by the WFRC currently includes a two lane arterial roadway along the general alignment of the proposed North Legacy Highway facility. WFRC year 2030 daily traffic forecasts are approximately 12,000 vehicles a day.

Limitations associated with the regional travel demand modeling effort include:

- No direct inclusion of planned land uses west of I-15 in the vicinity of Station Park
- No direct model forecasting of 2040 traffic or transit volumes.
  - Model is based on 2030 regional and local origin and destination patterns.
  - Model is based on 2030 land uses and transportation network.
- Lack of analysis or assessment of phased development options (arterial to freeway).
- No definition of purpose and need as it relates to a freeway versus arterial corridor.
- Lack of formal Environmental Assessment (EA) and Environmental Impact Statement (EIS) process elements.

Based on our assessment, the key question not specifically addressed as a part of the corridor preservation study relates to substantiating the purpose and need for the proposed facility. This is one of the primary questions answered as a part of a formal environmental document (EA and EIS). The traffic volume forecasts, and the land use and transportation system information they are based on, are an important input when looking at purpose and need.

However, it is important to note that the UDOT Corridor Preservation Study process doesn't require establishment of purpose and need, but seeks only to establish the most viable corridor so that preservation efforts can be carried out and key right-of-way preserved until the time that a formal environmental document can be prepared.

As such, the traffic model projections prepared by UDOT appear to be reasonable for use in the preparation of a corridor preservation study.

## APPENDIX C

### Assessment of UDOT Corridor Alignment Options

Of the four alignment options considered by UDOT, each represents a potentially viable option *when considering only the four UDOT study criteria*. However, there are numerous additional issues that cannot be adequately addressed in a corridor preservation study but will require the preparation of a formal environmental document. A sampling of these issues includes:

- Obtaining formal input from the Army Corp of Engineers on wetland issues (primarily related to Option 2).
- Additional detailed transportation system operations analysis (to include Park Lane and the surrounding transportation network in a holistic approach).
- Analysis to address public concerns related to potential noise, air quality and socio-economic impacts of an additional freeway corridor through the City.

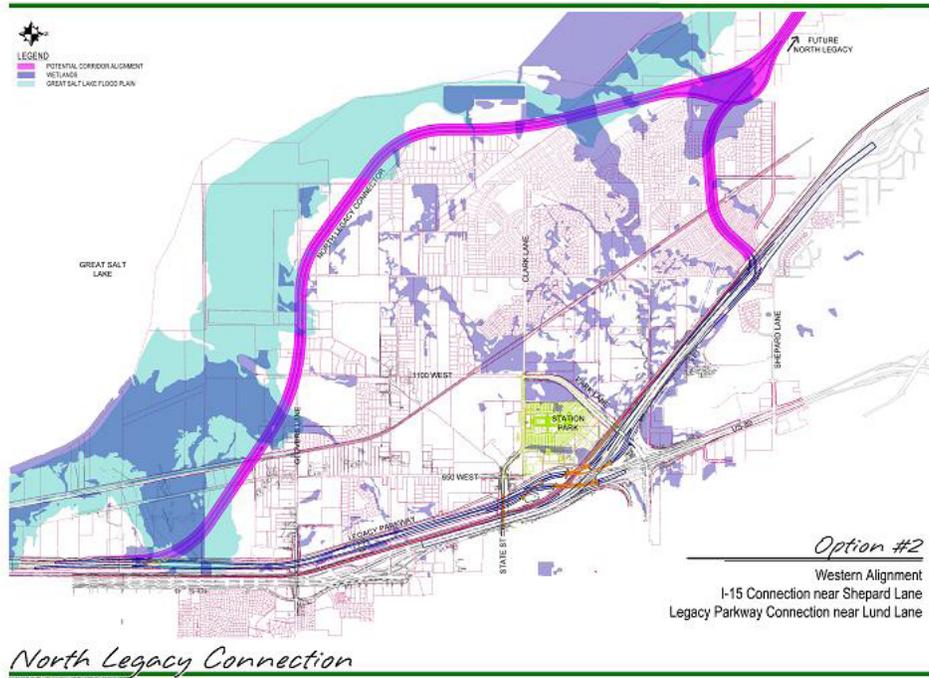
Figures C1 through C4 depict each of the UDOT options. Table C1 presents a summary of general pros and cons of each UDOT option as well as the current master transportation plan option. These pros and cons were developed based on asking the question, "Which option is best for Farmington City."

