

# Chapter 2: Alternatives

<b>2.1</b>	<b>Background of the Alternatives-Development Process.....</b>	<b>2-2</b>
<b>2.2</b>	<b>Alternatives-Development Process for the Final EIS.....</b>	<b>2-3</b>
2.2.1	Summary of Alternatives-Development Travel Demand Modeling Process.....	2-4
2.2.2	Range of Alternatives Considered in This EIS .....	2-6
2.2.3	Identification of Preliminary Alternatives.....	2-7
2.2.4	Screening of Alternatives .....	2-16
2.2.5	Alternatives-Screening Reports.....	2-33
2.2.6	Consideration of Clean Water Act Section 404(b)(1) during Alternatives Development.....	2-34
<b>2.3</b>	<b>WDC Roadway Design Elements.....</b>	<b>2-37</b>
2.3.1	Stormwater Runoff Treatment and Drainage Facilities.....	2-37
2.3.2	Relocated Utilities .....	2-38
2.3.3	Park-and-Ride Lots .....	2-38
2.3.4	Right-of-Way Width .....	2-39
2.3.5	Interchange Locations .....	2-41
2.3.6	Local Street Overpasses or Closures .....	2-41
2.3.7	Trail Considerations .....	2-42
2.3.8	Changes to Alternatives after the Release of the Draft EIS .....	2-44
2.3.9	Consideration of a Supplemental EIS .....	2-49
<b>2.4</b>	<b>Description of Alternatives Carried Forward for Detailed Study .....</b>	<b>2-50</b>
2.4.1	No-Action Alternative.....	2-50
2.4.2	Alternative A1 .....	2-50
2.4.3	Alternative A2.....	2-54
2.4.4	Alternative B1 .....	2-57
2.4.5	Alternative B2 .....	2-60
2.4.6	Wetland Avoidance Options .....	2-62
<b>2.5</b>	<b>Summary Comparison of Alternatives.....</b>	<b>2-63</b>
2.5.1	Purpose and Need Comparison .....	2-63
2.5.2	Degree to Which the Alternatives Meet the Project Purpose .....	2-67
2.5.3	Estimated Cost.....	2-68
2.5.4	Operational Characteristics of the WDC.....	2-69
2.5.5	Summary Comparison of Resource Impacts by Alternative .....	2-69
<b>2.6</b>	<b>Identification of the Preferred Alternative .....</b>	<b>2-72</b>
2.6.1	FHWA and UDOT’s Evaluation of the Action Alternatives.....	2-72
2.6.2	FHWA and UDOT’s Evaluation of the Wetland Avoidance Option .....	2-73
2.6.3	FHWA and UDOT’s Evaluation of Northern Alternatives .....	2-74
2.6.4	FHWA and UDOT’s Evaluation of Northern Options for Alternatives B1 and B2 .....	2-80
2.6.5	FHWA and UDOT’s Preferred Alternative – Alternative B1 with Wetland Avoidance Option .....	2-85
2.6.6	Conclusion.....	2-85
<b>2.7</b>	<b>References .....</b>	<b>2-86</b>

This chapter describes the alternatives that were considered for meeting the purpose of and need for the West Davis Corridor (WDC) Project as described in Chapter 1, Purpose of and Need for Action. This chapter reviews the alternatives that were eliminated from detailed study, describes the No-Action Alternative and the alternatives that were carried forward for detailed study, and summarizes the advantages and disadvantages of the No-Action and action alternatives.

## 2.1 Background of the Alternatives-Development Process

The WDC alternatives-development process started in 2010, shortly after the initiation of the Environmental Impact Statement (EIS) process. Throughout the EIS process, whenever new information became available, UDOT updated the alternatives-development process to ensure that all alternatives were rigorously explored and evaluated. The following is a chronology of the alternatives-development process.

### Draft EIS Alternatives-Development Process

- **Summer 2010** – Alternatives-development process initiated. Range of preliminary alternatives identified with public and agency input and comment.
- **Fall 2010** – Initial Level 1 screening using the Wasatch Front Regional Council’s (WFRC) travel demand model version 6.0 and 2007 Regional Transportation Plan (RTP).
- **November 2010** – Released draft Level 1 screening version of *Technical Memorandum 15: Alternatives Screening Report* to agencies and the public.
- **Winter 2011** – Initial Level 2 screening.
- **February 2011** – Released draft Level 2 screening version of *Technical Memorandum 15: Alternatives Screening Report* to agencies and the public.
- **Spring 2011** – Public and agency comment period.
- **June 2011** – WFRC releases new travel demand model (version 7.0) and 2011–2040 RTP.
- **Summer 2011** – Revised WDC study area boundary based on WFRC travel demand model version 7.0 and 2011–2040 RTP.
  - Revised and updated Level 1 screening process based on changes to WDC study area, travel demand model version 7.0, and 2011–2040 RTP.
  - Revised and updated Level 2 screening process based on new public and agency comments regarding wetlands, farmland, community resources, engineering design, and costs.
- **Fall 2011** – Released revised WDC alternatives-screening process and refined alternatives to the public and agencies for review and comment.
- **May 2013** – Released the Draft EIS.

## Final EIS Alternatives-Development Process

- **Summer 2014** – Shared Solution Alternative evaluation process initiated.
- **Summer 2015** – WFRC releases new travel demand model (version 8.0) and 2015–2040 RTP.
- **Spring 2016** – WFRC updates the travel demand model (version 8.1) incorporating managed motorways into the RTP.
- **Summer 2016** – Alternatives-development process revised and new Level 1 and 2 screening conducted based on WFRC travel demand model version 8.1 and 2015–2040 RTP.
- **Summer 2017** – Released the Final EIS.

In this Final EIS, only the alternatives-development process conducted after release of the Draft EIS is described, since the process was redone based on release of version 8.1 of the WFRC travel demand model, the updated 2015–2040 RTP, and evaluation of the Shared Solution Alternative. Detailed information about the alternatives-development process is provided in the following documents:

- *Technical Memorandum 15: Alternatives Screening Report* (West Davis Corridor Team 2012b)
- *Development and Evaluation of the Shared Solution Alternative* (West Davis Corridor Team 2016a)
- *Final EIS Addendum to Technical Memorandum 15: Alternatives Screening Report* (West Davis Corridor Team 2017a)

## 2.2 Alternatives-Development Process for the Final EIS

The alternatives-development process identified and evaluated a full range of alternatives that were brought forward during the National Environmental Policy Act (NEPA) scoping process, identified in previous studies, or brought forward during the EIS process.

The Federal Highway Administration (FHWA), UDOT, UTA, the cooperating and participating agencies, and the public participated in the screening process that evaluated the alternatives. Each alternative was considered and reviewed against the project’s purpose and against the screening criteria to determine whether it would be carried forward for detailed study in this Final EIS.

In order to be carried forward for detailed study, an alternative needed to meet the purpose of the project (see Table 2-1 below) and be reasonable and practicable. The alternatives-

### How were the alternatives developed for this Final EIS?

The alternatives-development process identified and evaluated a full range of alternatives. Each alternative was considered and reviewed against the project’s purpose and against the screening criteria to determine whether it would be carried forward for detailed study in this Final EIS.

development process is summarized below and is explained in detail in *Technical Memorandum 13: Alternatives-Development and Screening Process* (West Davis Corridor Team 2011b), *Technical Memorandum 14: Level 2 Screening Process* (West Davis Corridor Team 2011c), *Technical Memorandum 15: Alternatives Screening Report* (West Davis Corridor Team 2012b), and the *Final EIS Addendum to Technical Memorandum 15: Alternatives Screening Report* (West Davis Corridor Team 2017a).

**Table 2-1. Summary of the Project’s Purpose**

Primary Purposes	Secondary Objectives
Improve regional mobility.	Increase the interconnection between transportation modes.
Enhance peak-period mobility.	Support local growth objectives. Increase bicycle and pedestrian options.

For more details, see Section 1.4.1, Purpose of the Project, in Chapter 1, Purpose of and Need for Action.

Figure 2-1, Alternatives Development and Screening Process, in Volume IV provides an overview of the WDC alternatives-development process. The process took a large number of suggested recommendations and screened and refined them to produce the alternatives that are being studied in detail in this Final EIS. The alternatives-development process described in this chapter consists of the following five steps:

1. Identification of preliminary alternatives
2. Level 1 screening
3. Level 2 screening
4. *Alternatives Screening Report* (with public and agency input)
5. Refinement of the advanced alternatives

## 2.2.1 Summary of Alternatives-Development Travel Demand Modeling Process

WFRC is the designated metropolitan planning organization that works in partnership with UDOT, UTA, local governments, and other stakeholders to develop long-range transportation plans for the communities in their jurisdiction. WFRC maintains a travel demand model, which is a state-of-the-practice tool that allows transportation analysts to input various land-use and growth scenarios to test road and transit networks with the expected traffic for each scenario.

Based on a review in August 2013 (Transportation Planning Certification Review for the Wasatch Front Regional Planning Area), FHWA and the Federal Transit Administration certified that the transportation planning process carried out by WFRC met transportation planning requirements. The WFRC travel demand model has been reviewed by experts from the FHWA Resource Center, and the model has been shared at numerous federal conferences as a best practice (FHWA 2013). The travel demand model was found by FHWA to be acceptable for planning and NEPA purposes.

The WDC team used the WFRC regional travel demand forecasting model to evaluate the transportation effectiveness of the various alternatives. The travel demand model predicts future travel demand based on land-use, socioeconomic, and transportation system characteristics. The goal of the modeling is to determine, based on the distribution of population, households, and employment and available transportation facilities, the amount, type, and location of travel that residents will undertake. The travel demand model consists of three elements: the model itself (the scripts, equations, constants, and so on), the input networks (both highway and transit), and the input socioeconomic data.

WFRC is continually updating and refining the travel demand model to incorporate new observed data and increased capabilities. The WDC EIS process initially used version 6.0 of the travel demand model for developing the project's purpose and need and for screening the project alternatives. However, before the Draft EIS was published, WFRC released version 7.0 of the travel demand model. To ensure accurate travel forecasting for the Draft EIS, version 7.0 of the travel demand model was used, including for the purpose and need and alternatives screening. After release of the Draft EIS, WFRC released version 8.0 of the travel demand model as part of its 2015–2040 RTP. This updated model included recalibration of version 7.0 using the 2012 Utah Household Survey, a new freight module to better forecast truck trips, inclusion of school trips, expansion of employment categories from 3 to 11, updated freeway capacities, and an upgraded transit module.

In early 2016, WFRC released version 8.1 of its travel demand model, which included the I-15 Managed Motorways project. Managed motorways allow better utilization of traffic flow so that I-15 can manage a greater volume of traffic by controlling the flows at the freeway ramps. Because I-15 is an important part of the travel flow in the WDC study area, and after reviewing version 8.1 of the model and the improvements made by WFRC, the WDC team decided to update the project's needs assessment and alternatives-screening process using the updated model. For this reason, all travel demand model information in this Final EIS is based on version 8.1 of WFRC's travel demand model.

