WEST DAVIS
CORRIDOR

Technical Memorandum 18: UDOT's Draft EIS Locally Preferred Alternative

in support of the
Environmental Impact Statement

West Davis Corridor Project

Federal Highway Administration
Utah Department of Transportation

udot.utah.gov

UDOT Project No. S-0067(14)0

April 2013

WEST DAVIS CORRIDOR

Contents

Tables

Figure

Charts

1.0 Introduction

This technical memorandum documents the process used by the Utah Department of Transportation (UDOT) to identify its locally preferred alternative for the West Davis Corridor (WDC) Project in the Draft Environmental Impact Statement (EIS). The process included reviewing how the project alternatives would meet the purpose of the project and how they would affect the human and natural environment. Transportation and environmental information was reviewed both at the regional scale (by the total alternative) and at the local level (by city or area). Local information was reviewed to ensure UDOT considered how specific cities or neighborhoods may be affected by the alternatives.

Section 2.0 of this memorandum summarizes the transportation performance, costs, and impacts of the WDC alternatives. Section 3.0 identifies UDOT's locally preferred alternative and the reasons for its selection. Section 3.2 summarizes the reasons for UDOT's identification of a preferred southern option in Farmington and Kaysville, Section 3.3 summarizes the reasons for UDOT's identification of preferred northern alternatives north of Gentile Street, and Section 3.4 summarizes the reasons for UDOT's identification of a preferred northern option.

2.0 Summary of the WDC Alternatives' Transportation Performance, Costs, and Impacts

2.1 Alternatives Summary

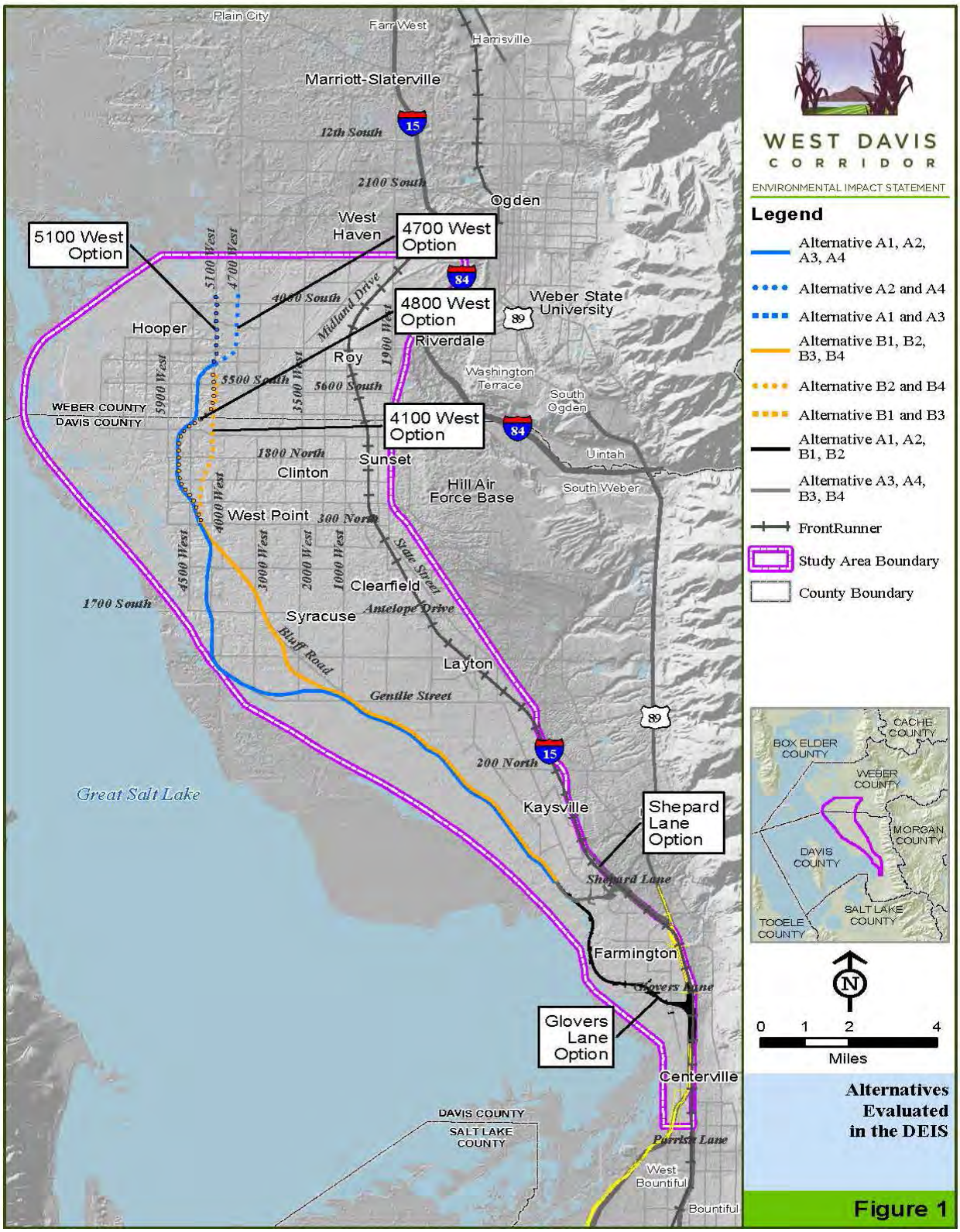
As described in Chapter 2 of the Draft EIS, a No-Action and eight action alternatives are being considered. The eight action alternatives are Alternatives A1–A4 and Alternatives B1–B4.

These alternatives are shown in Figure 1. They are also shown on individual maps in Figure 2-19 to Figure 2-26 in Volume IV of the Draft EIS.

As shown in Figure 1 below, all of the action alternatives use one of two southern options in Farmington. Alternatives A1, A2, B1, and B2 use the Glovers Lane southern option, while Alternatives A3, A4, B3, and B4 use the Shepard Lane southern option.

The two southern options converge near the Farmington–Kaysville boundary. All of the action alternatives use a common alignment between the Farmington–Kaysville boundary to Gentile Street in Syracuse. North of Gentile Street in Syracuse, the A Alternatives (A1–A4) use a western alignment in Syracuse and West Point and the B Alternatives (B1–B4) use a more eastern alignment near Bluff Road in Syracuse.

Figure 1. Alternatives Evaluated in the Draft EIS



Both the A Alternatives and B Alternatives have two possible northern options. As shown in Figure 1 above, Alternatives A1 and A3 use the 4700 West northern option that ends at 4700 West 4000 South in Weber County. Alternatives A2 and A4 use the 5100 West northern option that ends at 5100 West 4000 South in Weber County. Alternatives B1 and B3 use the 4100 West northern option that ends at 5100 West 5500 South in Weber County. Alternatives B2 and B4 use the 4800 West northern option that ends at 5100 West 5500 South in Weber County.

Table 1 summarizes the southern options, northern alternative, northern options, and northern termini for each of the WDC action alternatives.

Table 1. Components of WDC Action Alternatives

Action Alternative	Southern Option	Northern Alternative	Northern Option	North Terminus
A1	Glovers Lane	A Alternative (Western)	4700 West	4700 West 4000 South
A2	Glovers Lane	A Alternative (Western)	5100 West	5100 West 4000 South
A3	Shepard Lane	A Alternative (Western)	4700 West	4700 West 4000 South
A4	Shepard Lane	A Alternative (Western)	5100 West	5100 West 4000 South
B1	Glovers Lane	B Alternative (Eastern)	4100 West	5100 West 5500 South
B2	Glovers Lane	B Alternative (Eastern)	4800 West	5100 West 5500 South
B3	Shepard Lane	B Alternative (Eastern)	4100 West	5100 West 5500 South
B4	Shepard Lane	B Alternative (Eastern)	4800 West	5100 West 5500 South

2.2 Purpose and Need Performance

The Federal Highway Administration (FHWA) and UDOT analyzed the transportation performance of each alternative at both a regional and local level to determine how each alternative would meet the purpose of and need for the project.

The regional transportation performance evaluation was based on how well each alternative improved regional mobility and enhanced peak-period mobility. The regional transportation performance evaluation also included an evaluation of how much traffic each alternative would carry. The regional transportation performance evaluation is described in Section 2.2.1 below.

FHWA and UDOT also considered the local transportation performance to evaluate how specific alternative segments could have different effects on the transportation system. The evaluation of local transportation performance included safety, traffic, and operational evaluations for the system-to-system interchanges and the modeled average daily traffic volumes for the WDC alternative segments. The local transportation performance of the southern options and the Glovers Lane and Shepard Lane system-to-system interchanges is discussed in Section 3.2.1. The local transportation performance of the northern alternatives is discussed in Section 3.3.1. The local transportation performance of the northern options for the B Alternatives is discussed in Section 3.4.1.

2.2.1 Regional Transportation Performance

The regional performance was based on the following two project purposes:

- **Improve Regional Mobility.** Improve regional mobility for automobile, transit, and freight trips in the WDC needs assessment study area for automobile, transit, and freight trips by substantially reducing user delay on the road system compared to the No-Action conditions through the consideration of all transportation modes.
- **Enhance Peak-Period Mobility.** Substantially enhance mobility in the WDC needs assessment study area during the AM and PM peak periods for the main travel direction (north–south) to help accommodate the projected travel demand in the needs assessment study area in 2040.

Table 2 below summarizes how the action alternatives compare in reducing regional daily delay and peak period mobility in the WDC study area. As shown in the table, all of the action alternatives would substantially[1] reduce daily delay and peak-period congestion and, therefore, would meet the purpose of and need for the project. Charts 1–5 below illustrate the regional delay and congestion benefits by alternative.