In looking at pros and cons, each option has either a substantial con or requires further study in order to conclude that the particular option is indeed "better" than the others or the "best" for the City. The preparation of an environmental document would likely assist in providing answers to many of the technical questions but would not help in making decisions on items that are goal oriented or value based.

*Based on the lack of technical information provided in the UDOT Corridor Preservation Study, we recommend that the City wait to consider UDOT's request to amend the Master Transportation Plan to include a preservation corridor until UDOT completes an Environmental Assessment (EA) or Environmental Impact Statement (EIS).*

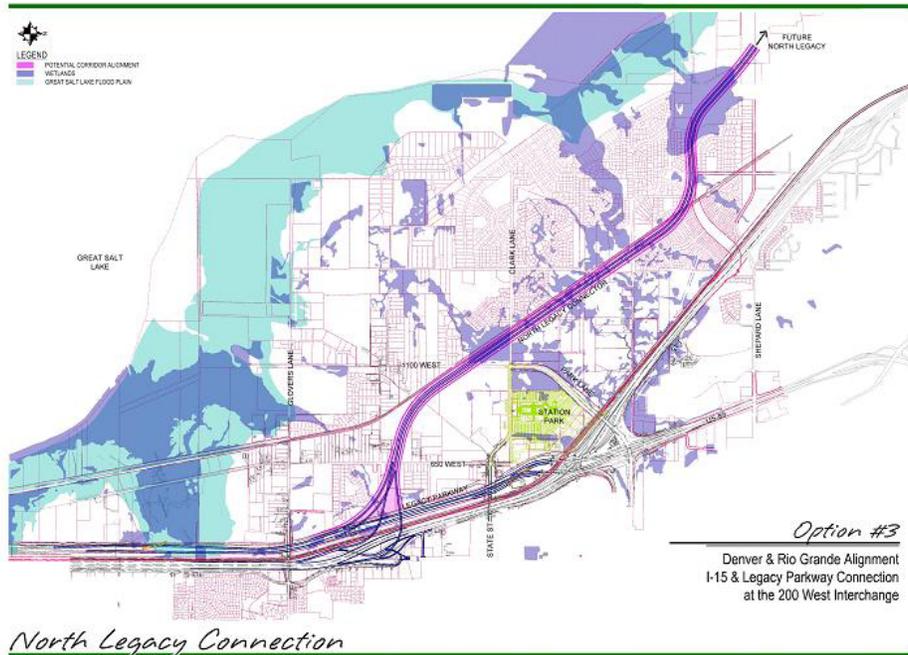


Figure C1: UDOT Corridor Preservation Option 1



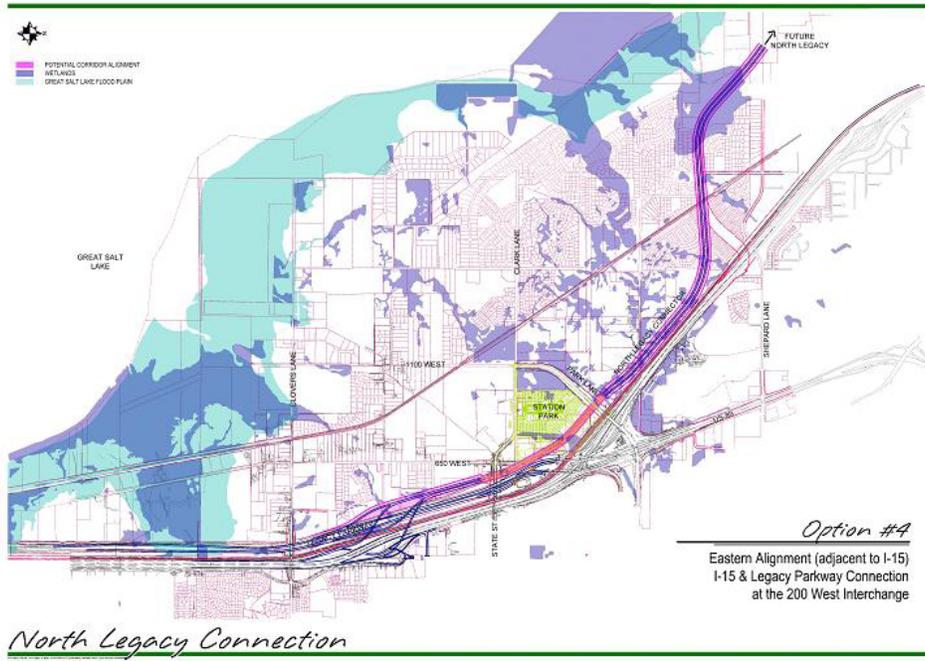
*North Legacy Connection*

Figure C2: UDOT Corridor Preservation Option 2



*North Legacy Connection*

Figure C3: UDOT Corridor Preservation Option 3



*North Legacy Connection*

Figure C4: UDOT Corridor Preservation Option 4

**TABLE C1**  
**Corridor Preservation Option Pros and Cons**

| <b>Option</b> | <b>Primary Alignment</b>             | <b>Primary Interchanges</b>                            | <b>Overall Pros</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Overall Cons</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------|--------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1             | Denver & Rio Grande Alignment        | I-15 near Shepard Ln. and Legacy Parkway near Lund Ln. | <ul style="list-style-type: none"> <li>• Adjacent to existing (and potentially future) rail and utility corridor – current divider.</li> <li>• Potential for additional interchange connections to western residential and commercial roadways; reduce demand on Park Lane/I-15 interchange.</li> <li>• Utilizes current Master Transportation Plan right of way near Shepard Ln.</li> <li>• Provides a distinct geographic separation between commercial and residential areas.</li> </ul>                    | <ul style="list-style-type: none"> <li>• Additional geographic division of Farmington.</li> <li>• Potential for increased noise and air quality impacts to additional residential areas.</li> <li>• Split interchange configurations for Legacy Parkway and I-15; operational and right-of-way considerations.</li> <li>• Impacts to commercial properties west of I-15.</li> </ul>                                                                                         |
| 2             | Western Alignment                    | I-15 near Shepard Ln. and Legacy Parkway near Lund Ln. | <ul style="list-style-type: none"> <li>• No additional geographic division of Farmington.</li> <li>• Potential for interchange connections to western roadways.</li> <li>• Utilizes current Master Transportation Plan right of way near Shepard Ln.</li> <li>• Likely the least impact to existing and planned development.</li> </ul>                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• Potential for interchange connections to western residential roadways</li> <li>• Potential changes to land use near interchanges</li> <li>• Potential to decrease demand on the Park Lane/I-15 interchange.</li> <li>• Significant concerns regarding viability of the option due to wetland and wildlife habitat issues.</li> <li>• Western alignment likely to serve less of the regional demand; impacts along I-15.</li> </ul> |