## 2.2.2 Range of Alternatives Considered in This EIS

UDOT and FHWA used a two-step screening process to rigorously explore and objectively evaluate 51 alternatives brought forward by the public and agencies and defined in previous studies. The identification, consideration, and analysis of alternatives are key to the NEPA process and its goal of objective decision-making. The requirements to consider all “reasonable alternatives” and to consider a “range of reasonable alternatives” derive from the Council on Environmental Quality’s (CEQ) NEPA regulations (40 Code of Federal Regulations [CFR] 1500) as follows:

**1502.14(a)** Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

**1505.1(e)** [Agencies shall adopt NEPA procedures] requiring that the alternatives considered by the decisionmaker are encompassed by the range of alternatives discussed in the relevant environmental documents and that the decisionmaker consider the alternatives described in the environmental impact statement.

**1508.25** Scope consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement.

The regulations do not define “reasonable alternatives” or “range of alternatives,” but the meanings of those terms are addressed in CEQ’s memorandum titled “Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations” (March 16, 1981). Regarding what is meant by “range of alternatives,” the memo states:

The phrase “range of alternatives” refers to the alternatives discussed in environmental documents. It includes all reasonable alternatives, which must be rigorously explored and objectively evaluated, as well as those other alternatives, which are eliminated from detailed study with a brief discussion of the reasons for eliminating them.

Regarding what is a “reasonable alternative” that a project applicant must consider, the memo states:

Section 1502.14 requires the EIS to examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is “reasonable” rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.

As part of the alternatives-development process, the WDC team evaluated alternatives based on NEPA regulations and CEQ guidance. Each alternative was evaluated to determine whether the alternative was practicable or feasible from the technical and economic standpoint and using common sense. The alternatives-evaluation process is described in detail in this chapter, in *Technical Memorandum 15: Alternatives Screening Report*, and in the *Final EIS Addendum to Technical Memorandum 15: Alternatives Screening Report*.

## 2.2.3 Identification of Preliminary Alternatives

This section describes the processes that were used to identify a range of preliminary alternatives. These alternatives were identified from the following sources:

- Previous studies and plans
- Public and agency input

### 2.2.3.1 Preliminary Alternatives Identified in Previous Studies and Plans

The WDC team considered alternatives from the following previous transportation studies and plans:

- 2001 *North Legacy Transportation Corridor Study* (WFRC 2001)
- 2007 Regional Transportation Plan from WFRC (WFRC 2007a)
- 2007 *North Legacy to Legacy Connection Study* (WFRC 2007b)
- 2009 *North Legacy Transportation Corridor Supplemental Study* (WFRC 2009)
- *Wasatch Choices 2040* (WFRC and others, no date)
- 2008 *Davis Weber East-West Transportation Study Legislative Report* (InterPlan Co. 2008)
- City transportation master plans

Figure 2-2, Alternatives from Previous Transportation Studies, in Volume IV shows the alternatives from the 2001 *North Legacy Transportation Corridor Study* and the 2009 *North Legacy Transportation Corridor Supplemental Study*. The other studies made modifications to the 2001 and 2009 study alignments that were too localized to be shown on a regional figure.

## 2.2.3.2 Preliminary Alternatives Identified through Public and Agency Input

### NEPA Scoping

As discussed in the *West Davis Corridor Summary Scoping Report* (West Davis Corridor Team 2010), during the scoping period for the WDC Project, the WDC team received 189 scoping comments. Of these 189 comments, 149 pertained to alternatives development or design. These 149 comments addressed alternative locations, alternative configurations, intersection locations, modes of transportation, construction costs, construction methods, smart growth, and logical termini (endpoints) for the alternatives. Where applicable, the WDC team incorporated the alternatives scoping comments when developing the range of preliminary alternatives.

#### What is scoping?

Scoping is an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.

### Meetings of the Stakeholder Working Group

A Stakeholder Working Group meeting devoted to developing preliminary alternatives was held on August 3, 2010. The Stakeholder Working Group included representatives of Cities in the project area, government agencies (including cooperating and participating agencies under SAFETEA-LU—the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users of 2005), and nongovernmental organizations. Lists of SAFETEA-LU cooperating and participating agencies and Stakeholder Working Group members are included in Appendices B and C of *Technical Memorandum 15: Alternatives Screening Report*.

#### What are cooperating and participating agencies?

A cooperating agency is any federal agency, other than a lead agency, that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project or project alternative.

A participating agency is a federal, state, tribal, regional, or local government agency that might have an interest in a project.

The Stakeholder Working Group meeting gave cooperating and participating agencies and other stakeholders an opportunity to provide comments on the alternatives-screening criteria and the development of preliminary alternatives in accordance with the requirements of SAFETEA-LU. During this meeting, stakeholders were specifically asked to provide ideas for preliminary alternatives as well as comments on any alternatives from previous studies and plans.

Additionally, the alternatives-screening methodology and criteria were presented and provided to the Stakeholder Working Group during this meeting (see *Technical Memorandum 13: Alternatives-Development and Screening Process*). A 40-day review period (from August 3, 2010, to September 12, 2010) was provided for stakeholders to comment on the alternatives-development process and the screening criteria for the preliminary alternatives.

## Agency and Public Input under SAFETEA-LU

The WDC team used several methods to involve agencies and the public during the development and screening of preliminary alternatives as required under NEPA and SAFETEA-LU.

The WDC team requested agency and public input through meetings, open houses, and reviews of project materials. As described above in the section titled Meetings of the Stakeholder Working Group, on August 3, 2010, the WDC team hosted a meeting with the established Stakeholder Working Group (consisting of representatives from SAFETEA-LU cooperating and participating agencies, Cities, and nongovernmental organizations) that presented (1) the proposed alternatives-screening methodology and criteria and (2) a list of preliminary alternatives from previous studies and plans.

At this meeting, the WDC team requested comments on the alternatives-screening methodology and criteria and the preliminary alternatives for the WDC Project. Additionally, the Stakeholder Working Group and the agencies were given a 40-day review and comment period from August 3, 2010, to September 12, 2010. The WDC team received comments from 17 members of the Stakeholder Working Group that included comments from 11 cooperating and participating agencies.

The public was also asked to review and provide comments on the proposed alternatives-screening methodology and criteria and on the list of preliminary alternatives. Opportunities for public comments were provided at three open houses held between August 3 and August 5, 2010; at a booth at the Davis County Fair between August 18 and August 21, 2010; and through the project website ([www.udot.utah.gov/westdavis](http://www.udot.utah.gov/westdavis)), written comments, and e-mail. The proposed alternatives-screening methodology and criteria and the preliminary list of alternatives were posted on the project website for public review between August 3, 2010, and September 12, 2010.

Over 500 members of the public attended the open houses. During the 40-day comment period, the WDC team received 398 public or agency comments related to the development and screening of preliminary alternatives, of which 168 were submitted at the public meetings. The majority of these comments expressed support for or opposition to the preliminary corridors that were presented at the public open houses. Of the comments about the preliminary corridors, the preliminary corridors in Farmington were the subject of the largest number of comments. The WDC team posted on the project website a file containing all of the comments received and a summary of responses to unique comments ([www.udot.utah.gov/westdavis/pages/documentation](http://www.udot.utah.gov/westdavis/pages/documentation)).

During the August 2010 comment period, when the needs assessment study area (another name for the WDC study area) extended to 12th South in Weber County, members of the public suggested two new northern connections in the Weber County part of the study area that connected to I-15 north of 4000 South: one on Midland Drive in Roy and one along the Hooper Canal between 2300 North and 12th South in Hooper and West Haven. The WDC team considered these northern connections when developing Alternatives 11A, 12A, and 13A during the screening process in 2011.

With the revised study area boundary to 3000 South (see Section 1.2, Description of the Needs Assessment Study Area), there was no need for a northern connection to I-15 north of 3000 South. In addition, the northern termini of the alternatives suggested by the public after the study area boundary had been revised are between existing roads and would not have a logical terminus connection with the existing roadway network. Therefore, these alternatives were combined into Alternatives 11A and 13A with logical termini that connected into the existing roadway network. For more information, see Section 2.1.4, Agency and Public Input under SAFETEA-LU, in *Technical Memorandum 15: Alternatives Screening Report*.

Additionally, public and agency comments in 2010 suggested two new alignments in the central part of the study area:

- An alignment that follows Gentile Street west from the Gentile Street/Bluff Road intersection to 3000 West and then follows 3000 West north to intersect with the alignment identified in the 2001 *North Legacy Transportation Corridor Study* (2001 alignment) north of Antelope Drive. This alignment was considered as Syracuse Option 1 for Alternative 11A in Level 2 screening.
- An alignment between 2700 South 4000 West in Syracuse and the 2001 alignment near 300 North in West Point. This alignment is identified as Alternatives 13A, 13B, and 13C in Figure 2-3, Range of Alternatives Considered, in Volume IV.

The WDC team incorporated both of these new central alignments into the range of preliminary alternatives, which are shown in Figure 2-3.

WDC team members also had focused meetings with individuals, agency representatives, city and county representatives, and representatives of nongovernmental organizations to discuss specific concerns or proposals. These meetings were recorded in meeting notes, and the notes were made available to the team as it developed the alternatives.

Finally, as part of the process, the WDC team consulted with tribal representatives regarding Native American concerns about potential alternatives and the screening process. The WDC team also consulted with Native American tribes under Section 106 of the National Historic Preservation Act.

In February 2011, the WDC team presented the draft results of the alternatives-screening process to the agencies and the public and provided a 6-week comment period. Three public meetings were held between February 8 and February 10, 2011. During the comment period, the WDC team received over 4,500 unique comments. A summary of the public and agency comments received is included in *Technical Memorandum 15: Alternatives Screening Report*. Included among those comments were some new alignments, variations of existing alignments, and comments about the screening process and screening criteria. Where the alternatives suggested in the public comments were different from corridors or alternatives previously evaluated, the WDC team incorporated these suggested alternatives into the range of preliminary alternatives that were considered during the screening process.

The information gathered during the agency and public involvement process was used to help define the range of preliminary alternatives. More information about public and agency input is provided in *Technical Memorandum 15: Alternatives Screening Report*.

## Alternatives Received after the Draft EIS Was Released (Shared Solution Alternative)

The WDC team began collecting information, analyzing data, and evaluating alternatives in 2010 as it initiated an EIS to address transportation needs in western Davis and Weber Counties. The team released a Draft EIS in May 2013, after which UDOT received a formal request to develop and evaluate a new alternative known as the Shared Solution (Figure 2-4, Shared Solution Alternative, in Volume IV). This alternative was proposed by the Shared Solution Coalition (Coalition) comprising various nongovernmental organizations and local resident groups. The Shared Solution Alternative was based on six key principles as presented by the Coalition:

1. **Compact, mixed-use development.** Boulevard nodes create walkable activity centers with a variety of business, housing, and transportation choices for people of all ages, income levels, and abilities. High-quality design is critical to the value and success of livable, walkable places. The Shared Solution Coalition recommended numerous land-use changes to cities in the WDC study area.
2. **Boulevard roadway configurations with innovative intersections.** Center-median boulevards and multi-way boulevards create an enhanced arterial grid for travel. Utilizing newly invented innovative intersections, these roadways allow users to drive slower but travel faster. Boulevards maximize safety for all users and make choosing active transportation and transit a viable option. In most cases, boulevard enhancements, including increasing the number of travel lanes, can be achieved within the existing right-of-way by repurposing existing wide shoulders.
3. **Incentivized transit.** This principle includes improved fare structures, suburban shuttles to FrontRunner, improved park- or bike-and-ride options, intuitive routing, and peak-hour priority bus lanes.
4. **Connected, protected bikeways.** This principle includes bikeways that link neighborhoods and activity centers to transit and provide safe transportation and recreation use for all users. Bikeways should be physically separated from vehicle traffic where feasible, possibly as attractive underpasses at challenging intersections.
5. **Preventative ramp metering on I-15.** This would optimize freeway flow during peak congestion. (Note that this improvement has been included as a future project in WFRC's 2015–2040 RTP.)
6. **Strategically placed overpasses along I-15.** Separating local circulation from freeway traffic eases peak-hour east-west congestion. Overpasses should be designed for the safety and convenience of all users, including pedestrians, wheelchair users, and bicyclists.