[1] To achieve substantial reduction, an alternative had to perform better than the No-Action Alternative for all five transportation criteria, perform better than the average value for all alternatives for all five criteria, and perform at or better than the first-quartile value for all alternatives for at least three of the five criteria. This process and these criteria are described in *Technical Memorandum 15: Alternatives Screening Report*.

WEST DAVIS CORRIDOR

Table 2. Comparison of Regional Delay and Congestion Benefits for the WDC Action Alternatives

Alternative	Hours of Daily Total Delay	Percentage Change from the No-Action Alternative in 2040 in the PM Peak Period[a]: Lane-Miles of North–South Roads in Congestion[b]	Lane-Miles of East–West Roads in Congestion[b]	Vehicle-Miles Traveled (VMT)[c]	Vehicle-Hours Traveled (VHT)[c]
A1 – Glovers Lane/4700 W	–27.5	–62.6	–37.5	–61.2	–49.4
A2 – Glovers Lane/5100 W	–27.1	–60.5	–36.3	–60.2	–47.8
A3 – Shepard Lane/4700 W	–26.8	–63.1	–34.7	–60.9	–48.3
A4 – Shepard Lane/5100 W	–26.1	–59.8	–36.3	–59.9	–47.1
B1 – Glovers Lane/4100 W	–27.6	–57.2	–37.5	–59.3	–46.7
B2 – Glovers Lane/4800 W	–27.3	–55.4	–37.5	–58.5	–45.6
B3 – Shepard Lane/4100 W	–27.4	–55.1	–35.5	–58.2	–45.7
B4 – Shepard Lane/4800 W	–26.8	–55.6	–36.7	–58.4	–45.8

[a] The PM peak period is between 3 PM and 6 PM. Volume to capacity, or V/C, is a measure of the actual traffic volume on a road compared with the traffic capacity for which the road was designed. A V/C ratio of 0.75 to 0.99 represents heavy congestion, and a V/C ratio of more than 1.0 represents severe congestion (the volume of traffic exceeds the capacity of the road). A V/C ratio greater than 0.90 is equivalent to level of service (LOS) E or F (congested, stop-and-go traffic).

[b] Includes reduction in congestion on roads with a V/C ratio greater than 0.90 (LOS E and F) during the PM peak period (between 3 PM and 6 PM). Roads include freeways (Interstate 15), principal and minor arterial streets, and collector streets in the WDC study area.

[c] Includes reduction in congestion for vehicle-miles traveled and vehicle-hours traveled on roads with a V/C ratio of greater than 0.90 (LOS E and F) during the PM peak period (between 3 PM and 6 PM). Roads include freeways (Interstate 15), principal and minor arterial streets, and collector streets in the WDC study area.