| 3             | Denver & Rio Grande Alignment        | I-15 & Legacy Parkway at the 200 W. interchange        | <ul style="list-style-type: none"> <li>• Combined interchange area for both I-15 and Legacy Parkway.</li> <li>• Adjacent to existing (and potentially future) rail and utility corridor – current divider.</li> <li>• Potential for additional interchange connections to western residential and commercial roadways; reduce demand on Park Lane/I-15 interchange. Would require detailed analysis.</li> <li>• Provides a distinct geographic separation between commercial and residential areas.</li> </ul> | <ul style="list-style-type: none"> <li>• Additional geographic division of Farmington.</li> <li>• Potential for increased noise and air quality impacts to additional residential areas.</li> <li>• Impacts to commercial lands west of I-15.</li> </ul>                                                                                                                                                                                                                    |
| 4             | Eastern Alignment (adjacent to I-15) | I-15 & Legacy Parkway at the 200 W. interchange        | <ul style="list-style-type: none"> <li>• No additional geographic division of Farmington.</li> <li>• Potential noise and air quality concerns stay primarily within the currently impacted areas.</li> </ul>                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• Limited ability to provide local access connections elevated facility in vicinity of Station Park development.</li> <li>• Close proximity to I-15; incident management concerns.</li> <li>• Further limits potential for future additional I-15 interchange connections to the local transportation network.</li> </ul>                                                                                                            |
| MTP           | I-15 Frontage Road Alignment         | Legacy Parkway/ US-89/ I-15 Interchange                | <ul style="list-style-type: none"> <li>• Currently planned.</li> <li>• No additional geographic division of Farmington.</li> <li>• Potential noise and air quality concerns stay primarily within the currently impacted areas.</li> </ul>                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• No direct Legacy Parkway to North Legacy Highway connection.</li> <li>• Likely won't accommodate year 2040 traffic demands.</li> <li>• Constrained system to system ramp geometry.</li> </ul>                                                                                                                                                                                                                                      |

## **APPENDIX D**

### **Assessment of the City's Current Master Transportation Plan Alignment Option as a Viable UDOT Option**

Based on our review of the technical analysis performed by Horrocks Engineers, we concur that the North Legacy to Legacy connection option currently in the master transportation plan is not viable for UDOT based on its inability to reasonably accommodate 2040 traffic volumes.