UDOT has worked collaboratively with the Coalition since 2013 to determine whether the Shared Solution Alternative would meet the transportation needs in the WDC study area. The Coalition requested that UDOT formalize this process in a Memorandum of Agreement, which was signed in May 2014. This agreement included several workshops and meetings that would be held with the Cities, Counties, and agencies. In all, 30 technical coordination

meetings, 6 stakeholder workshops, and 15 city land-use meetings were held to develop and evaluate this alternative. The workshops were held to receive and evaluate stakeholder feedback on roadway, transit, and land-use concepts.

In May 2016, UDOT and the Coalition finalized the Shared Solution Alternative assumptions based on all of the information gathered throughout the alternative-refinement process. Elements of the Shared Solution Alternative, such as protected bikeways, preventative ramp metering, and strategically placed overpasses along I-15, have been incorporated into the WDC EIS alternatives or local and regional transportation plans. UDOT is also including some parkway features based on comments on the Draft EIS and during the Shared Solution process; these features include noise-reducing pavement, dark-sky lighting, additional trail connections, and other landscaping and aesthetic features. For more information about the Shared Solution Alternative process and the components of this alternative as agreed to by the Coalition and UDOT, see *Development and Evaluation of the Shared Solution Alternative* (West Davis Corridor Team 2016a). This report was released for public and agency review in May 2016.

### 2.2.3.3 List of Preliminary Alternatives

*Technical Memorandum 15: Alternatives Screening Report* and the *Final EIS Addendum to Technical Memorandum 15: Alternatives Screening Report* provide detailed information about the previous iterations of the development of preliminary alternatives.

Based on previous studies and input from the agencies and the public, the WDC team identified and modeled 51 preliminary alternatives in addition to the No-Action Alternative (see Section 2.4.1, No-Action Alternative). The 51 preliminary alternatives considered various combinations of transportation modes, facility types, and corridor alignments (see Table 2-2 on page 2-14).

The 51 preliminary alternatives included one Transportation System Management/Traffic Demand Management (TSM/TDM) alternative, two transit alternatives, the Shared Solution Alternative, five alternatives that proposed widening existing roads, and 42 alternatives that proposed constructing new roads. The 42 new roadway alternatives included five unique corridors:

- D&RGW corridor (Alternatives 09A, 09B, and 09C in Figure 2-3, Range of Alternatives Considered, in Volume IV)
- Rocky Mountain Power corridor (Alternatives 10A, 10B, and 10C in Figure 2-3)
- 2001 alignment (Alternatives 11A, 11B, and 11C in Figure 2-3)
- Far West alignment (Alternatives 12A, 12B, and 12C in Figure 2-3)
- An alignment between the 2001 alignment and the Far West alignment in Syracuse and West Point (Alternatives 13A, 13B, and 13C in Figure 2-3)

Three different roadway facility types (four-lane divided highway; two-lane, limited-access highway; and five-lane arterial) were modeled for each of the five unique new road corridors.

In addition, each unique corridor was modeled with the Shepard Lane, Glovers Lane, and D&RGW connections in Farmington.

In Table 2-2 below, alternatives that have the same number (for example, 09A, 09B, and 09C) are on the same alignment but have different facility types. Furthermore, with the exception of alternatives that upgraded existing facilities (Alternatives 03, 04, 05, 06, 07, and 08), alternatives that end with an A were modeled as a new four-lane divided highway; alternatives that end with a B were modeled as a new two-lane, limited-access highway; and alternatives that end with a C were modeled as a new five-lane arterial.

The preliminary alternatives were developed based on previous transportation studies listed in Section 2.2.3.1, Preliminary Alternatives Identified in Previous Studies and Plans, and comments from members of the public and representatives from Cities, resource agencies, and other stakeholders. Public and agency comments from the comment periods in the summer of 2010, in the spring of 2011, and on the Draft EIS were used to develop the range of preliminary alternatives. The Shared Solution Alternative was based on comments on the Draft EIS, and the alternatives-development and screening process for this alternative is described in *Development and Evaluation of the Shared Solution Alternative* (West Davis Corridor Team 2016a).

New roadway alternatives that involved minor variations or shifts in alignment of existing alternatives were not considered as part of Level 1 screening, since minor changes in alignment would not affect the transportation performance of an alternative at a regional scale. The variations of the new corridor alignments that passed Level 1 screening were considered during Level 2 screening (see Section 2.2.3.2, Preliminary Alternatives Identified through Public and Agency Input). If an alternative passed Level 1 screening, the WDC team considered all feasible variations or options for that alternative during Level 2 screening.

Similarly, for all of the new roadway alternatives (Alternatives 09A, 09B, 09C, 10A, 10B, 10C, 11A, 11B, 11C, 12A, 12B, 12C, 13A, 13B, and 13C), various southern connections were considered. Each new roadway alternative was modeled with a Shepard Lane, Glovers Lane, and D&RGW connection in Farmington except Alternatives 09A, 09B, and 09C, which are on the D&RGW alignment and were modeled with only Shepard Lane and Glovers Lane connections.

The range of preliminary alternatives that was considered during the Level 1 screening process is shown in Table 2-2 below. Figure 2-3, Range of Alternatives Considered, in Volume IV shows the different corridors and alignments that the WDC team considered when developing the preliminary list of alternatives. The Shared Solution Alternative is shown in Figure 2-4, Shared Solution Alternative, in Volume IV.

**Table 2-2. Preliminary Alternatives**

Alternative	Facility Type	Description
No-Action	Not applicable	No action taken other than the projects in WFRC's current RTP minus the WDC.
TSM/TDM	Not applicable	Improve roadway operations by 10% by using systemwide mobility improvements on Hinckley Drive, 4000 South, 5500/5600 South, 1800 North, State Route (SR) 193, Antelope Drive, SR 126, and SR 108. WFRC has determined that a 10% operational improvement is the maximum reasonable improvement that could be expected from TSM/TDM projects.
01	Transit	<i>Ultimate Transit:</i> In addition to the transit projects in the RTP, add light-rail transit along 4000 South and Antelope Drive, add bus rapid transit along 1800 North and in Layton (all lines would connect to existing FrontRunner stations), and reduce FrontRunner headway times to 30 minutes.
02	Transit	Assumes the same transit projects listed in Alternative 01 with reduced household size for the socioeconomic data. The purpose of the change in the socioeconomic data was to determine whether more transit-friendly land-use assumptions would improve ridership.  <i>Reduce household size:</i> The socioeconomic data assumed a reduced household size for the population in the study area. The assumption of reduced household size had the net effect of reducing population in the study area by 15,500 compared to the 2040 No-Action Alternative socioeconomic conditions. This change to the socioeconomic data was based on findings by Envision Utah that found higher transit use was correlated with smaller household sizes in some areas of the U.S.
03	Shared Solution Alternative	Land use, boulevard, transit, bikeway, and ramp-metering improvement alternative that makes use of existing infrastructure and smart-growth land use to reduce travel demand and improve traffic flow. Because this alternative would change land uses, jobs would be located in each community, thereby reducing the need for travel by car.
04	Upgrade existing roads	<i>Widen Existing East-West Roads beyond RTP:</i> Widen Hinckley Drive, 4000 South, 5500/5600 South, 1800 North, SR 193, and Antelope Drive. All east-west roads are widened from I-15 to SR 37 (Weber County) or SR 110 (Davis County).
05	Upgrade existing roads	<i>Widen Existing East-West Roads beyond RTP plus I-15 Widening:</i> Widen Hinckley Drive, 4000 South, 5500/5600 South, 1800 North, SR 193, and Antelope Drive. All east-west roads are widened from I-15 to SR 37 (Weber County) or SR 110 (Davis County). Include I-15 widening to add one more general-purpose lane in each direction (milepost [MP] 324/SR 225 to MP 342/SR 79).
06	Upgrade existing roads	<i>Widen Existing North-South Roads beyond RTP:</i> Widen SR 126 (Layton Parkway to Hinckley Drive) and SR 108 (Antelope Drive to Hinckley Drive).
07	Upgrade existing roads	<i>Widen Existing North-South Roads beyond RTP plus I-15 Widening:</i> Widen SR 126 (Layton Parkway to Hinckley Drive) and SR 108 (Antelope Drive to Hinckley Drive). Include I-15 widening to add one more general-purpose lane in each direction (MP 324/SR 225 to MP 342/SR 79).
08	Upgrade existing roads	<i>Widen Existing East-West and North-South Roads beyond RTP plus I-15 Widening:</i> Combine Alternatives 05 and 07.
09A	New four-lane divided highway	Begin at Farmington, merge to D&RGW corridor, and stay on D&RGW corridor to 4000 South. Interchanges at 5600 South, 1800 North, SR 193, Antelope Drive, Hill Field Road, Layton Parkway, 200 North, and Shepard Lane. <b>Modeled with Shepard Lane and Glovers Lane Options in Farmington.<sup>a</sup></b>

(continued on next page)

**Table 2-2. Preliminary Alternatives**

Alternative	Facility Type	Description
09B	New two-lane, limited-access highway	Same alignment as 09A. At-grade intersections at minimum 1-mile spacing. <b>Modeled with Shepard Lane and Glovers Lane Options in Farmington.<sup>a</sup></b>
09C	New five-lane arterial	Same alignment as 09A. At-grade intersections at minimum 0.5-mile spacing. <b>Modeled with Shepard Lane and Glovers Lane Options in Farmington.<sup>a</sup></b>
10A	New four-lane divided highway	Begin at Farmington, follow 2001 alignment to 2000 West in Layton, merge to Rocky Mountain Power corridor, and stay on power corridor to 4000 South. Interchanges at 5600 South, 1800 North, SR 193, Antelope Drive, Hill Field Road, Layton Parkway, 200 North, and Shepard Lane. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
10B	New two-lane, limited-access highway	Same alignment as 10A. At-grade intersections at minimum 1-mile spacing. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
10C	New five-lane arterial	Same alignment as 10A. At-grade intersections at minimum 0.5-mile spacing. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
11A	New four-lane divided highway	Begin at Farmington, follow 2001 alignment to 4000 South. Interchanges at 5500 South, 1800 North, SR 193, Antelope Drive, 2000 West, 2700 West (Layton), 200 North, and Shepard Lane. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
11B	New two-lane, limited-access highway	Same alignment as 11A. At-grade intersections at minimum 1-mile spacing. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
11C	New five-lane arterial	Same alignment as 11A. At-grade intersections at minimum 0.5-mile spacing. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
12A	New four-lane divided highway	Begin at Farmington, follow 2001 alignment to Gentile Street, swing far west crossing Antelope Drive west of 4500 West, stay west of existing development in West Point crossing the Davis County–Weber County border near 6500 West (Weber County), follow 6500 West in Hooper to 4600 South, then cut northeast to 4000 South at 5900 West. Interchanges at 5500 South, 1800 North, SR 193, Antelope Drive, 2000 West, 2700 West (Layton), 200 North, and Shepard Lane. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
12B	New two-lane, limited-access highway	Same alignment as 12A. At-grade intersections at minimum 1-mile spacing. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
12C	New five-lane arterial	Same alignment as 12A. At-grade intersections at minimum 0.5-mile spacing. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>