Chart 1. Hours of Daily Total Delay in WDC Study Area, by Alternative

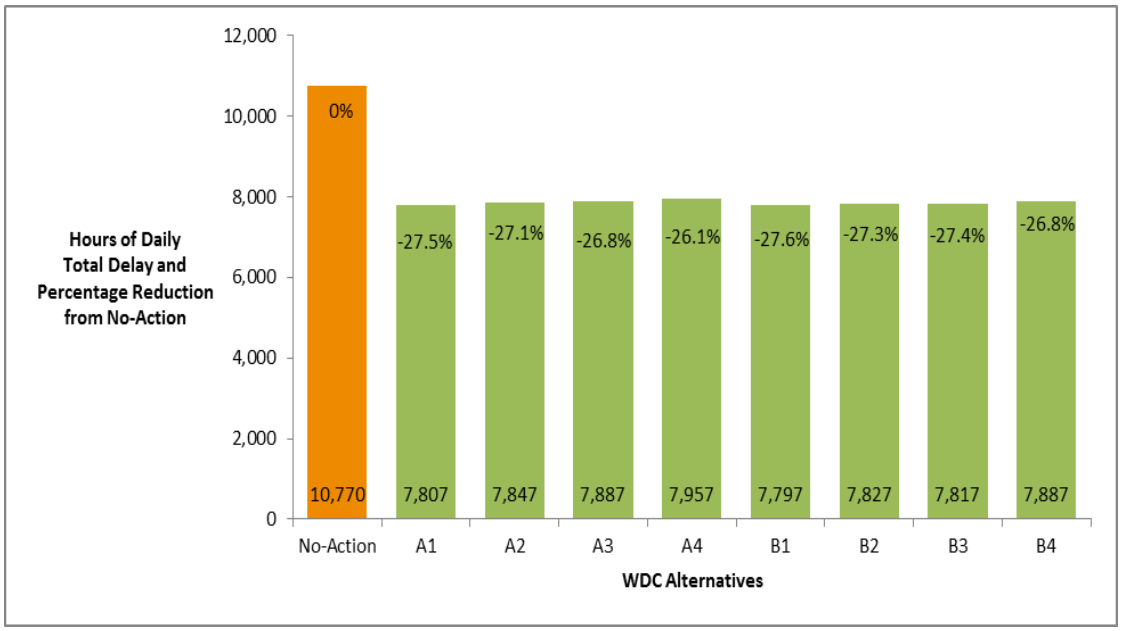


Chart 2. Lane-Miles of North–South Roads in Congestion, by Alternative

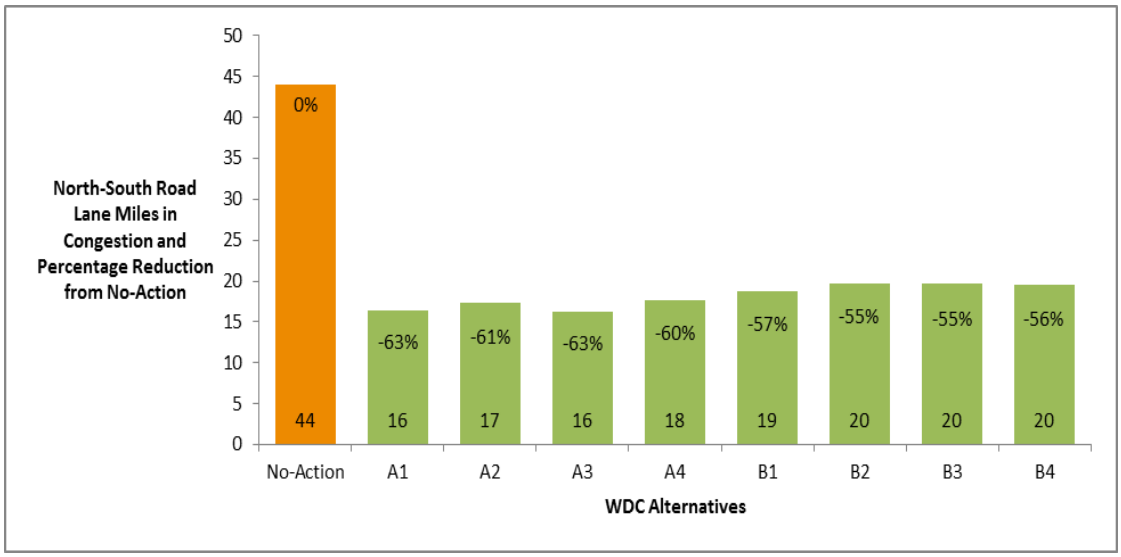


Chart 3. Lane-Miles of East–West Roads in Congestion, by Alternative

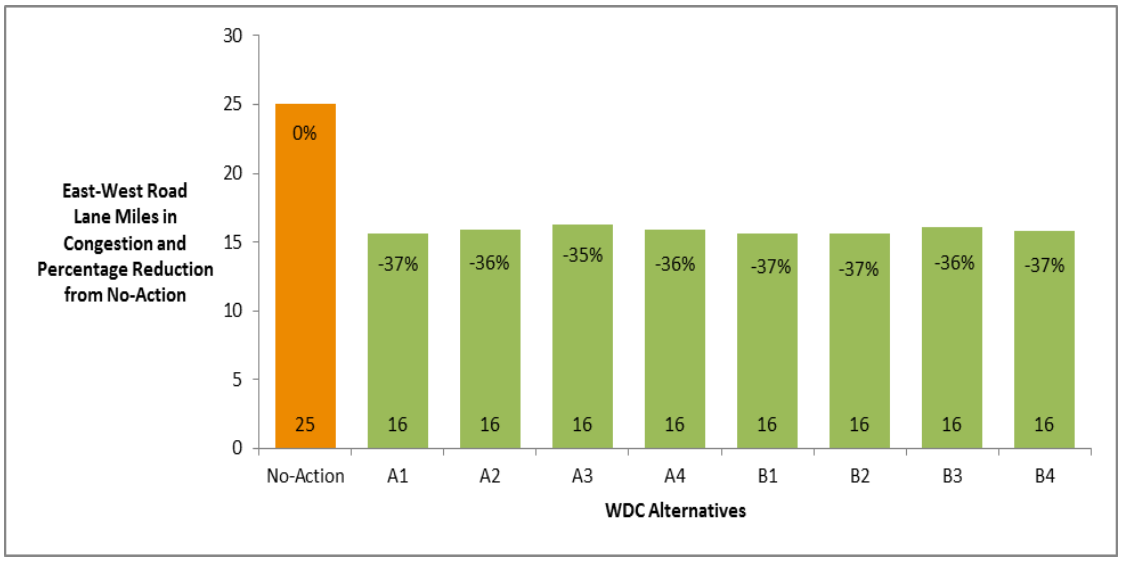


Chart 4. Vehicle-Miles Traveled in Congestion, by Alternative

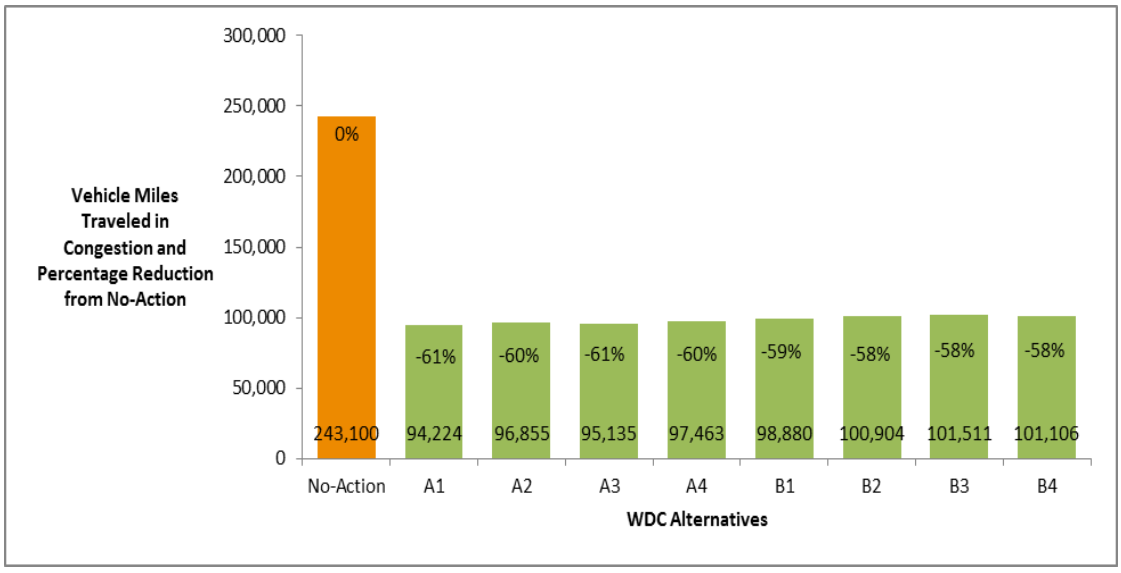
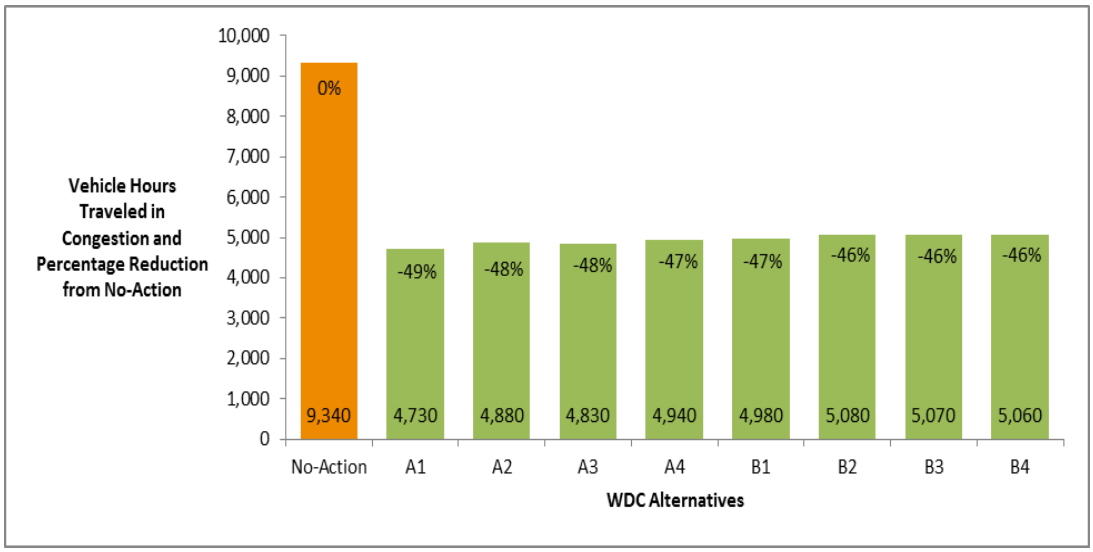


Chart 5. Vehicle-Hours Traveled in Congestion, by Alternative



When reviewing the regional transportation performance for each alternative, FHWA and UDOT also compared the daily traffic volumes. FHWA and UDOT consider alternatives with higher daily traffic volumes to perform better, since they carry more traffic, reduce the amount of traffic on other roads in the network, and represent a better return on the investment of public funds. Table 3 shows the daily traffic volumes for the WDC action alternatives.

Table 3. Comparison of Daily Traffic Volumes for the WDC Action Alternatives

Alternative	Daily Traffic Volume (vehicles per day)
A1	24,300
A2	23,500
A3	22,600
A4	21,400
B1	28,500
B2	26,600
B3	27,200
B4	24,800

As shown above in Table 3, the following observations can be made about the daily traffic volumes:

- Alternative B1 carries the most traffic of any of the WDC action alternatives (28,500 vehicles per day).
- Alternative A4 carries the least daily traffic of any of the WDC action alternatives (21,400 vehicles per day).
- The B Alternatives (B1–B4) all carry more traffic than the A Alternatives (A1–A4).
- There are also specific differences in daily traffic volumes between the southern options, the northern alternatives, and the northern options of the B Alternatives. These are discussed in more detail in Sections 3.2.1, 3.3.1, and 3.4.1, respectively.

2.3 Estimated Cost

Table 4 shows estimated costs of the action alternatives. The cost estimates below include design, right-of-way, construction, utility relocations, and environmental mitigation. These cost estimates are based on unit prices for previously completed, similar projects that were escalated to 2012 dollars. The actual cost of construction will likely be higher because of inflation between 2012 and the year of construction, but would be expected to increase proportionally among the various alternatives.

Table 4. Estimated Costs of the Action Alternatives

Alternative	2012 Cost ($)
Alternative A1	674 million
Alternative A2	665 million
Alternative A3	708 million
Alternative A4	700 million
Alternative B1	587 million
Alternative B2	605 million
Alternative B3	622 million
Alternative B4	640 million

2.4 Summary Comparison of Resource Impacts, by Alternative

Table 5 below compares the resource impacts of the eight WDC action alternatives. This table provides a quantitative comparison among the alternatives for the resources evaluated in the Draft EIS. Although impacts are quantified for all of the impact categories below, not all resources listed favored one alternative or another.

As shown in Table 5, some resources would experience a substantial difference in impacts from the alternatives, while other resources would experience no difference or a very small difference in impacts from the alternatives. Thus, some resource impacts were more helpful than others in distinguishing between the alternatives. Additionally, some of the resources have avoidance requirements that must be considered. Overall, in comparing the alternatives, some had more impacts on some resources while having fewer impacts on others.

Although Table 5 provides the quantitative information for each impact, it does not always provide the context and intensity of the impact. For some resources, the context and intensity of the impact provides relevant information for the weighing of alternatives. Impact context and intensity are included as appropriate in the following discussions of how the UDOT locally preferred alternative was identified.

Table 5. Summary Comparison of Resource Impacts, by Alternative

Impact Category	Unit	Alternative							
		A1	A2	A3	A4	B1	B2	B3	B4
Route length	Miles	23. 2	22.9	21.8	21.5	19.7	20.1	18.3	18.7
Route cost (2012)	Million $	674	665	708	700	587	605	622	640
Land converted to roadway use	Acres	1,038	1,018	936	916	924	943	822	840
Direct impacts on the Great Salt Lake Shorelands Preserve	Acres	71	71	71	71	71	71	71	71
Direct impacts on land with a conservation easement[a]	Acres	76	76	20	20	56	56	0	0
Consistent with city plans (out of eight cities)[b]	Number	3	5	3	5	7	5	7	5
Direct impacts on prime farmland	Acres	162	162	152	152	110	118	101	108
Direct impacts on irrigated cropland	Acres	723	715	622	615	581	612	480	511
Direct impacts on non-irrigated cropland	Acres	102	102	101	101	93	94	92	93
Direct impacts on Agriculture Protection Areas	Acres	55	56	55	56	3	20	3	20
Indirect farmland impacts	Acres	257	258	214	215	215	219	171	175
Residential relocations	Number	31	40	41	50	26	23	36	33
Potential residential relocations[c]	Number	11	13	12	14	5	6	6	7
Residential plats affected[d]	Number	38	49	37	48	49	50	48	49
Business relocations	Number	4	4	4	4	5	5	5	5
Potential business relocations[c]	Number	1	1	0	0	1	1	0	0
Congestion cost savings compared to No-Action Alternative	Million $	27.3	27.5	27.4	26.4	28.4	27.7	27.8	27.4
Direct impacts on recreation areas	Number	3	2	5	4	3	2	5	4
Direct impacts on community facilities	Number	0	0	0	0	1	1	1	1
Environmental justice populations affected	Yes/no[e]	No	No	No	No	No	No	No	No
Existing trails relocated	Number	1	0	3	2	1	1	3	3
Existing trails crossed	Number	6	6	6	6	7	6	7	6
Consistent with air quality conformity regulations	Yes/no[f]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Noise receptors above criteria	Number	244	234	304	294	251	241	311	301
Stream/canal crossings	Number	8	8	7	7	7	7	6	6

Table 5. Summary Comparison of Resource Impacts, by Alternative

Impact Category	Unit	Alternative							
		A1	A2	A3	A4	B1	B2	B3	B4
Direct impacts on wetlands	Acres	22	22	22	22	52	48	51	47
Direct impacts on high-quality wetlands[g]	Acres	5	5	5	5	5	5	5	5
Wetlands within 300 feet of the right-of-way	Acres	83	80	69	66	135	109	121	95
Direct impacts on high-quality wildlife habitat[h]	Acres	47	47	45	45	50	46	48	44
High-quality wildlife habitat within 300 feet of the right-of-way	Acres	127	127	117	117	116	106	106	96
Direct impacts on floodplains	Acres	201	201	62	62	201	201	62	62
Adverse effects on cultural resources	Number	3	8	5	10	4	4	6	6
Direct impacts on hazardous waste sites	Number	0	0	0	0	0	0	0	0
Visual changes	Category	Moderate-high	Moderate-high	Moderate-high	Moderate-high	Moderate-high	Moderate-high	Moderate-high	Moderate-high
Section 4(f) uses	Number	5	8	9	12	3	3	7	7
Section 4(f) *de minimis* impacts	Number	19	25	13	19	17	17	9	11
Mode share (percent of all home-based work trips)	Percent	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1

[a] Conservation easements include Farmington City–held conservation easements and the Black Agriland conservation easement held by the Utah Department of Agriculture and Food.