*We recommend that the City consider an amendment to the Master Transportation Plan to remove this alignment option. This recommendation should be considered in conjunction with the recommendations in Appendix F related to a local access interchange at I-15/ Shepard Lane.*

## **APPENDIX E**

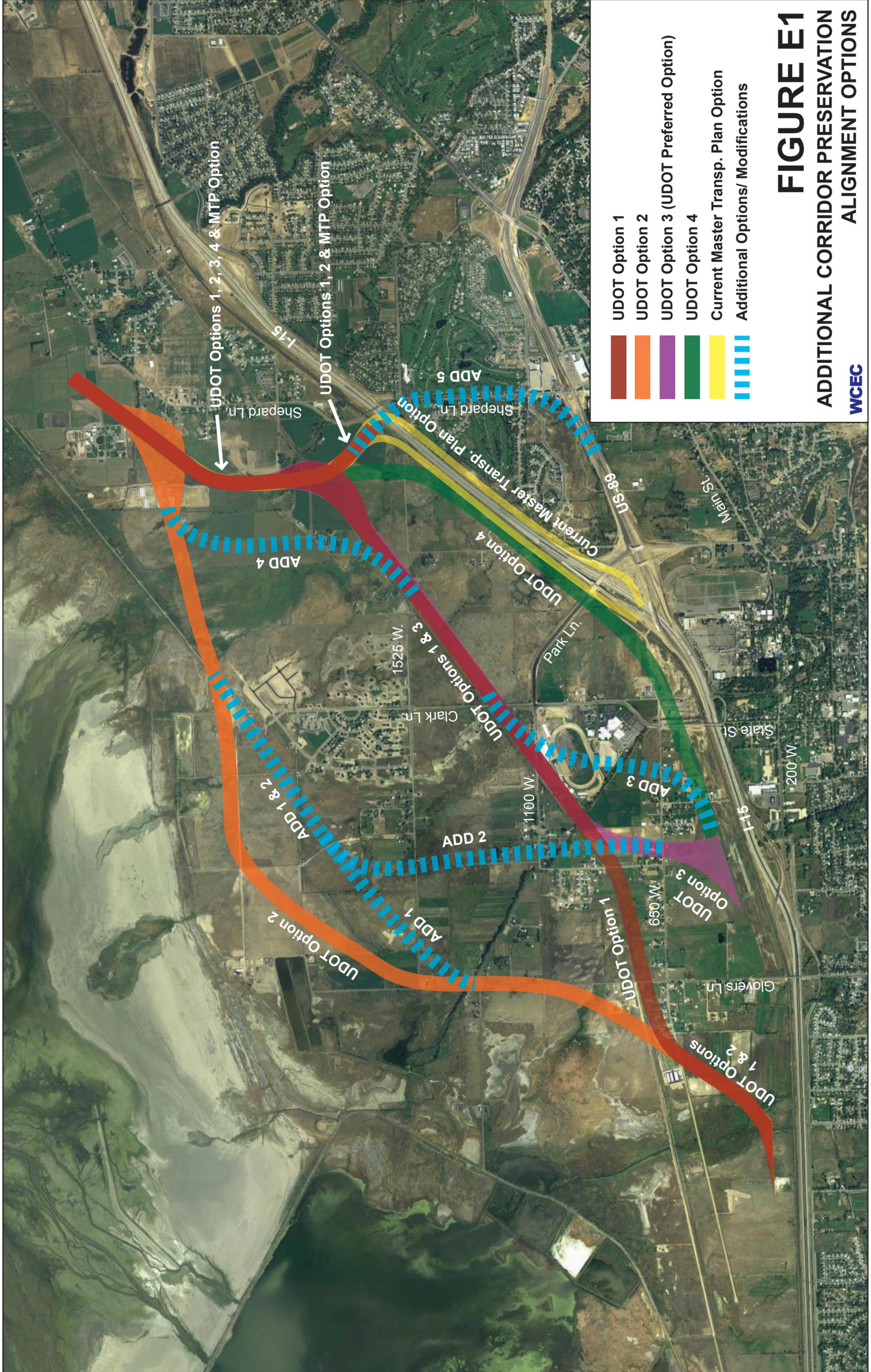
### **Identification and Assessment of Additional Corridor Alignment Options**

Based on our review of the process followed by Horrocks Engineers to identify preservation corridor options as a part of the UDOT Study, a full range of viable options was considered.