*(continued on next page)*

**Table 2-2. Preliminary Alternatives**

Alternative	Facility Type	Description
13A	New four-lane divided highway	Begin at Farmington, follow 2001 alignment to Gentile Street, swing west crossing Antelope Drive west of 4000 West, stay west of 4000 West in West Point crossing 4500 West near 800 North and the Davis County–Weber County border near 5700 West (Weber County), then cut northeast to 4000 South. Interchanges at 5500 South, 1800 North, SR 193, Antelope Drive, 2000 West, 2700 West (Layton), 200 North, and Shepard Lane. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
13B	New two-lane, limited-access highway	Same Alignment as 13A. At-grade intersections at minimum 1-mile spacing. <b>Modeled With Shepard Lane, Glovers Lane, And D&amp;RGW Options in Farmington.</b>
13C	New five-lane arterial	Same alignment as 13A. At-grade intersections at minimum 0.5-mile spacing. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>

<sup>a</sup> This alternative was on the D&RGW alignment, so it could be modeled with only the Shepard Lane and Glovers Lane Options in Farmington.

## 2.2.4 Screening of Alternatives

The preliminary alternatives identified during the process described in Section 2.2.2, Range of Alternatives Considered in This EIS, were evaluated using a two-step screening process to determine which alternatives were reasonable and should be considered for detailed study in this EIS. Level 1 screening examined roadway, transit, and geographic alternatives that focused on potential locations in the WDC study area. Level 1 screening quantitatively evaluated the range of preliminary alternatives to determine which alternatives would meet the project’s purpose.

Alternatives that passed Level 1 screening were then evaluated using the Level 2 screening process. Level 2 screening involved a primarily quantitative analysis to identify the reasonable alternatives to be studied in more detail in the EIS. In part, Level 2 screening considered alternatives’ impacts to the natural and built environment. The impact numbers used during Level 2 screening were based on preliminary alignments developed using geographic information systems (GIS) software and on initial resource data. For this reason, the impact numbers used during Level 2 screening are different than the impacts calculated for the engineered alternatives. More-detailed resource information was used to determine the impacts of the alternatives advanced for detailed study in this EIS.

### 2.2.4.1 Level 1 Screening

The purpose of Level 1 screening was to identify alternatives that would meet the purpose of the project. Alternatives that were determined to not meet the purpose of the project were considered unreasonable for NEPA purposes and were not carried forward for further analysis in Level 2 screening.

#### What was the purpose of Level 1 screening?

The purpose of Level 1 screening was to identify alternatives that would meet the purpose of the project.

Level 1 screening was the first major decision point at which alternatives were eliminated based on specific screening criteria. During Level 1 screening, the preliminary alternatives were screened against delay and congestion criteria (see Table 2-3). To accommodate Level 1 screening, the preliminary alternatives were developed in enough detail to allow the WDC team to use the WFRC travel demand model to forecast future traffic for roadway alternatives and future transit ridership for transit alternatives. Level 1 screening used version 8.1 of the WFRC travel demand model

*Technical Memorandum 15: Alternatives Screening Report* and the *Final EIS Addendum to Technical Memorandum 15: Alternatives Screening Report* provide detailed information about how the WDC team used the Level 1 screening criteria shown in Table 2-3 to evaluate the preliminary alternatives. Section 3.2.1, Reduce Delay and Congestion in the Study Area, of *Technical Memorandum 15* discusses the criteria that were used to determine whether an alternative would substantially reduce delay and congestion.

**Table 2-3. Level 1 Screening Criteria for the Preliminary Alternatives**

Criterion	Measures
Reduce delay (improve regional mobility)	<ul style="list-style-type: none"> <li>• Substantial reduction in daily hours of delay</li> <li>• Substantial reduction in lost productivity (dollars)<sup>a</sup></li> </ul>
Reduce congestion (enhance peak-hour mobility)	<ul style="list-style-type: none"> <li>• Substantial reduction of lane-miles of roads operating at levels of service<sup>b</sup> (LOS) E or F in the PM peak period<sup>c</sup></li> <li>• Substantial reduction in VMT in congestion during the PM peak period</li> <li>• Substantial reduction in VHT at LOS E or F in the PM peak period</li> </ul>
Have adequate capacity	<ul style="list-style-type: none"> <li>• Transit alternative would have enough capacity to meet ridership demands</li> <li>• Roadway alternative would be designed to achieve LOS D or better in the PM peak period (must operate at or better than LOS D during the entire period)</li> </ul>

<sup>a</sup> Lost productivity is based on an aggregate user rate of \$25.80 using \$15.50/hour for passenger vehicles, \$56.00/hour for box trucks, and \$102.00/hour for tractor trailer trucks. Assuming an average traffic composition of 86% passenger vehicles, 4% box trucks, and 10% tractor trailer trucks, the average cost is \$25.80/hour for travel time.

<sup>b</sup> For the definition of level of service, see Section 1.7.2.2, Level of Service.

<sup>c</sup> The PM peak period is the 3-hour period of the afternoon during which there is the greatest number of vehicles on the roadway system.

As shown in Table 2-3 above, for the reduce delay and reduce congestion criteria, an alternative must result in a substantial reduction to pass Level 1 screening. For these two measures, the following five criteria were developed:

- **Daily total delay (measured in hours).** This quantifies the daily total hours of delay experienced by drivers on all freeway, arterial, and collector roads in the WDC study area for each alternative.
- **North-south road lane-miles with V/C  $\geq$  0.9 (measured in miles).** This calculates the number of north-south lane-miles in the WDC study area that would operate in congestion (LOS E or F) in the PM peak 3-hour period for each alternative.
- **East-west road lane-miles with V/C  $\geq$  0.9 (measured in miles).** This calculates the number of east-west lane-miles in the WDC study area that would operate in congestion (LOS E or F) in the PM peak 3-hour period for each alternative.
- **Vehicle-miles traveled (VMT) with V/C  $\geq$  0.9 (measured in miles).** This calculates the total number of vehicle-miles traveled in congestion (LOS E or F) in the WDC study area during the PM peak 3-hour period for each alternative.
- **Vehicle-hours traveled (VHT) with V/C  $\geq$  0.9 (measured in hours).** This calculates the total number of vehicle-hours traveled in congestion (LOS E or F) in the WDC study area during the PM peak 3-hour period for each alternative.

#### What is volume to capacity (V/C)?

Volume to capacity (V/C) is a measure of the actual traffic volume on a road compared to the traffic capacity for which the road was designed. A V/C ratio of 0.9 or greater indicates operating conditions of LOS E or F, which are generally considered unacceptable operating conditions.

For the Level 1 screening process, the WDC team determined that the following would indicate alternatives that would substantially reduce delay and congestion in the WDC study area and would meet the purpose of and need for the project:

- Perform better than the No-Action Alternative for all five criteria
- Perform better than the average value of all alternatives for all five criteria
- Perform at or better than the first-quartile (top 25%) value for at least three of the five criteria

The WDC team determined that any alternative that (1) increased delay or congestion compared to the No-Action Alternative, (2) performed worse than the average value for one or more criteria, or (3) did not perform in the first quartile for at least three of the five criteria would not substantially reduce delay or congestion in the WDC study area and would not meet the overall purpose of the project.

## Level 1 Screening Results

***Alternatives Eliminated.*** As a result of Level 1 screening, the following alternatives were eliminated from further consideration for not substantially reducing delay and congestion in the WDC study area and for not meeting the purpose of the project:

- TDM/TSM Alternative
- Alternative 01
- Alternative 02
- Alternative 03
- Alternative 04
- Alternative 06
- Alternative 07
- Alternatives 09B and 09C
- Alternatives 10B and 10C
- Alternatives 11B and 11C
- Alternatives 13B and 13C

***Alternatives Advanced to Level 2 Screening.*** Based on the analysis from the Level 1 screening process, 16 action alternatives would substantially reduce delay and congestion in the WDC study area and therefore were advanced to Level 2 screening as part of the Final EIS screening process. These alternatives are listed in Table 2-4 below and shown in Figure 2-5, Alternative 05, to Figure 2-11, Alternative 13A, in Volume IV. Although the transit alternatives (Alternatives 01 and 02) did not pass Level 1 screening, UDOT continued to evaluate potential transit options in the WDC study area that might meet the secondary objective to increase the interconnection between transportation modes.

**Table 2-4. Alternatives Selected for Advancement to Level 2 Screening**

Alternative	Facility Type	Description
05	Upgrade existing roads	<i>Widen Existing East-West Roads beyond RTP plus I-15 Widening:</i> Widen Hinckley Drive, 4000 South, 5500/5600 South, 1800 North, SR 193, and Antelope Drive. All east-west roads are widened from I-15 to SR 37 (Weber County) or SR 110 (Davis County). Include I-15 widening to add one more general-purpose lane in each direction (MP 324/SR 225 to MP 342/SR 79).
08	Upgrade existing roads	<i>Widen Existing East-West and North-South Roads beyond RTP plus I-15 Widening:</i> Combine Alternatives 05 and 07.
09A	New four-lane divided highway	Begin at Farmington, merge to D&RGW corridor, and stay on D&RGW corridor to 4000 South. Interchanges at 5600 South, 1800 North, SR 193, Antelope Drive, Hill Field Road, Layton Parkway, 200 North, and Shepard Lane. <b>Modeled with Shepard Lane and Glovers Lane Options in Farmington.</b>
10A	New four-lane divided highway	Begin at Farmington, follow 2001 alignment to 2000 West in Layton, merge to Rocky Mountain Power corridor, and stay on power corridor to 4000 South. Interchanges at 5600 South, 1800 North, SR 193, Antelope Drive, Hill Field Road, Layton Parkway, 200 North, and Shepard Lane. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
11A	New four-lane divided highway	Begin at Farmington, follow 2001 alignment to 4000 South. Interchanges at 5500 South, 1800 North, SR 193, Antelope Drive, 2000 West, 2700 West (Layton), 200 North, and Shepard Lane. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
12A	New four-lane divided highway	Begin at Farmington, follow 2001 alignment to Gentile Street, swing far west crossing Antelope Drive west of 4500 West, stay west of existing development in West Point crossing the Davis County–Weber County border near 6500 West (Weber County), follow 6500 West in Hooper to 4600 South, then cut northeast to 4000 South at 5900 West. Interchanges at 5500 South, 1800 North, SR 193, Antelope Drive, 2000 West, 2700 West (Layton), 200 North, and Shepard Lane. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>
13A	New four-lane divided highway	Begin at Farmington, follow 2001 alignment to Gentile Street, swing west crossing Antelope Drive west of 4000 West, stay west of 4000 West in West Point crossing 4500 West near 800 North and the Davis County–Weber County border near 5700 West (Weber County), then cut northeast to 4000 South. Interchanges at 5500 South, 1800 North, SR 193, Antelope Drive, 2000 West, 2700 West (Layton), 200 North, and Shepard Lane. <b>Modeled with Shepard Lane, Glovers Lane, and D&amp;RGW Options in Farmington.</b>

## Summary of Level 1 Screening

Level 1 screening advanced 16 of the 51 preliminary action alternatives to Level 2 screening.