[b] The adopted Farmington City Transportation Plan shows a future WDC on Glovers Lane (Alternatives B1 and B2). However, city officials have passed a resolution supporting a WDC alignment on Shepard Lane (Alternatives B3 and B4). The adopted Kaysville City Transportation Plan shows a future WDC on Shepard Lane (Alternatives B3 and B4). However, city officials have passed a resolution supporting a WDC alignment on Glovers Lane (Alternatives B1 and B2).

[c] A potential relocation occurs when the right-of-way required for the WDC would affect the property and would be between 1 foot and 15 feet away from the structure.

[d] A residential plat is a lot that has been approved for residential development by the local jurisdiction but has not been developed.

[e] Yes or no: Would the alternative have a disproportionately high and adverse effect on an environmental justice population?

[f] Yes or no: Is the alternative consistent with air quality conformity regulations under the Clean Air Act?

[g] High-quality wetlands were determined using a wetland functional quality checklist that was based on UDOT's Functional Assessment Form. For more information, see Chapter 14, Ecosystem Resources.

[h] High-quality wildlife habitats were determined by evaluating parcels for their habitat suitability for eight different wildlife species representative of the WDC study area. For more information, see Chapter 14, Ecosystem Resources, and *Technical Memorandum 9: Wildlife Assessment Methodology – Existing Conditions* (West Davis Corridor Team 2010b).

3.0 Identification of UDOT's Locally Preferred Alternative

The following sections identify and provide UDOT's basis for identifying the locally preferred alternative. It should be noted that UDOT's identification of a preferred alternative at the Draft EIS stage does not ensure that UDOT will recommend the same alternative in the Final EIS. Also, the final selection of an alternative will be made by FHWA in the Record of Decision. As part of the Clean Water Act permitting process, the U.S. Army Corps of Engineers will decide which alternative satisfies the Section 404(b)(1) guidelines. Neither of these agencies has identified a preferred alternative in the Draft EIS.

UDOT identified its locally preferred alternative based on the transportation performance, cost, and impacts to the natural and human environment. Public and agency input during the scoping process and the alternatives-development, screening, and refinement process was reviewed as part of the identification process. It should be noted that there are strengths and weaknesses for each alternative. No alternative had the best transportation performance, had the lowest cost, and minimized impacts on all resources. All alternatives would affect Section 4(f) resources, wetlands, and farmland and would result in residential and business relocations.

During the resource identification process, UDOT gave specific consideration to the resources with avoidance and minimization requirements under federal or state laws: Section 4(f) resources, wetlands and waters regulated by Section 404 of the Clean Water Act, wetlands regulated by Executive Order 11990, farmlands regulated by the Utah Agricultural Protection Act, and floodplains regulated by Executive Order 11988. All of these laws require that efforts be made to avoid impacts or uses of specific resources, except under specified conditions. However, as previously stated, collective and individual avoidance of all of these resources was not possible. All of the action alternatives would affect Section 4(f) resources, jurisdictional wetlands and waters of the U.S. regulated under the Clean Water Act, and Agriculture Protection Areas (APAs) as defined by the Utah Agricultural Protection Act.

3.1 UDOT Evaluation of Draft EIS Alternatives

UDOT has identified **Alternative B1** as its locally preferred alternative for the WDC Project.

As shown on Figure 1, Alternative B1 consists of the Glovers Lane southern option (common to Alternatives A1, A2, B1, and B2) and the 4100 West northern option (common to Alternatives B1 and B3). The identification of Alternative B1 as the UDOT locally preferred alternative is based on the selection of the southern option, northern alternatives, and northern option listed above. The rationale for these three decisions is described in the following three subsections.

3.2 Evaluation of Southern Options

As previously described, all of the WDC action alternatives use either the Glovers Lane southern option (common to Alternatives A1, A2, B1, and B2) or the Shepard Lane southern option (common to Alternatives A3, A4, B3, and B4).

UDOT has identified the **Glovers Lane southern option** as the preferred southern option.

The reasons for this selection are that the Glovers Lane option would have better regional and local transportation performance, would have no uses of Section 4(f) resources, would have 0.5 acre more wetland impacts, would avoid Haight Creek riparian/floodplain corridor, would avoid relocation of the Union Pacific Railroad (UPRR) and Utah Transit Authority (UTA) railroad, would have fewer relocations and impacts on community cohesion, and would avoid impacts on the Oakridge Country Club.

The sections below summarize the reasons why UDOT identified the Glovers Lane option as the preferred southern option.

3.2.1 Transportation Performance

Regional Performance

As shown above in Table 2, Comparison of Regional Delay and Congestion Benefits for the WDC Action Alternatives, the alternatives that use the Glovers Lane option in Farmington (A1, A2, B1, and B2) performed similarly on all five regional transportation criteria (reducing daily delay, congestion on north–south roads, congestion on east–west roads, vehicle-miles traveled, and vehicle-hours traveled) when compared with the alternatives that use the Shepard Lane option in Farmington (A3, A4, B3, and B4).

Table 3 above, Comparison of Daily Traffic Volumes for the WDC Action Alternatives, shows that, when comparing alternatives that have the same northern alignment, the daily traffic volumes for the alternatives that use the Glovers Lane option in Farmington (A1, A2, B1, and B2) are higher than the daily traffic volumes for the alternatives that use the Shepard Lane option (A3, A4, B3, and B4). For example, Alternative A1 carries more traffic than Alternative A3, Alternative A2 carries more traffic than Alternative A4, Alternative B1

carries more traffic than Alternative B3, and Alternative B2 carries more traffic than Alternative B4.

The better performance indicates that a southern connection to Interstate 15 (I-15) and Legacy Parkway near the Glovers Lane area is more beneficial to regional mobility than the connection near the Shepard Lane area. This is due to the fact that the Shepard Lane connection would be located between two local interchanges and the US 89 system interchange, causing increased levels of congestion. On the other hand, the Glovers Lane connection would be located south of these other interchanges, which results in better traffic flow. More information about the traffic performance is included in *Technical Memorandum 19: Traffic Performance and Engineering Design of Shepard Lane and Glovers Lane Area Alternatives* (West Davis Corridor Team 2013). The next section summarizes the key differences between the Glovers Lane and Shepard Lane system-to-system interchanges where they connect with I-15 and Legacy Parkway in Farmington.

Local Performance

WDC to I-15/Legacy Parkway System Interchange Performance. This section compares the transportation performance of the system-to-system interchange at Shepard Lane (Alternatives A3, A4, B3, and B4) and Glovers Lane (Alternatives A1, A2, B1, and B2) between WDC and I-15/Legacy Parkway. The system-to-system interchange performance is critical to the overall regional mobility benefits of the corridor because it is the southern terminus and primary means of connection to other major highway corridors. To understand the performance of these interchanges, the WDC team conducted an in-depth design and traffic analysis of the two system-to-system interchange concepts to evaluate traffic performance, operations and design, and other engineering considerations. The results of this analysis are described in *Technical Memorandum 19: Traffic Performance and Engineering Design of Shepard Lane and Glovers Lane Area Alternatives*.

As described in Technical Memorandum 19, a total of 25 different criteria were evaluated. The Glovers Lane interchange (Alternatives A1, A2, B1, and B2) has advantages in 15 categories, the Shepard Lane interchange (Alternatives A3, A4, B3, and B4) has advantages in three categories, and both interchanges performed similarly for the remaining seven categories. Both interchange designs would meet traffic and safety design requirements and would operate at an acceptable level of service (LOS D or better) in 2040. However, the Glovers Lane option performed better than the Shepard Lane option in every traffic performance measure, having higher speeds, reduced travel times, and substantially less delay.

The Glovers Lane interchange features a more straightforward and conventional design, which simplifies the traffic operations and maneuvers. It is very similar to other system interchanges in the region. The Shepard Lane interchange is more complex and has more traffic movements for drivers to maneuver when traveling to/from Legacy Parkway, I-15, and the WDC. The operations and design analysis indicated that the design of the Glovers Lane option is preferable to that of the Shepard Lane option.

3.2.2 Resource Impacts

Table 6 summarizes the costs and impacts of the Glovers Lane and Shepard Lane options. The data in Table 6 include only the impacts for the southern option of each action alternative, not the complete length of the alternatives.

Table 6 shows the impacts from each southern option's system-to-system interchange to a point near the Kaysville–Farmington city boundary west of the Central Davis Sewer Facility where the two southern options converge to a common alignment.