Our independent identification of additional options resulted only in modifications to or combinations of one or more of the four UDOT options. Although some of the additional options represented a perceived improvement as compared to the original option, none proved to address the primary issues of concern or resulted in the elimination of relevant questions better than any other option.

Figure E1 depicts the four UDOT options as well as additional corridor options that were considered.

The level of detail found in a corridor preservation study is more general in nature than what would normally be included in an environmental document and ultimately the final design. Issues such as precise interchange locations, lane configurations, vertical and horizontal alignments, and right-of-way requirements are not addressed until the environmental document is prepared and approved and final design is completed.



# **APPENDIX F**

## **Assessment of Park Lane Capacity and Safety Considerations**

### **Introduction**

Park Lane is unique in that it is located at the convergence of three freeway systems (US 89, I-15 and Legacy Parkway) and is the only current I-15 interchange serving the areas west of I-15 between 200 North/SR 273 in Kaysville ( $\pm$  4 miles to the north) and Parrish Lane in Centerville ( $\pm$  5 miles to the south).

General assessments of traffic operating conditions on Park Lane were provided by UDOT as a part of the corridor preservation options considered in the UDOT study. However, capacity and safety issues related to Park Lane exist independent of the UDOT corridor preservation effort.

Current and planned land uses west of I-15 adjacent to Park Lane allow development that has been shown to generate substantial trips during peak periods. The proposed Station Park Transit Oriented Development will likely consume a substantial amount of the Park Lane peak hour capacity.

### **Station Park Traffic Impact Study**

A traffic impact study was prepared as a part of the Station Park Development (Station Park – 2007 Update Park Lane / Clark Lane Traffic Impact Study, February 2007, A Trans Transportation Engineering). This study analyzed traffic conditions on Park Lane at both the US-89 and I-15 interchanges for the year 2030.

The study shows that traffic volumes are expected to increase substantially as a result of development primarily west of I-15. Several geometric improvements will be required at the US-89 and I-15 interchanges to accommodate this increase. These improvements will maximize the capacity of both interchanges, however, many will require UDOT design variances to allow for narrower lanes and reduced shoulder widths.

Even with these improvements, the study indicates that future (2030) traffic demands on Park Lane at both the US-89 and I-15 interchanges will result in failing conditions.

Based on our review of the traffic impact study, we have significant concerns regarding the ability of Park Lane to accommodate future growth in travel demand west of I-15.

### **Park Lane Independent of the Corridor Preservation Effort**

Park Lane is the only I-15 interchange that connects the east and west sides of Farmington over a distance of approximately nine miles. The 2004 American Association of State Highway and Transportation Officials (AASHTO) Green Book states as a general rule of thumb that a minimum interchange spacing for urban areas should be one mile with two miles being appropriate in rural areas. Despite the fact that this rule of thumb represents minimum spacing, a four to five mile spacing of interchanges in this area will likely be insufficient when considering future travel demands for the area.

Looking at the area between 200 North/SR 273 in Kaysville and Parrish Lane in Centerville yields few feasible areas for future interchange development. The area south of the US-89/ Park Lane interchange is constrained by the location of I-15, the rail corridor and Legacy Parkway, making it extremely difficult to provide for a full access interchange that would provide a substantial benefit to Farmington City.

Areas north of the US-89/ Park Lane interchange are also constrained by the location of the rail corridor immediately west of I-15 as well as residential development located immediately east of I-15. The Shepard Lane crossing of I-15 represents the most feasible location for a future interchange.

Interchange alternatives studied in the past at this location garnered substantial opposition based on the idea that the interchange would serve as the primary connection between I-15 and Legacy North Highway. It is our understanding that none of the previous study efforts included the option of a local access interchange at Shepard Lane (Refer to November 2005 Farmington City Master Transportation Plan). This interchange option assumes that a Shepard Lane/ I-15 interchange would be configured so as to provide access only to the local transportation network east and west of I-15.

We estimate that a Shepard Lane interchange could reduce the demand on Park Lane by as much as 30 percent as well as accommodate a significant amount of traffic associated with potential development west of I-15.

### **Park Lane as an Important Element in the Corridor Preservation Effort**

In the context of UDOT's corridor preservation effort, Park Lane is a UDOT facility and an important element of the overall transportation system.

Local access connections are considered as a part of UDOT corridor preservation study, however the study does not provide quantitative information related to the future operations of Park Lane with any of the proposed options.