### ***Facility Types and Modes***

Level 1 screening showed that, with the exception of Alternatives 05 and 08, a new four-lane divided highway is the facility type needed to substantially reduce delay and congestion in the WDC study area. (This facility type would reduce daily delay by 27% to 32%; see Table 2-17, Comparison of Regional Delay and Congestion Benefits from the WDC Action Alternatives, on page 2-63). The TSM/TDM Alternative; transit-only alternatives; new two-lane, limited-access highways; and new five-lane arterials were not found to substantially reduce delay and congestion in the study area.

The screening analysis for Alternatives 05 and 08 showed that, to substantially reduce delay and congestion in the study area by improving existing facilities, additional capacity improvements beyond the planned improvements identified in the 2040 WFRC RTP would be needed on five east-west arterials in addition to capacity improvements on 17.5 miles of I-15. The screening analysis for Alternative 08 showed that additional reductions to delay and congestion, beyond those with Alternative 05, could be gained by also widening SR 108 and SR 126.

### ***Logical Termini and Number of Highway Lanes***

For all of the alternatives that passed Level 1 screening, the WDC team used the travel demand model data and sensitivity analysis to determine (1) where the northern terminus for each of the new roadway alternatives would be, (2) where the western terminus would be for the alternatives that widen existing east-west arterial roads, and (3) the number of lanes for the highway alternatives. Section 3.3.3, Northern and Western Termini for Alternatives Advanced to Level 2 Screening, of *Technical Memorandum 15: Alternatives Screening Report* and the *Final EIS Addendum to Technical Memorandum 15: Alternatives Screening Report* provide a detailed description of this process. Using version 8.1 of WFRC's travel demand model for the Final EIS, the WDC team noticed that the logical termini for each alternative changed compared to the logical termini used for the Draft EIS. The most notable change is that the northern terminus for the new freeway alternatives was substantially farther south. The results of the travel demand model data and sensitivity analysis are summarized below.

- **Alternative 05:** The widening limits for Alternative 05 were determined to be:
  - *I-15:* Park Lane/SR 225 (MP 324) to Hinckley Drive/SR 79 (MP 341)
  - *Hinckley Drive:* I-15 to 1900 West (Weber County)
  - *5500/5600 South:* I-15 to 3500 West (Weber County)
  - *1800 North:* I-15 to 3000 West (Davis County)
  - *SR 193:* I-15 to 2000 West (Davis County)
  - *Antelope Drive:* I-15 to 2000 West (Davis County)

- **Alternative 08:** The same I-15 and east-west widening limits for Alternative 05 (listed above) were used for Alternative 08. The north-south widening limits for Alternative 08 were determined to be:
  - *SR 108:* SR 193 (200 South in Davis County) to SR 126 (Weber County)
  - *SR 126:* Gentile Street (Davis County) to Hinckley Drive (Weber County)
- **Alternative 09A:** For the Draft EIS, the northern terminus of Alternative 9A was 4000 South (Weber County) based on version 7 of the travel demand model. During the 2016 screening process, the WDC team using version 8.1 of the travel demand model determined that Alternative 9A would meet the Level 1 screening criteria with the alternative ending at 5500 South (Weber County).
- **Alternative 10A:** For the Draft EIS, the northern terminus of Alternative 10A was 2550 South in Weber County based on version 7 of the travel demand model. During the 2016 screening process, the WDC team using version 8.1 of the travel demand model determined that Alternative 10A would meet the Level 1 screening criteria with the alternative ending at 1800 North in Davis County.
- **Alternative 10A Modified:** During the alternatives-development and refinement process, Alternative 10 was modified based on comments from the resource agencies and became Alternative 10A Modified. The modification included a shift around 700 South in Clearfield. For Alternative 10A Modified, which goes west around 700 South in Clearfield to about 3800 West in West Point, the northern terminus would be in the same location as for Alternative 10A.
- **Alternative 11A:** For the Draft EIS, the northern terminus for Alternative 11A (4800 West and 4100 West options) was 5500 South (Weber County) based on version 7 of the travel demand model. This alternative included the last interchange at 1800 North (Davis County), a transition from a four-lane divided highway to a five-lane arterial north of 1800 North (Davis County), and an at-grade intersection at 5500 South 5100 West (Weber County). During the 2016 screening process, the WDC team using version 8.1 of the travel demand model determined that Alternative 11A (4800 West and 4100 West options) would meet the Level 1 screening criteria with the last interchange at Antelope Drive, then transitioning to a two-lane, grade-separated highway with an at-grade intersection at 1800 North (Davis County).
- **Alternative 12A:** For the Draft EIS, the northern terminus for Alternative 12A was 4000 South (Weber County) based on version 7 of the travel demand model. During the 2016 screening process, the WDC team using version 8.1 of the travel demand model determined that Alternative 12A would meet the Level 1 screening criteria with the last four-lane highway interchange at 1800 North (Davis County), then transitioning to a two-lane, grade-separated highway with an at-grade intersection at 4000 South in Weber County.
- **Alternative 13A:** For the Draft EIS, the northern terminus for Alternative 13A (5100 West and 4700 West Weber County options) was 4000 South (Weber County) with the last grade-separated interchange at 5500 South (Weber County) and a transition

from a four-lane divided highway to a five-lane arterial cross-section between 5500 South (Weber County) and 4000 South (Weber County). During the 2016 screening process, the WDC team using version 8.1 of the travel demand model determined that Alternative 13A would meet the Level 1 screening criteria with the last interchange at 2000 West (Davis County), then transitioning to a two-lane, grade-separated highway to 5500 South (Weber County) with an alignment on 4800 West (Davis County). The sensitivity analysis also showed that, with a northern alignment on 4100 West, Alternative 13A would meet the Level 1 screening criteria with the last interchange at 2000 West (Davis County), then transitioning to a two-lane, grade-separated highway to 1800 North (Davis County).

In addition to using the travel demand model, the logical termini considered rational end points for the alternatives into the existing roadway network so that the project would have independent utility and not cause a need for other transportation improvements. Therefore, all of the alternatives carried forward for Level 2 screening ended at a major east-west arterial that could handle the increased traffic volume and included appropriate merging with the connecting road north of the east-west arterial. The WDC team also reviewed environmental data to ensure that the alternative terminus did not preclude the evaluation of important resources such as wetlands.

Level 1 screening also showed that all of the alignments in the southern end of the WDC study area around Farmington (Shepard Lane, D&RGW, and Glovers Lane Options) were able to substantially reduce delay and congestion if used as the southern terminus of Alternatives 9A, 10A, 11A, 12A, or 13A, as described in *Technical Memorandum 15: Alternatives Screening Report* and in the *Final EIS Addendum to Technical Memorandum 15: Alternatives Screening Report*.

## Transit Considerations

During the alternatives-development process, the WDC team considered transit-only scenarios as well as various alternatives that combined transit and roadway improvements. Though the transit-only alternatives proposed were very extensive, they did not provide enough regional mobility benefits to meet the purpose of the WDC Project (see Section 2.2.3, Identification of Preliminary Alternatives, and Section 2.2.4, Screening of Alternatives, for a description and the Level 1 screening results for the transit alternatives). In addition, combining the transit improvements with roadway alternatives did not affect which alternatives met the project purpose.

Nevertheless, one of the objectives of this EIS is to improve the relationships between various modes of transportation. For this reason, as part of the EIS process, the WDC team considered additional transit alternatives beyond the ones that were evaluated in Level 1 screening. This multiple-travel-mode evaluation is described in more detail in the *West Davis Corridor Transit Study* (West Davis Corridor Team 2012a).

The *West Davis Corridor Transit Study* was developed in coordination with several nongovernmental organizations and UTA. As part of this coordination, the organizations and UTA agreed that a transit alternative had to achieve the following three goals in order to be advanced for further study in the EIS:

1. Meet UTA’s criteria for capital cost effectiveness and operational cost and be fully supported by UTA.
2. Provide benefits that offset any negative effects to the community or environment caused by the transit investment.
3. Increase transit ridership and transit mode share in the study area in 2040, which should reduce peak-period VMT in 2040 in the study area.

**What is transit mode share?**

Transit mode share is the percentage of transportation trips that use transit as their mode of travel.

The western part of the WDC study area is not now, nor is it expected to become, an area with a large amount of high-density development. For this reason, it would not support a higher class of transit service (that is, rail). Instead, the *West Davis Corridor Transit Study* focused on bus rapid transit (BRT) and express bus service with a focus on increasing ridership on UTA’s FrontRunner commuter rail.

Typically, the implementation of BRT or express bus service causes few environmental impacts because these services usually operate within the existing roadway and require only minor improvements such as bus stops. The main effect could be the need for additional right-of-way for the bus stops, which could affect the adjacent property owners.

In order to satisfy the first study goal (that the transit alternative is fully supported by UTA), the WDC team obtained general ridership and construction cost information from UTA. The general ridership and construction cost information provides the values for UTA’s desired ridership per mile for various levels of transit investment. These values are shown in Table 2-5. The key value in this table is 250 future boardings per mile, which is UTA’s minimum desired threshold for a BRT I investment.

**Table 2-5. UTA Ridership and Capital Cost Guidelines**

Transit Mode	Capital Cost per Mile (\$ millions)	Future Boardings per Mile
BRT I	0.5–1.2	250–500
BRT II	8–25	250–500
BRT III	8–25	500–700
Light-rail transit	35–75	>1,000

As UDOT and UTA considered a possible transit scenario to be included as part of an action alternative in the EIS, these agencies extensively evaluated various transit scenarios using WFRC’s travel demand model. Initially, six east-west routes were evaluated: 2550 South in

West Haven, 4000 South in West Haven, 5500 South in Roy, 1800 North in Sunset and Clinton, 700 South in Clearfield, and Gentile Street in Layton. Of these routes, the three with the highest ridership in the WDC study area (4000 South, 5500 South, and 1800 North) were carried forward for a refined analysis.

In addition, as part of the refined analysis, UDOT and UTA evaluated a north-south BRT and express bus route. In all, five separate transit routes were considered in the refined analysis: three east-west BRT routes, one north-south BRT route, and one express bus route with service to Salt Lake City. See Figure 2-16, Transit Routes, in Volume IV for a map of the transit routes that were considered in the refined analysis.