Table 6. Summary of Cost and Environmental Impacts for the Southern Options

		Southern Option	
Impact Category	**Unit**	**Glovers Lane Option (used by Alternatives A1, A2, B1, B2)**	**Shepard Lane Option (used by Alternatives A3, A4, B3, B4)**
Route length	Miles	4.17	2.77
Route cost (2012) [g]	Dollars	$175 million	$209 million
Land converted to roadway use	Acres	279	177
Direct impacts on the Great Salt Lake Shorelands Preserve	Acres	1	2
Direct impacts on land with a conservation easement[a]	Acres	56	0
Consistent with city plans	Yes/No	Farmington – Yes[b] Kaysville – No[b]	Farmington – No[b] Kaysville – Yes[b]
Direct impacts on prime farmland	Acres	11	1
Direct impacts on irrigated cropland	Acres	137	36
Direct impacts on non-irrigated cropland	Acres	36	36
Direct impacts on Agriculture Protection Areas	Number	0	0
Indirect farmland Impacts	Acres	70	26
Relocations (residential)	Number	0	10
Potential relocations[c] (residential)	Number	1	2
Platted residential[d]	Number	1	0
Relocations (business)	Number	3	3
Potential relocations[c] (business)	Number	1	0
Direct impacts on recreation areas	Number	0	2
Direct impacts on community facilities	Number	0	0
Relocated trails	Number	0	2
Existing trails crossed	Number	5	5
Noise receptors above criteria	Number	46	106
Stream/canal crossings	Number	3	2
Direct impacts on wetlands	Acres	7.8	7.3
Direct impacts on high-quality wetlands[e]	Acres	0	0

Table 6. Summary of Cost and Environmental Impacts for the Southern Options

Impact Category	Unit	Southern Option	
		Glovers Lane Option (used by Alternatives A1, A2, B1, B2)	Shepard Lane Option (used by Alternatives A3, A4, B3, B4)
Wetlands within 300 feet of the right-of-way	Acres	33	19
Direct impacts on high-quality wildlife habitat[f]	Acres	2	0
High-quality wildlife habitat within 300 feet of the right-of-way	Acres	21	11
Direct impacts on floodplains	Acres	173	34
Adverse effects on cultural resources	Number	1	3
Hazardous waste sites	Number	0	0
Visual change	Category	Moderate-High	Moderate-High
Section 4(f) uses	Number	0	4
Section 4(f) *de minimis* uses	Number	7	1

[a] Conservation easements include Farmington City–held conservation easements and the Black Agriland conservation easement held by the Utah Department of Agriculture and Food.

[b] The adopted Farmington City Transportation Plan shows a future WDC on Glovers Lane (Alternatives A1, A2, B1, and B2). However, city officials have passed a resolution supporting a WDC alignment on Shepard Lane (Alternatives A3, A4, B3, and B4). The adopted Kaysville City Transportation Plan shows a future WDC on Shepard Lane (Alternatives A3, A4, B3, and B4). However, city officials have passed a resolution supporting a WDC alignment on Glovers Lane (Alternatives A1, A2, B1, and B2).

[c] A potential relocation occurs when the right-of-way required for the WDC would affect the property and would be between 1 foot and 15 feet away from the structure.

[d] A platted residential impact is a lot that has been approved for residential development by the local jurisdiction but has not been developed.

[e] High-quality wetlands were determined using a wetland functional quality checklist that was based on UDOT's Functional Assessment Form. For more information, see Chapter 14, Ecosystem Resources, of the Draft EIS.

[f] High-quality wildlife habitats were determined by evaluating parcels for their habitat suitability for eight different wildlife species representative of the WDC study area. For more information, see Chapter 14, Ecosystem Resources, of the Draft EIS and *Technical Memorandum 9: Wildlife Assessment Methodology – Existing Conditions* for more details.

[g] The costs for the two options are considered equivalent since the Shepard Lane option includes a local interchange on I-15 at Shepard Lane, which is a separate project in the Wasatch Front regional transportation plan that would still need to be built if the Glovers Lane option is selected.

Environmental Impacts

As shown above in Table 6, the Glovers Lane option is longer and requires more right-of-way to construct; it also has higher impacts on floodplains and conservation easements and is located closer to wildlife habitat along the Great Salt Lake. On the other hand, the Shepard Lane option would use four Section 4(f) resources, have substantially more community impacts, require the relocation of two railroads (this impact is not listed in Table 6), have 60 more residential noise impacts, partially affect the Oakridge Country Club (this impact is not listed in Table 6), have floodplain impacts that are more difficult to mitigate, and have

two additional adverse impacts on cultural resources. On balance, UDOT considers the Glovers Lane option to have the lowest overall impacts on the natural and human environment. Specific regulatory requirements are discussed in the following section.

Farmland. The Glovers Lane option would have a greater impact on prime farmland and irrigated cropland. However, over 80% of the Glovers Lane option's cropland impacts would be to pasture and turf farms. In addition, many of the farmlands in Farmington that would be affected by the Glovers Lane option are zoned and planned to be developed as residential or commercial property. None of the farms that would be affected by the Glovers Lane option or the Shepard Lane option are designated as APAs under the Utah Agricultural Protection Act.

Land with Conservation Easements. The Glovers Lane option would directly affect 56 acres of three conservation easements located on the west side of Farmington, whereas the Shepard Lane option would avoid these areas. The affected conservation easements are held by Farmington City and were designated with the intent of preserving open space and recreational use. The conversion of parts of these conservation easements to roadway use by the Glovers Lane option would conflict with the intended use of the conservation easements. The Shepard Lane option would not affect the conservation easements in Farmington.

Impacts on the Great Salt Lake Shorelands Preserve. Both southern options would affect a parcel owned by The Nature Conservancy that is located west of the Central Davis Sewer District facility. The impacts on this parcel resulting from both southern options would be similar.

Relocations. The Shepard Lane option would necessitate the relocation at least 10 residences, nine of which are located in the Quail Creek subdivision, with the potential for two additional relocations. The Glovers Lane option would not cause known residential relocations, but would potentially result in one residential relocation. For more information about potential relocations, see Chapter 5, Community Impacts.

Railroad Relocations. The Shepard Lane option would necessitate the realignment of 1.3 miles of the UTA commuter-rail tracks and UPRR tracks. The Glovers Lane option would not result in any relocation of either railroad.

Recreation Areas. The Shepard Lane option would affect the Oakridge Country Club by relocating at least one, and possibly three or more, holes of the 18-hole golf course, which UDOT considers to be a substantial business impact. This golf course is a Professional Golf Association–rated course, and at least one Professional Golf Association tournament a year is held at this location. The relocation of the par 4 hole could negatively affect the course rating because there is not much room to expand the course in other areas. The golf course could also lose business during course reconstruction. Representatives for the Oakridge Country Club have provided comments stating that the impacts from the Shepard Lane option could lead to lower club membership, which could put the golf course business at risk, and could negatively affect the residential community surrounding the golf course.

Noise and Indirect Community Impacts. In addition to the nine direct relocation impacts on the Quail Creek subdivision, the Shepard Lane option would also cause indirect noise and visual impacts on the remaining residents in the Quail Creek Crossing and adjacent Hunters

Creek subdivisions. As previously shown in Table 6, Summary of Cost and Environmental Impacts for the Southern Options, the Shepard Lane option would have noise impacts on 60 more residences than would the Glovers Lane option. The currently cohesive neighborhoods would be separated by the Shepard Lane option. Although roadway and pedestrian access would be relocated and maintained, remaining residents of the subdivisions would experience some loss of neighborhood connection, noise impacts, and visual impacts.

By comparison, the Glovers Lane option would be located to the west of the Farmington Ranches, Farmington Meadows, and Hunters Creek subdivisions and would not have direct impacts on any of these subdivisions. It would have 60 fewer noise impacts than the Shepard Lane option. None of the noise impacts currently meet the criteria for noise walls per UDOT's noise policy, so no noise mitigation is currently proposed for any of the noise impacts.

Wetlands. The Glovers Lane option would fill an additional 0.5 acre of wetlands than would the Shepard Lane option (7.8 acres versus 7.3 acres). The Glovers Lane wetland impacts would occur at the Glovers Lane/Legacy Highway/I-15 interchange south of Glovers Lane near 900 West and west of the Farmington Ranches subdivision. The Shepard Lane wetland impacts would occur at the Shepard Lane interchange and along Haight Creek. None of the wetlands that would be impacted or that are around the Shepard Lane option are considered to be high quality. The riparian wetland types that are located along Haight Creek are less common in the WDC study area.

Floodplains. The Glovers Lane option would affect 173 acres of floodplains, compared with 34 acres for the Shepard Lane option. While the affected acreage of the Glovers Lane option is larger, the nature and context of the impacts are such that actual impacts on floodplain functions under the Glovers Lane option are considered to be less than under the Shepard Lane option.

- The Glovers Lane option would affect floodplains of the Great Salt Lake, a large body of water with a 2.3-million-acre floodplain. The Glovers Lane option would affect 0.007% of the Great Salt Lake floodplain. Mitigation for the Glovers Lane option's floodplain impacts would entail ensuring that the Great Salt Lake floodplain elevation would not increase during the infrequent instances when the lake floods. The floodplain functions of the Great Salt Lake in this area can be easily accommodated with culverts under the Glovers Lane option. It is unlikely that the floodplain storage capacity or elevation of the Great Salt Lake would be affected by the Glovers Lane option.
- By comparison, the Shepard Lane option would affect 100% of the Haight Creek floodplain in the affected segment and would require a Conditional Letter of Map Revision from the Federal Emergency Management Agency to relocate the creek's regulatory floodway and associated floodplain. The Shepard Lane option would affect the floodplain storage and conveyance functions of Haight Creek, which is a small tributary of the Great Salt Lake. Haight Creek flows year-round and has frequent seasonal variations in water levels. Under the Shepard Lane option, Haight Creek would be realigned between Shepard Lane in Kaysville and 950 North in

Farmington. The floodplain storage and conveyance functions associated with Haight Creek would also need to be mitigated and relocated. Mitigation of floodplain impacts under the Shepard Lane option would be more difficult, would entail a much more extensive design effort, and would require Federal Emergency Management Agency-approved permitting. For more information about floodplain mitigation for the Shepard Lane option, see Chapter 15, Floodplains.

Wildlife Habitat. The Glovers Lane option would directly affect 2 acres of high-quality wildlife habitat. The Shepard Lane option would not affect any high-quality wildlife habitat. However, the Shepard Lane option would affect about 8 acres of the Haight Creek riparian corridor, which does provide some wildlife habitat. On balance, the Glovers Lane option would affect more wildlife and open space values and, at least temporarily, more farmland.

Other Resources. For the southern options, the action alternatives would have comparable levels of impacts on community facilities, hazardous waste facilities, trail crossings, and stream or canal crossings. The length of the alternatives, the land use impacts, the number of platted lots affected, the number of potential business relocations, and the visual impacts would be similar between all of the southern options, and the impacts to these resources would not provide a meaningful basis for differentiating between options.