Under Farmington's current Master Transportation Plan, the goal for operating conditions on City streets and intersections is level-of-service "C" during usual travel times, with LOS "D" being acceptable for peak hours/conditions in urban areas (Section 3.1.5 Traffic Conditions, pp. 3-4).

General statements from the UDOT Corridor Preservation Study related to traffic operations for each option include:

- Option 1 – "Overall, this option will function at adequate levels, but it is anticipated that the study area will be at or near failure by the design year of 2040."
- Option 2 – "...this option would result in increased traffic on I-15 and an under-utilized Legacy Parkway through the study area. It is likely that the Park Lane intersection would fail sooner with this option than compared to other options."
- Option 3 – "...the system interchanges function well to the 2040 design year. Traffic at the Park Lane interchange is congested, although the availability to use the Legacy Parkway helps to alleviate some of this traffic."
- Option 4 – "...this option will operate at an adequate level of service through the 2040 design year...This option will incur major impacts over the Station Park commercial development with the construction of the elevated structure over Park Lane and Station Park. This option is the least favorable of all options for the local transportation system, although the regional system functions adequately with this option."

Our assessment indicates that UDOT Option 3, assuming it includes a local interchange access connection to Park Lane, will likely provide the greatest benefit to Park Lane traffic operations. Under this option, motorists will have two rather than one interchange access options (I-15/US-89

and North Legacy Highway) for regional access and circulation. However, a more detailed analysis is necessary to establish the magnitude of the benefit and specific operating level-of-service.

The UDOT Corridor Preservation Study does not provide sufficient quantitative information to demonstrate that Park Lane will function at an adequate level of service with any of the four options.

### **Additional Park Lane Improvement Concepts**

Additional Park Lane improvement concepts considered as a part of this assessment provided few if any viable options.

- Concept 1: Reconfigure the existing US-89/ Park Lane interchange from a tight-diamond to a Single Point Urban Interchange (SPUI). This option would reduce the number of signals at the interchange from two to one and likely provide a significant benefit to traffic operations. Current frontage road and ramp configurations prohibit this option as a through movement must be provided at off and on-ramp junctions.
- Concept 2: Reconfigure the existing I-15/ Park Lane interchange from a tight-diamond to a SPUI. In a manner similar to Concept 1, this option would reduce the number of signals at the interchange from two to one and likely provide a significant benefit to traffic operations. This concept would require a complete rebuild of the interchange and even then would be difficult to accomplish due to width of structure necessary to span I-15 and the adjacent rail facility.
- Concept 3: Widen the existing structures over I-15 and US-89 to accommodate additional capacity. Some widening/ expansion can be accommodated based on the current configuration. However, additional improvements necessary to ensure sufficient future capacity will require a complete reconstruction due to the type of retaining wall structures utilized in the original construction. Future demand may be such that additional widening would not cure capacity deficiencies but either shifts them to other parts of the system or changes the nature of the deficiencies.
- Concept 4: Construct an additional closely spaced but separate parallel facility over US-89 and I-15 immediately north of the existing facility. Under this concept, the new facility could accommodate westbound traffic and the existing facility would accommodate eastbound traffic. This would result in an even more unique interchange configuration requiring non-traditional intersection configurations and operations. Based on the uniqueness of such a concept, the viability is questionable and would require additional analysis. For the purposes of this assessment, this concept was considered infeasible.
- Concept 5: Eliminate local access from I-15 and/ or US-89. This option would look to improve capacity by restricting/ limiting regional access. Future demand will be such that this option would not cure capacity deficiencies but shift them to other parts of the system and change the nature of the deficiencies.

Our assessment of the current Park Lane configuration indicates that the current configuration is the most appropriate solution given the numerous locational constraints and issues in the area.

## **Recommendations**

Although our assessment considered multiple solutions to issues on Park Lane, the primary solution to capacity and safety issues, now and into the future, appears to be the provision for additional I-15 interchanges that provide direct access to areas west of I-15 between Parrish Lane and SR 273.

Based on our overall assessment of potential interchange locations, the most viable appears to be a new interchange at Shepard Lane. As such, we recommend the following:

- 1) *The City should initiate an effort to look at the development potential west of I-15 and quantify the magnitude of traffic, identify and analyze key traffic access and circulation issues, and study the feasibility for a local access Shepard Lane interchange.*
- 2) *If a local access interchange at this location is feasible, we recommend that the City pursue an amendment to the Master Transportation Plan to include a future I-15 interchange at Shepard Lane with connections to only the local roadway network east and west of I-15 in conjunction with removing the City's current North Legacy Connection alignment option (See Appendix D).*