The east-west and north-south BRT routes would provide direct access to UTA’s FrontRunner commuter-rail line in the study area, and the express bus would provide direct access from the study area to downtown Salt Lake City. Each of these routes was analyzed with the projected daily ridership in 2040 (West Davis Corridor Team, 2012a).

Table 2-6 shows the boarding information for each route for work trips. None of the BRT routes are predicted to generate UTA’s desired minimum of 250 boardings per mile, and therefore none of the routes meet UTA’s criteria for implementation. For this reason, none of the transit options evaluated in the *West Davis Corridor Transit Study* were carried forward for detailed analysis in the EIS. However, UDOT and UTA are working with project stakeholders to evaluate other transit options that would improve connections between various modes of transportation in the WDC study area.

**Table 2-6. Transit Routes Evaluated in the Refined Analysis (2040)**

Transit Route	Frequency of Service (minutes)	Round Trip Length (miles)	Daily Boardings	Boardings per Mile <sup>a</sup>
East-west BRT				
4000 South	15	7.7	400	103
5500 South	15	19.1	890	93
1800 North	15	16.7	1,000	120
North-south BRT	15	24.6	2,160	176
Express bus	30	42.4	1,070	51

<sup>a</sup> UTA’s criterion for minimum boardings per mile is 250.

### Personal Rapid Transit (PRT) and Dual-Mode Advanced Vehicular Endeavor (DAVE)

As part of comments provided during the EIS scoping period, a comment was received to look at personal rapid transit (PRT) as an alternative to the WDC. PRT is similar to a gondola system that would provide users with an alternative to vehicle use. As described in the previous Additional Transit Considerations section of this chapter, this system would be similar to any transit system that was modeled during the EIS process. Based on the version 8.1 model results, the Ultimate Transit Alternative (Alternative 01) was eliminated in Level 1 screening for not meeting the screening criteria.

As part of the comments on the Draft EIS, the Dual-Mode Advanced Vehicular Endeavor (DAVE) concept was suggested to the WDC team as an alternative to the WDC. The DAVE would be an elevated, fixed-guideway infrastructure that would allow personally owned automobiles to attach to a system of elevated guideways that would transport them to their destinations. The WDC team determined that the DAVE concept would require installing a technology that does not currently exist and is not commercially or institutionally available.

Additionally, the DAVE concept either would require all of the users to purchase new vehicles that could be used on the DAVE guideway system or would require that users purchase some sort of equipment that would allow their personal vehicles to be modified to use the DAVE guideway system. Neither the new vehicles nor the modification equipment are commercially available, and, even if it were available, the State could not require that drivers purchase the vehicles or equipment to use the DAVE.

Because a commercially available product is not available, designing an alternative for the WDC Project is not possible and would require an extensive and costly research and development process. Without a proven technology or the ability to require potential users to buy new vehicles or the appropriate equipment, a DAVE alternative would not meet the logistic, technology, or economic requirements for a reasonable or practicable WDC alternative. (A DAVE alternative would not meet the economic requirements because substantial resources would be required to develop an operational system.)

#### 2.2.4.2 Level 2 Screening

The purpose of Level 2 screening was to determine which of the alternatives advanced from Level 1 screening were reasonable and would be evaluated in detail in the EIS.

The reasonable alternatives were determined by collectively evaluating the alternatives that were found to meet the purpose of the project in Level 1 screening while also considering the degree to which these alternatives meet the project purpose as well as their impacts to the natural and built environment, estimated costs, logistical considerations, and feasibility. Table 2-7, Level 2 Screening Criteria, on page 2-28 lists the Level 2 screening criteria.

##### What was the purpose of Level 2 screening?

The purpose of Level 2 screening was to determine which of the alternatives advanced from Level 1 screening were reasonable and would be evaluated in detail in the EIS.

During the Level 2 screening process, the WDC team found that none of the alternatives would avoid affecting the natural and built environment. The WDC study area contains urban and suburban areas, farmland, and wetlands. Because of the high density of these community and natural resources, the team found that, in all situations, avoiding or minimizing impacts to one resource would cause additional impacts to other resources.

Given that no alternatives would avoid affecting the natural and built environment, the WDC team collectively evaluated each of the alternatives to determine which alternatives would best meet the purpose of the project with the lowest overall levels of impacts to the natural and built environment while still meeting the requirements of Section 404(b)(1) of the Clean Water Act and Section 4(f) of the Department of Transportation Act of 1966.

For more information about the Section 404(b)(1) requirements, see Section 2.2.6, Consideration of Clean Water Act Section 404(b)(1) during Alternatives Development, and Chapter 14, Ecosystem Resources. For more information about the Section 4(f) requirements, see Chapter 27, Section 4(f)/6(f) Evaluation.

## Methodology

As described in *Technical Memorandum 14: Level 2 Screening Process*, the WDC team used the following process to calculate the Level 2 screening criteria for the six alternatives advanced from Level 1 screening:

1. The WDC team developed basic alignments and footprints, based on standard right-of-way widths and typical cross-sections, for the alternatives carried forward from Level 1 screening. During this step, the team attempted to minimize impacts to natural resources and the built environment.
2. Project engineers reviewed the alignments to make sure they met basic requirements for roadway design. Preliminary engineering was performed during Level 2 screening to ensure that roadway alternatives met basic engineering geometric requirements.
3. The alternatives' footprints were rendered as digital GIS files, and a GIS analysis was performed to determine the amount of impacts for each alternative.
4. The WDC team created segments for each unique alignment for the alternatives considered in Level 2 screening. Because many alternatives had common segments, the WDC team was able to combine the segments to calculate the total Level 2 screening impacts for each alternative. When developing the segments for the new alignments, the WDC team used GIS data to show the locations of resources in order to avoid and minimize impacts to the natural and built environment.
5. The alternatives' effects on the resources listed in Table 2-7 below were compared to determine the reasonable and practicable alternatives to be advanced for detailed study in the EIS.

**Table 2-7. Level 2 Screening Criteria**

Criterion	Measures
Access to transit and pedestrian facilities	<ul style="list-style-type: none"> <li>• Number of mode transfer locations (for example, park-and-ride lots, bus stops, or commuter-rail stations)</li> <li>• Mode share</li> <li>• Rate of growth in VMT</li> <li>• 2040 daily VMT</li> <li>• 2040 daily VMT per capita</li> </ul>
Consistency with local and regional plans	<ul style="list-style-type: none"> <li>• Alternative's consistency with local and regional land-use and transportation plans<sup>a</sup></li> </ul>
Impacts to trail connections	<ul style="list-style-type: none"> <li>• Number of trails that would be connected</li> </ul>
Cost, technology, and logistics	<ul style="list-style-type: none"> <li>• Estimated project cost (general)</li> <li>• Constructability given available technology</li> <li>• Logistical considerations<sup>b</sup></li> </ul>
Impacts to natural resources	<ul style="list-style-type: none"> <li>• Acres and types of wetlands and other waters of the U.S. affected<sup>c</sup></li> <li>• Acres and types of sensitive wildlife habitat affected</li> <li>• Number of drainage crossings (includes streams, canals, or ditches)</li> <li>• Number and acres of Agriculture Protection Areas affected</li> <li>• Acres of irrigated prime or unique farmland affected<sup>d</sup></li> <li>• Acres of floodplain affected</li> <li>• Percent increase in vehicle emissions based on VMT (impacts to air quality)</li> </ul>
Impacts to the built environment	<ul style="list-style-type: none"> <li>• Number and area of parks and trails affected</li> <li>• Number of community facilities affected</li> <li>• Number of potential property acquisitions, including residential, business, and utility acquisitions</li> <li>• Number of Section 4(f)/Section 6(f) uses<sup>e</sup></li> <li>• Potential for impacts to low-income or minority populations (environmental justice populations)<sup>f</sup></li> <li>• Number of cultural resources affected (for example, historic and archaeological resources)</li> </ul>
Extent to which the alternative meets the project's purpose	<ul style="list-style-type: none"> <li>• Relative effectiveness of the alternative in meeting the project's purpose; that is, the degree to which the alternative addresses regional mobility, peak-period mobility, mode interconnection, local growth objectives, and bicycle and pedestrian options compared to other alternatives. Similar alternatives could be combined to optimize performance.</li> </ul>

<sup>a</sup> This criterion was not used to determine whether an alternative is reasonable or practicable but was used to make minor shifts to alignments.

<sup>b</sup> Logistical considerations for each alternative are described in more detail in the *Section 404(b)(1) Practicability Analysis* and *Section 404(b)(1) Practicability Analysis – 2016 Addendum*. See Section 2.2.6, Consideration of Clean Water Act Section 404(b)(1) during Alternatives Development.

<sup>c</sup> Based on Clean Water Act requirements, an alternative with a substantially greater number of wetland impacts could be eliminated from detailed study.

<sup>d</sup> Acres of prime or unique irrigated farmland were added to the Level 2 screening criteria based on comments from the Utah Department of Agriculture and Food and farmers during the comment period in spring 2011. This metric estimates the effects on soils identified by the U.S. Department of Agriculture as being prime or unique that are irrigated and farmed.

<sup>e</sup> Based on the requirements of Section 4(f) of the Department of Transportation Act of 1966 and Section 6(f) of the Land and Water Conservation Fund Act, an alternative with a substantially greater number of Section 4(f) or Section 6(f) impacts could be eliminated from detailed study.

<sup>f</sup> Areas with higher percentages of low-income or minority populations were identified using U.S. Census data. If an alternative would cause residential relocations in areas with higher percentages of low-income or minority populations, that alternative was determined to have a "high" potential for environmental justice impacts. If an alternative would not affect areas with higher percentages of low-income or minority populations, the alternative was determined to have a "low" potential for environmental justice impacts.

During Level 2 screening, the WDC team collectively evaluated the alternatives advanced from Level 1 screening for their ability to meet the project’s purpose as well as their impacts, estimated costs, logistical considerations, feasibility, and practicability. If an alternative was similar to another alternative and was determined to have substantially higher impacts or costs without having substantially higher benefits, it was considered unreasonable for NEPA purposes and was not carried forward for detailed analysis in the EIS.

The alternatives that passed Level 2 screening were advanced for detailed study in the EIS. The alternatives considered in detail in this EIS will go through additional engineering design and further refinement to optimize their performance and reduce their impacts.

The *Final EIS Addendum to Technical Memorandum 15: Alternatives Screening Report* (West Davis Corridor Team 2017a) provides detailed information about how the WDC team used the Level 2 screening criteria shown in Table 2-7 above to evaluate the alternatives advanced to Level 2 screening.

## Level 2 Screening Results

Figure 2-12a, WDC EIS Level 2 Screening Data – Shepard Lane Options; Figure 2-12b, WDC EIS Level 2 Screening Data – Glovers Lane Options; and Figure 2-12c, WDC EIS Level 2 Screening Data – D&RG Options, in Volume IV show the results of Level 2 screening for each of the alternatives advanced to Level 2 screening. Since Alternatives 10A, 9A, 11A, 12A, and 13A all had multiple options, Figures 2-12a, 2-12b, and 2-12c show the Level 2 screening impacts for these alternatives’ options.