Regulatory Considerations

Section 4(f). Section 4(f) of the Department of Transportation Act of 1966 requires FHWA to avoid impacts on historic resources, publicly owned parks and recreation areas, and publicly owned wildlife refuges unless (1) the use has a *de minimis* uses or (2) there is no prudent and feasible alternative and the action includes all possible planning to minimize harm. As previously shown in Table 6, it is anticipated that the Glovers Lane option would have only *de minimis* uses on Section 4(f) resources. The Shepard Lane option would use four Section 4(f) resources (the D&RGW Railroad tracks, the UPRR tracks, the Legacy Parkway Trail, and the D&RGW Trail). Therefore, UDOT anticipates that the selection of the Glovers Lane option is consistent with the requirements of Section 4(f).

Section 404 of the Clean Water Act. The Clean Water Act prohibits the discharge of dredged or fill material to jurisdictional wetlands and waters of the U.S. if there is a practicable alternative to the proposed discharge with less impacts to the aquatic ecosystem, unless the practicable alternative has other significant adverse environmental consequences that outweigh the aquatic ecosystem impacts. The U.S. Army Corps of Engineers will ultimately make this decision. Both of the southern options would affect wetlands and waters of the U.S. There are no practicable southern options that would completely avoid impacts on all wetlands and waters of the U.S. The Glovers Lane option would fill a slightly larger area (0.5 acre) of wetlands than the Shepard Lane option.

Executive Order 11990, Protection of Wetlands. Federal Executive Order 11990 requires that federal agencies, including FHWA, "shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In

making this finding the head of the agency may take into account economic, environmental, and other pertinent factors." As previously shown in Table 6, all of the WDC action alternatives would have some impacts on wetlands. There was no practicable WDC action alternative that would avoid impacts on wetlands. As described above the Glovers Lane option would fill a slightly larger area (0.5 acre) of wetlands than the Shepard Lane option..

Federal Executive Order 11988, Floodplain Management. Federal Executive Order 11988 requires federal agencies, including FHWA, "to avoid to the extent possible the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative." Furthermore, it is FHWA's policy "to avoid longitudinal encroachments, where practicable" [23 Code of Federal Regulations 650.103(b)]. Longitudinal encroachments are parallel or nearly parallel to a stream or the edge of a lake.

As previously shown in Table 6, all of the WDC action alternatives would have some impacts on floodplains. There was no practicable WDC action alternative that would avoid impacts on floodplains. The Glovers Lane option would affect 173 acres of floodplains, compared with 34 acres for the Shepard Lane option. As previously described, while the affected acreage of the Glovers Lane option is larger, the nature and context of the impacts is such that actual impacts on floodplain functions of the Glovers Lane option are considered to be less than the impacts on floodplain functions for the Shepard Lane option.

Utah Agricultural Protection Act. The Utah Agricultural Protection Act requires that designated APAs can be converted to highway use only if there is no feasible and prudent alternative to use of land in the APA. Neither southern option would affect APAs.

3.2.3 Summary

UDOT identified the Glovers Lane option as the locally preferred southern option because, compared with the Shepard Lane option, it would have better regional and local transportation performance, have only *de minimis* impacts on Section 4(f) resources, have only a 0.5 acre difference in wetland impacts, avoid floodplain impacts to the Haight Creek riparian floodplain corridor, avoid the relocation of the UPRR and UTA railroads, have no residential relocations, have 60 fewer noise impacts on residences, have fewer impacts on community cohesion, and would have no impact on the Oakridge Country Club.

3.3 UDOT Evaluation of Northern Alternatives

UDOT identified the **B Alternatives** as its locally preferred northern alternatives.

As previously described in Table 1, Components of WDC Action Alternatives, and shown above in Figure 1, Alternatives Evaluated in the Draft EIS, north of Gentile Street in Syracuse, all of the WDC action alternatives use one of two northern alternatives.

The A Alternatives (Alternatives A1–A4) use a westerly alignment in Syracuse that parallels Gentile Street and the northern boundary of the Great Salt Lake Shorelands Preserve before turning north and crossing Antelope Drive at about 4000 West in Syracuse. The

A Alternatives share a common alignment to 5500 South in Weber County, and use one of two northern options to a northern terminus at 4000 South in Weber County.

The B Alternatives (Alternatives B1–B4) use an eastern alignment in Syracuse that parallels the bluff and crosses Antelope Drive around 2800 West in Syracuse. The B Alternatives share a common alignment to 700 South in West Point, use one of two northern options, and have a northern terminus at 5500 South 5100 West in Weber County.

UDOT identified the B Alternatives as its locally preferred northern alternatives because they would have the best transportation performance, the fewest uses of Section 4(f) resources, the lowest amount of impacts on APAs and other farmland, the most consistency with local land use and transportation plans, the fewest relocations, the lowest cost, and because they would not be located immediately adjacent to the Great Salt Lake Shorelands Preserve along Gentile Street.

The sections below summarize the reasons why UDOT identified the B Alternatives as its locally preferred northern alternatives.

3.3.1 Transportation Performance

Regional Performance

Section 2.2, Purpose and Need Performance, describes how the WDC action alternatives meet the project purpose. As previously shown in Table 2, Comparison of Regional Delay and Congestion Benefits for the WDC Action Alternatives, all alternatives would improve regional mobility and enhance peak-period mobility to a similar level.

However, as previously shown in Table 3, Comparison of Daily Traffic Volumes for the WDC Action Alternatives, over the length of the whole alternative, all of the B Alternatives carry more daily traffic than any of the A Alternatives.

Local Performance

At a local scale, the B Alternatives would carry about 9,300 more vehicles per day in Syracuse (a 49% increase), and about 6,700 more vehicles per day in West Point (a 32% increase), than the A Alternatives. Additionally, the overall length of the B Alternatives is about 2.8 to 3.5 miles shorter than the A Alternatives because the northern terminus of the B Alternatives is located at 5500 South in Weber County instead of 4000 South in Weber County (which is used by the A Alternatives). The B Alternatives—with a shorter length and more vehicle use per day—provide a better overall transportation benefit than the A Alternatives.

3.3.2 Resource Impacts

Table 7 summarizes the costs and impacts of the two northern alternatives between Gentile Street and the northern termini in Weber County. The data in Table 6 include only the impacts for the two northern alternatives, not the complete length of the alternatives.

Table 7 shows the impacts from each northern alternative from Gentile Street in Syracuse to the northern termini. As shown previously in Table 1, Components of WDC Action Alternatives, the northern terminus for the A Alternatives is 4000 South (Weber County), while the northern terminus for the B Alternatives is 5500 South 5100 West (Weber County).

Table 7. Summary of Environmental Impacts for the Northern Alternatives (from Gentile Road to North Project Termini)

		Alternative (option)	
Impact Category	**Unit**	**A Alternatives**	**B Alternatives**
Route length	Miles	12.5 to 12.7	9.2 to 9.6
Route cost (2012)	Dollars	$329 to $337 million	$251 to $269 million
Land converted to roadway use	Acres	477 to 497	384 to 402
Direct impacts on the Great Salt Lake Shorelands Preserve	Acres	0	0
Direct impacts on land with a conservation easement[a]	Acres	20	0
Consistent with city plans (four cities)	Number	0 to 2	2 to 4
Direct impacts on prime farmland	Acres	55	3 to 11
Direct impacts on irrigated cropland	Acres	350 to 358	216 to 247
Direct impacts on non-irrigated cropland	Acres	38	30 to 31
Direct impacts on Agriculture Protection Areas	Number	55 to 56	3 to 20
Indirect farmland impacts	Acres	92 to 93	49 to 53
Relocations (residential)	Number	31 to 40	23 to 26
Potential relocations[b] (residential)	Number	10 to 12	4 to 5
Platted residential[c]	Number	35 to 46	46 to 47
Relocations (business)	Number	0	1
Potential relocations[b] (business)	Number	0	0
Recreation areas	Number	2 to 3	2 to 3
Direct impacts on community facilities	Number	0	1
Relocated trails	Number	0 to 1	1
Existing trails crossed	Number	1	1 to 2
Noise receptors above criteria	Number	166 to 176	173 to 183
Stream/canal crossings	Number	2	1
Direct impacts on wetlands	Acres	5.7 to 5.8	31.0 to 35.3
Direct impacts on high-quality wetlands[d]	Acres	0	0
Wetlands within 300 feet of the right-of-way	Acres	17 to 20	47 to 72

Table 7. Summary of Environmental Impacts for the Northern Alternatives (from Gentile Road to North Project Termini)

		Alternative (option)	
Impact Category	**Unit**	**A Alternatives**	**B Alternatives**
Direct impacts on high-quality wildlife habitat[e]	Acres	8	7 to 11
High-quality wildlife habitat within 300 feet of the right-of-way	Acres	32	11 to 21
Direct impacts on floodplains	Acres	0	0
Hazardous waste sites	Number	0	0
Adverse effects on cultural resources	Number	1 to 6	2
Section 4(f) use	Number	4 to 7	2
Section 4(f) *de minimis* uses	Number	8 to 14	4 to 6

[a] Conservation easements include Farmington City–held conservation easements and the Black Agriland conservation easement held by the Utah Department of Agriculture and Food.

[b] A potential relocation occurs when the right-of-way required for the WDC would affect the property and would be between 1 foot and 15 feet away from the structure.

[c] A platted residential impact is a lot that has been approved for residential development by the local jurisdiction but has not been developed.

[d] High-quality wetlands were determined using a wetland functional quality checklist that was based on UDOT's Functional Assessment Form. For more information, see Chapter 14, Ecosystem Resources, of the Draft EIS.