***Alternatives Considered for Detailed Study in the EIS.*** The WDC team considered two alternatives, each with two northern options, for detailed study in the EIS. These two alternatives are:

- Alternative 11A with 4100 West and 4800 West northern options (renamed Alternatives B1–B2)
- Alternative 13A with 1800 North and 5500 South northern options (renamed Alternatives A1–A2)

Figure 2-13, Alternative A Advanced from Level 2 Screening, and Figure 2-14, Alternative B Advanced from Level 2 Screening, in Volume IV show the alignments and an impact summary for these alternatives with each of their four possible combinations.

The four alternatives (Alternatives A1–A2 and B1–B2) were advanced from Level 2 screening because they met the purpose of the project while having the lowest overall levels of collective impacts to the built environment, farmland, and the natural environment. At the conclusion of Level 2 screening, these four alternatives were considered to be constructable, to be logistically feasible, and to have reasonable costs. Section 2.2.4.3, Alternatives Eliminated after the Level 2 Screening Process, summarizes the evaluation and screening determinations for the southern options for these four alternatives.

**Alternatives Eliminated during Level 2 Screening.** Table 2-8 lists the alternatives that were eliminated during Level 2 screening.

**Table 2-8. Alternatives Eliminated during Level 2 Screening**

Alternative	Reason for Elimination
05	Substantially higher impacts to the built environment and costs.
08	Substantially higher impacts to the built environment and costs.
09A	Substantially higher impacts to the built environment and costs.
10A (all options)	Substantially higher impacts to the built environment, farmland, and costs.
12A (all options)	Substantially higher impacts to natural environment.

Alternatives 05, 08, 09A, and 10A, which were all eliminated during Level 2 screening, would affect 3 to 18 acres of wetlands, 244 to 928 residences, 21 to 151 businesses, a disproportionately higher number of neighborhoods with historic properties, and 0 to 81 acres of irrigated prime or unique farmland; would have a high number of residential and business impacts in areas with low-income or minority populations; and would cost \$546 million to \$1.21 billion. Additionally, all of these alternatives propose new roadway facilities in areas of dense existing development in a manner that would be incompatible with the current and planned land uses, transportation networks, and utility networks (West Davis Corridor Team (2017a). (For more information about low-income and minority populations, see Chapter 6, Environmental Justice.)

Compared to the rest of the alternatives considered during Level 2 screening, these alternatives would have the lowest levels of wetland impacts, the highest levels of impacts to residences and businesses, the highest levels of impacts to historic properties, the highest levels of impacts to low-income and minority populations, and the highest costs. Alternatives 05, 08, and 09A would have the lowest levels of direct impacts to irrigated prime or unique farmland; Alternative 10A would have the highest levels of direct impacts to irrigated prime or unique farmland. (For more information about prime and unique farmland, see Chapter 4, Farmland.)

In addition to the substantial direct impacts listed above, any of these alternatives would also have substantial indirect impacts to existing and planned land use, transportation networks, and utility networks in the WDC study area.

The WDC team determined that the substantial impacts to residences, businesses, historic properties, and low-income and minority populations would make Alternatives 05, 08, 09A, and 10A unreasonable. The WDC team determined that the substantially higher costs of Alternatives 05, 08, 09A, and 10A would also make all of these alternatives unreasonable.

The WDC team eliminated Alternative 12A during the Level 2 screening process because it substantially duplicates Alternative 13A and, compared to Alternative 13A, offers no advantage to meeting the purpose of and need for the project; would have substantially greater impacts to high-quality wetlands, high-quality wildlife habitat, the Great Salt Lake Shorelands Preserve, high-quality farmlands, and the North Davis Sewer District property; is

inconsistent with all city, county, and regional transportation and land-use plans and existing development; and would have a higher cost.

### 2.2.4.3 Alternatives Eliminated after the Level 2 Screening Process

After the Level 2 screening process and based on further design of the alternatives that passed Level 2 screening, the WDC team performed additional evaluation of the southern connection alternatives in accordance with the FHWA Interstate Access Change Request. Provided below is a summary of the evaluation.

#### Southern Interchange Option – Farmington

After the Draft EIS was published in May 2013 and after the Final EIS 2016 screening process, UDOT began a more detailed evaluation of the Shepard Lane and Glovers Lane interchange options in accordance with FHWA’s process for modifying access to an interstate. This process, which requires FHWA to approve a new interchange design before the interstate can be modified, ensures that FHWA provides the highest level of service in terms of safety and mobility on the National Interstate Highway System. UDOT’s analysis of the Shepard Lane and Glovers Lane interchange options also included updated traffic data from WFRC’s 2015–2040 RTP, which was adopted after the Draft EIS was published.

UDOT submitted for FHWA’s review an Interstate Access Change Request report, which detailed the Glovers Lane and Shepard Lane Options’ compliance with all eight FHWA interstate access modification policy points and state and federal design standards (West Davis Corridor Team 2016b). The report concluded that the proposed Glovers Lane Option complied with all eight FHWA policy points and met state and federal design standards. The proposed Shepard Lane Option did not comply with Policy Points 3 (Operational Safety) and 4 (Full Access/Standards Compliance) because it would adversely affect the safety and operations of I-15 and does not meet design standards.

The main non-compliance of the Shepard Lane Option was that it did not meet the *Manual on Uniform Traffic Control Devices*, or *MUTCD*, standards which govern the installation and maintenance of traffic-control devices on all public streets, highways, bikeways, and private roads open to public travel. The *MUTCD* is the law governing all traffic-control devices. The U.S. Secretary of Transportation, under authority granted by the Highway Safety Act of 1966, decreed that traffic-control devices on all streets and highways open to public travel in each state shall be in substantial conformance with the standards issued or endorsed by FHWA. Noncompliance with the *MUTCD* ultimately can result in loss of federal-aid funds and would be in violation of Utah code and standards.

The UDOT Traffic and Safety Division reviewed the Shepard Lane interchange option and found that the interchange would be in violation of Utah’s version of the *MUTCD* standards. The signing standards could not be met because of the close proximity of the I-15, US 89, Legacy Parkway, and Park Lane interchanges to the proposed WDC Shepard Lane interchange. No other viable options to this interchange that would meet the signing standards are available except the Glovers Lane interchange option.

FHWA’s review of the UDOT Interstate Access Change Request for the Glovers Lane and Shepard Lane Options concluded that the Shepard Lane Option was not acceptable for engineering and operational reasons. Therefore, FHWA concluded that the Shepard Lane Option was not a reasonable alternative. For these reasons, the Shepard Lane Option was eliminated and was not advanced for detailed study in this Final EIS with either Alternative 11A or 13A.

The U.S. Army Corps of Engineers (USACE) reviewed FHWA’s findings and determined that, because the Shepard Lane Option did not meet *MUTCD* standards and thus was not available to FHWA, the Shepard Lane Option was not a practicable alternative under the Clean Water Act Section 404(b)(1) guidelines. The Glovers Lane Option did meet FHWA’s design and safety requirements, and therefore it was still a reasonable and practicable alternative for consideration in the EIS.

More information regarding the elimination of the Shepard Lane Option is provided in the *Interstate Access Change Request, West Davis Corridor Project* and the *Shepard Lane Interchange Section 404(b)(1) Practicability Alternative Analysis* (West Davis Corridor Team 2016b, 2017b).

### Southern Alignment Options Evaluated

After eliminating the Shepard Lane Option, the WDC team reconsidered the I-15 corridor in Layton, Kaysville, and Farmington to determine whether any other WDC connection to I-15 and Legacy Parkway was reasonable or practicable. This reconsideration also included an additional evaluation of the D&RGW Option and 10 other southern options. Table 2-9 summarizes the southern alignment options and the results of the analysis for each of the 11 southern options that were evaluated (see Figure 2-15, Southern Options, in Volume IV). More details about this process are provided in the *Southern Connection to I-15 and Legacy Parkway Section 404(b)(1) Practicability Alternative Analysis* (West Davis Corridor Team 2017c).

**Table 2-9. Results of the Reconsideration of the Southern Alignment Options**

Option	Determination
Shepard Lane	<b>Eliminated</b> – Does not meet FHWA and UDOT design standards.
Layton Parkway	<b>Eliminated</b> – Does not meet the overall project purpose and need.
Kaysville 200 North	<b>Eliminated</b> – Does not meet the overall project purpose and need.
Kaysville Rest Area	<b>Eliminated</b> – Does not meet FHWA and UDOT design standards.
Shepard North	<b>Eliminated</b> – Does not meet FHWA and UDOT design standards.
Shepard Lane Tunnel	<b>Eliminated</b> – Does not meet FHWA and UDOT design standards.
Public Comment 876, Modified Shepard Lane	<b>Eliminated</b> – Does not meet FHWA and UDOT design standards.
Burke Lane	<b>Eliminated</b> – Does not meet FHWA and UDOT design standards.
D&RGW/200 West	<b>Eliminated</b> – Does not meet FHWA and UDOT design standards.
D&RGW/Glovers Lane	<b>Eliminated</b> – Could not be implemented by UDOT and FHWA given applicable legal and practical constraints, safety considerations, and costs.
Glovers Lane South/West	<b>Eliminated</b> – High wetland and wildlife impacts. Impacts to Farmington Bay Waterfowl Management Area.

#### 2.2.4.4 Conclusion of the Alternatives-Development Process

During the Final EIS screening process, additional evaluation of alternatives was conducted to determine whether alternatives met safety and design standards, met traffic performance requirements, or had substantial impacts to the natural and built environment. The results of these analyses showed that the Glovers Lane Option in Farmington was the only reasonable and practicable connection to I-15 and Legacy Parkway and that various transit options would not substantially reduce delay. Based on the Final EIS alternatives-development and screening process, the WDC team advanced the following alternatives for detailed study in this Final EIS:

- No-Action Alternative
- Alternative A (formerly Alternative 13A) with two northern options and the Glovers Lane southern option (Alternatives A1 and A2)
- Alternative B (formerly Alternative 11A) with two northern options and the Glovers Lane southern option (Alternatives B1 and B2)

Figure 2-13, Alternative A Advanced from Screening, and Figure 2-14, Alternative B Advanced Screening, in Volume IV show the alignments and screening results for the Alternatives A and B options that were advanced for detailed study in this Final EIS.

## 2.2.5 Alternatives-Screening Reports

### 2.2.5.1 Draft EIS Process

Detailed information regarding the Draft EIS Level 1 and Level 2 screening process is summarized in *Technical Memorandum 15: Alternatives Screening Report*, which was released in May 2013. A brief summary of the process is provided in this section. The screening process for the Draft EIS was comprehensive and included extensive public and agency involvement. This stakeholder involvement process included a 6-week review period ending on March 25, 2011, to comment on the draft *Alternatives Screening Report*. During this comment period, the WDC team received over 4,500 unique comments from the public, local government officials, and resource agencies.