[e] High-quality wildlife habitats were determined by evaluating parcels for their habitat suitability for eight different wildlife species representative of the WDC study area. For more information, see Chapter 14, Ecosystem Resources, of the Draft EIS and *Technical Memorandum 9: Wildlife Assessment Methodology – Existing Conditions*.

Environmental Impacts

As shown above in Table 7, the A Alternatives are longer and require more right-of-way to construct; they also have greater impacts on conservation areas, APAs, other types of farmland, relocations, and Section 4(f) resources. The A Alternatives are also less consistent with city plans. On the other hand, the B Alternatives would have more direct impacts on wetlands and would have slightly more noise impacts. On balance, UDOT considers the B Alternatives to have the lowest overall impacts on the natural and human environment. Specific regulatory requirements are discussed in the following sections.

Farmland. The A Alternatives would have greater impacts on APAs, prime farmland, irrigated cropland, and non-irrigated cropland. The A Alternatives would also have more indirect impacts on farmlands. Some of the farmland that would be affected by the A Alternatives is in unincorporated parts of Davis and Weber Counties and is not planned for development.

Consistency with City Plans. The four cities in the northern part of the study area (Syracuse, West Point, Hooper, and West Haven) have all adopted the alignment identified in the 2001 *North Legacy Transportation Corridor Study* (NLTC). This alignment is identified in the city plans, and Syracuse City, West Point City, and Hooper City have purchased or preserved

some of the properties along this alignment in their respective cities. The B Alternatives would be more consistent with city plans than the A Alternatives because the alternatives are located close to the bluff in Syracuse, which was identified in the 2001 NLTC study as the preferred location for the North Legacy project. The B Alternatives also have a northern terminus at 5100 West in Weber County, which is consistent with the 2001 NLTC study in Hooper and West Haven. Therefore, the B Alternatives are more consistent with how the Cities plan to develop in the future.

Lands with Conservation Easements. The A Alternatives would directly affect 20 acres of the 40-acre Black Agriland conservation easement located between 3000 West and 3500 West in Syracuse on the northern side of the Great Salt Lake Shorelands Preserve. The affected conservation easement is held by the Utah Department of Agriculture and Food and was designated with the intent of preserving agricultural use and providing an upland buffer to the Great Salt Lake Shorelands Preserve. Converting this conservation easement to roadway use under the A Alternatives would negate the intended use of the conservation easement.

Impacts to the Great Salt Lake Shorelands Preserve. While the A Alternatives would not directly affect the Great Salt Lake Shorelands Preserve in this area, they would be immediately adjacent to the northern boundary of the preserve for a distance of about 1 mile. As stated above, the A Alternatives would directly affect 20 acres of the 40-acre Black Agriland conservation easement located between 3000 West and 3500 West in Syracuse on the northern side of the Great Salt Lake Shorelands Preserve. The Black Agriland conservation easement is held by the Utah Department of Agriculture and Food and was designated with the intent of preserving agricultural use and providing an upland buffer to the Great Salt Lake Shorelands Preserve. The B Alternatives would not affect the Black Agriland conservation easement and would not be close to the Great Salt Lake Shorelands Preserve north of Gentile Street. For more information, see the paragraph on the next page titled Wildlife Habitat.

Relocations. The A Alternatives would relocate 31 to 40 residences, and would potentially relocate 10 to 12 more. The B Alternatives would relocate 23 to 26 residences and would potentially relocate four to five residences.

Noise and Indirect Community Impacts. In addition to the direct relocation impacts on the Bridgeway Island subdivision, the A Alternatives would also cause noise and visual impacts on the remaining residents in the subdivision. The currently cohesive Bridgeway Island neighborhood would be separated by the A Alternatives. Although roadway and pedestrian access would be relocated and maintained, remaining residents of the Bridgeway Island subdivision would experience some loss of neighborhood connection, noise impacts, and visual impacts.

By comparison, the B Alternatives would not have any direct impacts on subdivisions. However, as previously shown in Table 7, Summary of Environmental Impacts for the Northern Alternatives (from Gentile Road to North Project Termini), the B Alternatives would have noise impacts on seven to 15 more residences than the A Alternatives.

Wetlands. The B Alternatives would fill about 25 to 29 acres more wetlands than the A Alternatives (31 to 35 acres versus 6 acres for the Alternatives). The B Alternatives' wetland impacts would occur along the bluff in Syracuse and West Point. The A Alternatives would avoid the impacts on wetlands along the bluff. None of the wetlands directly affected by either the A Alternatives or the B Alternatives are considered to be high-quality.

Floodplains. Neither the A Alternatives nor the B Alternatives would affect any floodplains north of Gentile Street.

Wildlife Habitat. The B Alternatives would directly affect 8 to 11 acres of high-quality wildlife habitat. The A Alternatives would affect 7 acres of high-quality wildlife habitat. However, the A Alternatives are located immediately adjacent to rarer, more important high-quality wildlife habitat located in the Great Salt Lake Shorelands Preserve. Of the different wildlife habitat types, the marsh, playa, riparian, and water habitats are rarer and more valuable in the WDC study area. The A Alternatives and B Alternatives would have comparable impacts on playa, riparian, and water habitats, but the A Alternatives would be immediately adjacent to a much higher acreage of high-quality marsh habitats in the Great Salt Lake Shorelands Preserve. On balance, UDOT believes that the A Alternatives would affect more wildlife habitat.

Other Resources. For the northern alternatives, any of the alternatives would have comparable impacts on community facilities, hazardous waste facilities, trail crossings, and stream or canal crossings. The number of platted lots affected, the number of potential business relocations, and the visual impacts would be similar between all of the northern alternatives, and the impacts on these resources would not provide a meaningful basis for differentiating between options.

Regulatory Considerations

Section 4(f). As shown previously in Table 7, it is anticipated that all of the northern options would use Section 4(f) resources. However, the B Alternatives would use two Section 4(f) resources and would have *de minimis* uses on four to six Section 4(f) resources, while the A Alternatives would use four to seven Section 4(f) resources and would have *de minimis* uses on eight to 14 Section 4(f) resources. Therefore, UDOT anticipates that the selection of the B Alternatives is consistent with the requirements of Section 4(f).

Section 404 of the Clean Water Act. Both of the northern alternatives would affect wetlands and waters of the U.S. There are no practicable northern alternatives that would completely avoid impacts to all wetlands and waters of the U.S. While the B Alternatives would fill a larger area (25 to 29 acres) of wetlands, the A Alternatives could have a greater overall impact on the ecosystem given their proximity to the Great Salt Lake Shorelands Preserve.

Executive Order 11990, Protection of Wetlands. As previously shown in Table 7, all of the WDC action alternatives would have some impacts on wetlands. There was no practicable WDC action alternative that would avoid impacts on wetlands. As described above, while the B Alternatives would fill a larger area (25 to 29 acres) of wetlands, the A Alternatives may have a greater overall impact on the ecosystem given its proximity to the Great Salt Lake Shorelands Preserve.

Federal Executive Order 11988, Floodplain Management. Neither northern alternative would affect floodplains.

Utah Agricultural Protection Act. The Utah Agricultural Protection Act requires that designated APAs can be converted to highway use only if there is no feasible and prudent alternative to use of land in the APA.

As shown previously in Table 7, all of the northern alternatives would affect APAs. There was no prudent and feasible alternative that would avoid all impacts on APAs. However, the B Alternatives would affect only 3 to 20 acres from one to six APAs. The A Alternatives would affect a total of 55 to 56 acres from 12 to 13 APAs. The B Alternatives would have the fewest impacts on APAs. Therefore, UDOT anticipates that the selection of the B Alternatives is consistent with the requirements of the Utah Agricultural Protection Act.

3.3.3 Summary

UDOT identified the B Alternatives as its locally preferred northern alternative because it would have the best regional and local transportation performance, the fewest uses of Section 4(f) resources, the lowest amount of impacts to APAs and other farmland, the most consistency with local land use and transportation plans, the fewest relocations, the lowest cost, and because it would not be located immediately adjacent to the Great Salt Lake Shorelands Preserve along Gentile Street.

3.4 UDOT Evaluation of Northern Options for the B Alternatives

UDOT identified the B Alternatives' **4100 West option** as its locally preferred northern option.

As previously described in Table 1, Components of WDC Action Alternatives, and shown above in Figure 1, Alternatives Evaluated in the Draft EIS, north of 700 South in West Point, the B Alternatives used one of two northern options. Alternatives B1 and B3 use the 4100 West northern option that ends at 5100 West 5500 South in Weber County. Alternatives B2 and B4 use the 4800 West northern option that ends at 5100 West 5500 South in Weber County.

The remainder of this section discusses only the northern options for Alternatives B1 and B2 because UDOT selected Glovers Lane as the preferred southern option. Although not discussed further in this memorandum, the northern options would be the same for the alternatives that use the Shepard Lane southern option (Alternatives B3 and B4).

UDOT identified the 4100 West northern option as its locally preferred northern option because it would have the best regional and local transportation performance, the fewest uses of Section 4(f) resources, the lowest amount of impacts to APAs, the most consistency with local land use and transportation plans, and the lowest cost.

The sections below summarize the reasons why UDOT identified the 4100 West option as its locally preferred northern option.

3.4.1 Transportation Performance

Regional Performance

Section 2.2, Purpose and Need Performance, describes how the WDC action alternatives meet the project purpose. The regional performance of the B Alternatives' northern options was similar for all five criteria. Alternative B1, which uses the 4100 West northern option, performed better than the other alternatives in reducing daily delay and reducing congestion on east-west roads. In addition, Alternative B1 was the best performing of the B Alternatives in all categories.

Over the length of the whole alternative, Alternative B1 carries 1,900 more trips per day than Alternative B2.

Local Performance

At a local scale, the 4100 West option carries about 8,700 more vehicles per day in West Point (a 58% increase) than the 4800 West option. Additionally, the length of the 4100 West option is about 0.4 mile shorter than the 4800 West option, since the 4800 West option goes farther to the west between 700 South in West Point and 5500 South in Weber County. The 4100 West option with a shorter length and more vehicle use per day provides a better overall transportation benefit than the 4800 West option.

3.4.2 Resource Impacts

Table 8 summarizes the costs and impacts of the two northern options for the B Alternatives between 700 South in West Point and the northern terminus at 5500 South 5100 West in Weber County. The data in Table 7 include only the impacts for these two northern options, not the complete length of the alternatives.

Table 8 shows the impacts from each northern option from 700 South in West Point to the northern terminus at 5500 South 5100 West in Weber County.

Table 8. Summary of Environmental Impacts for the B Alternatives' Northern Options (from 700 South to 5500 South 5100 West)

		B Alternatives' Northern Options	
Impact Category	**Unit**	**4800 West Option (Alternatives B2 and B4)**	**4100 West Option (Alternatives B1 and B3)**
Route length	Miles	5.2	4.8
Route cost (2012)	Dollars	$138 million	$120 million
Land converted to roadway use	Acres	186	168
Direct impacts to the Great Salt Lake Shorelands Preserve	Acres	0	0
Direct impacts on land with a conservation easement[a]	Acres	0	0
Consistent with city plans (four cities)	Number	1	4

Table 8. Summary of Environmental Impacts for the B Alternatives' Northern Options (from 700 South to 5500 South 5100 West)

Impact Category	Unit	B Alternatives' Northern Options	
		4800 West Option (Alternatives B2 and B4)	4100 West Option (Alternatives B1 and B3)
Direct impacts on prime farmland	Acres	11	3
Direct impacts on irrigated cropland	Acres	133	102
Direct impacts on non-irrigated cropland	Acres	13	12
Direct impacts on Agriculture Protection Areas	Number	17	0
Indirect farmland impacts	Acres	28	24
Relocations (residential)	Number	10	13
Potential relocations[b] (residential)	Number	3	2
Platted residential[c]	Number	22	21
Relocations (business)	Number	0	0
Potential relocations[b] (business)	Number	0	0
Recreation areas	Number	0	1
Direct impacts on community facilities	Number	0	0
Relocated trails	Number	0	0
Existing trails crossed	Number	0	1
Noise receptors above criteria	Number	14	24
Stream/canal crossings	Number	5	2
Direct impacts on wetlands	Acres	10.4	14.7
Direct impacts on high-quality wetlands[d]	Acres	0	0
Wetlands within 300 feet of the right-of-way	Acres	27	52
Direct impacts on high-quality wildlife habitat[e]	Acres	0	4
High-quality wildlife habitat within 300 feet of the right-of-way	Acres	0	10
Direct impacts on floodplains	Acres	0	0
Hazardous waste sites	Number	0	0
Adverse effects on cultural resources	Number	1	1
Section 4(f) use	Number	1	1
Section 4(f) *de minimis* uses	Number	2	0

Table 8. Summary of Environmental Impacts for the B Alternatives' Northern Options (from 700 South to 5500 South 5100 West)

Impact Category	Unit	B Alternatives' Northern Options	
		4800 West Option (Alternatives B2 and B4)	4100 West Option (Alternatives B1 and B3)

[a] Conservation easements include Farmington City–held conservation easements and the Black Agriland conservation easement held by the Utah Department of Agriculture and Food.

[b] A potential relocation occurs when the right-of-way required for the WDC would affect the property and would be between 1 foot and 15 feet away from the structure.

[c] A platted residential impact is a lot that has been approved for residential development by the local jurisdiction but has not been developed.

[d] High-quality wetlands were determined using a wetland functional quality checklist that was based on UDOT's Functional Assessment Form. For more information, see Chapter 14, Ecosystem Resources, of the Draft EIS.

[e] High-quality wildlife habitats were determined by evaluating parcels for their habitat suitability for eight different wildlife species representative of the WDC study area. For more information, see Chapter 14, Ecosystem Resources, of the Draft EIS and *Technical Memorandum 9: Wildlife Assessment Methodology – Existing Conditions*.

Environmental Impacts

As shown above in Table 8, the 4800 West option is longer and requires more right-of-way to construct; the 4800 West option also has greater impacts on APAs, other types of farmland, and is less consistent with city plans. On the other hand, the 4100 West option would have more direct impacts on wetlands, more relocations, and would have slightly more noise impacts. On balance, UDOT considers the 4100 West option to have the lowest overall impacts on the natural and human environment. Specific regulatory requirements are discussed in the following section.

Farmland. The 4800 West option would have greater impacts on APAs, prime farmland, irrigated cropland, and non-irrigated cropland. The 4800 West option would also have more indirect impacts on farmlands.

Consistency with City Plans. The four cities in the northern part of the study area (Syracuse, West Point, Hooper, and West Haven) have all adopted the alignment identified in the 2001 NLTC study. This alignment is identified in the city plans, and Syracuse City, West Point City, and Hooper City have purchased or preserved some of the properties along this alignment in their respective cities. Both options share the same alignment in Syracuse, and both are consistent with Syracuse City's land-use and transportation plans. The 4100 West option would be more consistent with city plans than the 4800 West option because the 4100 West option is located closer to the bluff in West Point, which was identified in the 2001 NLTC study as the preferred location for the North Legacy project. The northern termini of both northern options would be consistent with the preferred location identified in the 2001 NLTC study. The 4800 West option would not be consistent with the West Point City transportation and land-use plans and the Hooper City land-use and transportation plans and how the Cities have planned for future development.

Lands with Conservation Easements. Neither of the northern options would affect any areas with conservation easements.

Relocations. The 4800 West option would relocate 10 residences, and would potentially relocate three more. The 4100 West option would relocate 13 residences and would potentially relocate two more.

Noise and Indirect Community Impacts. The 4100 West option would have noise impacts on 10 more residences than the 4800 West option.

Wetlands. The 4100 West option would fill about 4.3 acres more wetlands than the 4800 West option (14.7 acres versus 10.4 acres). The 4100 West option's additional wetland impacts would occur near the 1800 North interchange along the bluff in West Point. The 4800 West option would avoid these wetland impacts. None of the wetlands directly affected by either the 4800 West or the 4100 West options are considered to be high-quality.

Floodplains. Neither the 4800 West nor the 4100 West options would affect floodplains.

Wildlife Habitat. The 4100 West option would directly affect 4 acres of high-quality wildlife habitat. The 4800 West option would not affect any high-quality wildlife habitat.

Other Resources. Both northern options would have comparable impacts on community facilities, hazardous waste facilities, trail crossings, and stream or canal crossings. The number of platted lots affected, the number of potential business relocations, and the visual impacts would be similar between the northern options, and the impacts on these resources would not provide a meaningful basis for differentiating between options.

Regulatory Considerations

Section 4(f). As previously shown in Table 8, it is anticipated that both of the northern options would use one Section 4(f) resource. The 4800 West option would also have *de minimis* uses on two Section 4(f) resources, while the 4100 West option would not have any *de minimis* uses. Therefore, UDOT anticipates that the selection of either northern option is consistent with the requirements of Section 4(f).

Section 404 of the Clean Water Act. Both of the northern options would affect wetlands and waters of the U.S. There are no practicable northern options that would completely avoid impacts on all wetlands and waters of the U.S. The 4100 West option would fill a larger area (14.7 acres) of wetlands than the 4800 West option (10.4 acres).

Executive Order 11990, Protection of Wetlands. Both of the northern options would affect wetlands. There was no practicable WDC northern option that would avoid impacts on wetlands. As described above, the 4100 West option would fill a larger area (14.7 acres) of wetlands than the 4800 West option (10.4 acres).

Federal Executive Order 11988, Floodplain Management. Neither northern option would affect floodplains.

Utah Agricultural Protection Act. As previously shown in Table 8, only the 4800 West northern option would affect APAs. The 4100 West northern option would avoid all impacts

on APAs. Therefore, UDOT anticipates that the selection of the 4100 West option is consistent with the requirements of the Utah Agricultural Protection Act.

3.4.3 Summary

UDOT identified the 4100 West northern option as its locally preferred northern option because it would have the best regional and local transportation performance, the fewest uses of Section 4(f) resources, and the lowest amount of impacts to APAs, the most consistency with local land use and transportation plans, and the lowest cost.

3.5 UDOT's Locally Preferred Alternative – Alternative B1

As described in the previous three sections, Alternative B1 consists of the Glovers Lane southern option, the segment common to all alternatives between the Farmington–Kaysville boundary and Gentile Street in Syracuse, the B Alternatives northern alternative, and the 4100 West northern option.

The rationale for the identification of UDOT's locally preferred southern option, northern alternatives, and northern option for the B Alternatives is described previously. Compared with the other WDC action alternatives, Alternative B1 would have the best overall transportation performance because it uses the better-performing Glovers Lane option in Farmington and the better-performing, more efficient eastern alignment in Syracuse and West Point.

As previously shown in Table 5, Summary Comparison of Resource Impacts, by Alternative, Alternative B1 would also have the fewest uses of Section 4(f) resources and APAs. It would also have low levels of relocations and community impacts, would be the most consistent with local plans, would have a low level of impacts on farmlands, and would have the lowest cost.

4.0 Conclusion

UDOT identified Alternative B1 as its locally preferred alternative for the WDC Draft EIS. It should be noted that UDOT's identification of a preferred alternative at the Draft EIS stage does not ensure that UDOT will recommend the same alternative in the Final EIS. The final selection of an alternative will be made by FHWA in the Record of Decision. As part of the Clean Water Act permitting process, the U.S. Army Corps of Engineers will make the decision about whether the alternative submitted in the permit application to the agency satisfies the Section 404(b)(1) guidelines. Neither of these agencies has identified a preferred alternative in the Draft EIS.