As a result of these comments, the WDC team met with various stakeholders and performed additional wetland, farmland, community impact, and engineering analysis. In addition, in May 2011, WFRC released its RTP for 2011–2040 and a new version of its travel demand model. The WDC team determined that the public comments and the updates to the resource information, RTP, and travel demand model warranted rescreening the WDC alternatives. One comment from the U.S. Fish and Wildlife Service suggested a new alternative based on a modification to one of the existing alternatives (Alternative 10A) to minimize impacts to wetlands. The WDC team included this alternative (Alternative 10A Modified) as part of the rescreening process conducted in 2011.

During the summer of 2011, the WDC team rescreened the WDC alternatives. In September 2011, the WDC team released updated maps on the project website showing the results of the

rescreening process. On November 14, 2011, the WDC team released an updated version of the *Alternatives Screening Report* that described the rescreening process and the changes to the screening process between February and November 2011.

The information from the Draft EIS screening process was used in the Final EIS screening process, which is summarized in this Final EIS.

### **2.2.5.2 Final EIS Process**

The Level 1 and Level 2 screening process was updated for the Final EIS to take into account the new WFRC travel demand model version 8.1 and the Shared Solution Alternative. The Final EIS process also considered the previous evaluation and comments received on the Level 1 and Level 2 screening process that was conducted for the Draft EIS. The results of the Final EIS Level 1 and Level 2 screening process were the same as those identified in the Draft EIS. The Final EIS screening process is documented in the *Final EIS Addendum to Technical Memorandum 15: Alternatives Screening Report* (West Davis Corridor Team 2017a).

## **2.2.6 Consideration of Clean Water Act Section 404(b)(1) during Alternatives Development**

The Clean Water Act Section 404(b)(1) guidelines state that “no discharge of dredged or fill material [to Section 404–regulated waters] shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences” [Section 230.10(a)]. The guidelines also state that, for actions subject to NEPA for which USACE is the permitting agency, the analysis of alternatives required under NEPA will in most cases provide the information for the evaluation of alternatives considered under the Clean Water Act 404(b)(1) process.

Although USACE makes official determinations under the Clean Water Act, the WDC team considered the requirements of the Clean Water Act during the alternatives-development process. The WDC team produced an additional technical memorandum, *Section 404(b)(1) Practicability Analysis* (West Davis Corridor Team 2012c), that provides more details about the practicability analysis that was conducted to address the Clean Water Act Section 404(b)(1) guidelines. Between October 2011 and November 2012, the WDC team coordinated extensively with the resource agencies on this evaluation as part of the screening process. Following a review of the *Section 404(b)(1) Practicability Analysis*, USACE and the U.S. Environmental Protection Agency concurred with the WDC team that no less environmentally damaging practicable alternatives were eliminated during the Level 2 screening process (see Appendix 2A, Alternatives Correspondence).

### 2.2.6.1 Draft EIS Section 404(b)(1) Considerations

The following text is the summary from the *Section 404(b)(1) Practicability Analysis* that was prepared for the Draft EIS (West Davis Corridor Team 2012c):

Five alternatives were identified that would have less impacts to aquatic resources than the two alternatives that the WDC team has determined to be reasonable under NEPA (Alternatives 11A and 13A). Alternatives 05, 08, 09A, 10A, and 10A Modified would fill between about 3 acres and 56 acres of wetlands. Alternative 11A and Alternative 13A would fill between 76 acres and 137 acres of wetlands. The alternatives considered in the practicability analysis were the only alternatives that would meet the project's purpose and would have less impacts to aquatic resources than Alternatives 11A and 13A.

The term *practicable* means “available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” The Clean Water Act guidelines create a presumption that practicable avoidance alternatives are available for non-water-dependent projects. Highway and transit projects generally are not water-dependent. This presumption places the burden on the applicant to demonstrate that there are no practicable alternatives that avoid “special aquatic sites.” (With regard to the WDC Project, “special aquatic sites” include wetlands and some fish and wildlife refuges.) The level of analysis and proof required varies depending on the project and the nature of the anticipated effects of the project.

Clean Water Act Section 404(b)(1) guidelines state that “no discharge of dredged or fill material [to Section 404-regulated waters] shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.” The evaluation in this practicability analysis is the WDC team's demonstration that there are no practicable alternatives that have fewer wetland impacts than Alternative 13A.

Based on the practicability analysis, the WDC team has determined that Alternatives 05, 08, 10A, and 10A Modified are not practicable because of logistical constraints resulting from impacts associated with relocating businesses. In addition, the WDC team has determined that Alternative 09A is not available to use for the WDC Project because it has been set aside as a potential transit corridor. Therefore, Alternatives 05, 08, 09A+04, 10A, and 10A Modified will not be considered for detailed evaluation in the WDC EIS.

More details about this evaluation are included in the *Section 404(b)(1) Practicability Analysis*.

### **2.2.6.2 Final EIS Section 404(b)(1) Considerations**

Between the release of the Draft EIS and the Final EIS, the WDC team produced an additional technical memorandum, *Section 404(b)(1) Practicability Analysis – 2016 Addendum*, that provides an update on the practicability analysis that was conducted for the Final EIS alternatives to address the Clean Water Act Section 404(b)(1) guidelines (West Davis Corridor Team 2016c).

#### **Alternatives 05, 08, 09A, and 10A**

The WDC team re-evaluated the Draft EIS practicability analysis for the Final EIS. In the Final EIS analysis, Alternatives 05, 08, 09A, and 10A would fill between about 3 acres and 18 acres of wetlands. Alternatives 11A and 13A would fill between 23 acres and 42 acres of wetlands. The alternatives considered in the practicability analysis were the only alternatives that would meet the project's purpose and would have less impacts to aquatic resources than Alternatives 11A and 13A. As in the Draft EIS, the WDC team has determined in this Final EIS that Alternatives 05, 08, and 10A are not practicable because of logistical constraints resulting from impacts associated with relocating businesses. In addition, the WDC team has determined that Alternative 09A is not available to use for the WDC Project because the D&RGW corridor has been legally protected as a potential transit corridor. USACE has commented that it concurs with this determination.

#### **Shepard Lane Option**

The Draft EIS analysis showed that the Shepard Lane Option would have about 0.5 acre less wetland impacts than the Glovers Lane Option. After the Draft EIS was published in May 2013 and during the Final EIS screening process, UDOT began a more detailed evaluation of the Shepard Lane and Glovers Lane interchange options to meet FHWA's process for modifying access to an interstate. This process, which requires FHWA to approve a new interchange design before the interstate can be modified, ensures that FHWA provides the highest level of service in terms of safety and mobility on the National Interstate Highway System. FHWA's review of UDOT's Interstate Access Change Request for the Glovers Lane and Shepard Lane Options concluded that the Shepard Lane Option was not acceptable for engineering and operational reasons. Therefore, FHWA concluded that the Shepard Lane Option was not a reasonable alternative.

USACE reviewed FHWA's findings and determined that, because the Shepard Lane Option did not meet *MUTCD* standards and thus was not available to FHWA, the Shepard Lane Option was not a practicable alternative under the Section 404(b)(1) guidelines.

#### **Other Connections to I-15 and Legacy Parkway**

After eliminating the Shepard Lane Option, the WDC team re-evaluated the I-15 corridor in Layton, Kaysville, and Farmington to determine whether any other WDC connection to I-15 and Legacy Parkway with less wetland impacts than the Glovers Lane Option was reasonable or practicable. This re-evaluation also included an additional evaluation of the D&RGW

Option and 10 other southern options. As discussed in the *Southern Connection to I-15 and Legacy Parkway Section 404(b)(1) Practicability Alternative Analysis* (West Davis Corridor Team 2017c), none of the 11 options considered were determined to be practicable under Section 404(b)(1) guidelines because they did not meet the project purpose, did not meet UDOT and FHWA design standards, or had logistical constraints. USACE concurred with the evaluation and determinations. Therefore, only the Glovers Lane Option was considered a reasonable or practicable connection to I-15 and Legacy Parkway for the WDC alternatives advanced for detailed study in this Final EIS.

## 2.3 WDC Roadway Design Elements

The subsections below provide more information regarding the roadway design elements included as part of the alternatives evaluated in detail in this Final EIS.

### 2.3.1 Stormwater Runoff Treatment and Drainage Facilities

Stormwater runoff from the WDC would be treated to minimize the amount of pollutants discharged to receiving waters. Stormwater either would be treated by vegetated filter strips or would be captured in storm drain systems consisting primarily of ditches. Some areas could receive sheet flow from the highway after the sheet flow passes over a vegetated filter strip if the adjacent landowners are able and willing to accept it. The roadway plans in Volume IV show the locations of potential stormwater runoff and drainage facilities.

In areas where retaining walls, barriers, or curbs are required, catch basins would be used to capture runoff, which would then be conveyed through pipe systems. These storm drain systems would be routed through detention basins before the runoff is discharged into the receiving waters. The stormwater treatment measures identified in this EIS are preliminary. The final treatment measures will be developed during the design process prior to project construction.

#### What are detention basins?

Detention basins hold stormwater runoff temporarily before releasing it.

Detention basins limit the amount of stormwater discharge to predevelopment levels, allow suspended solids to settle out of the water, and eliminate permanent ponding. Oil and grease skimmers would be included as appropriate on each detention basin outlet structure to further improve the quality of runoff water before it is discharged into the receiving waters.

The need for detention basins along the proposed alternatives has been coordinated closely with the Cities. UDOT will continue to coordinate with the Cities through the design phase of the project to identify locations for detention facilities.

The WDC team conducted preliminary drainage calculations to estimate a conservative footprint for detention basins for all of the advanced alternatives. The detention basins were included with the footprints for the alternatives in this EIS.

UDOT might also use vegetated filter strips to manage stormwater. Vegetated filter strips are land areas of planted vegetation and amended soils situated between the pavement surface

and the highway right-of-way. Vegetated filter strips accept overland sheet flow runoff from adjacent impervious areas. Their primary purpose is to remove sediments and other pollutants coming directly off the pavement. Vegetated filter strips function by slowing runoff velocities and by trapping sediment and other pollutants.

### 2.3.2 Relocated Utilities

During the alternatives-development process, the WDC team considered utilities including electric power, natural gas, water, and sewer. Each utility provider and local jurisdiction was contacted to determine whether utilities would need to be relocated or would pass through the alternatives' right-of-way. The roadway plans in Volume IV show the locations of utility features along and adjacent to the WDC alternatives.

Based on this coordination, high-voltage electrical lines and canals would need to be relocated outside the right-of-way. This relocation would require acquiring additional land beyond what would be required for the roadway. The cost and land required for each utility relocation were included in the overall project cost for each WDC action alternative and in the environmental impact analysis. For more information about utility relocations, see Chapter 5, Community Impacts.

The WDC team included the impacts of relocating or realigning the following utilities that are likely to be directly affected by the WDC alternatives:

- Rocky Mountain Power lines located west of I-15 at the Glovers Lane interchange
- Rocky Mountain Power lines in Farmington and Kaysville
- North Davis Sewer District sewer line south of Gentile Street in Layton
- Layton Canal between 600 South and 2100 South in West Point and Syracuse (for the B Alternatives)
- Hooper Canal in West Point near 800 North (for Alternatives A2 and B2)

### 2.3.3 Park-and-Ride Lots

Increasing the interconnection between transportation modes is one of the secondary objectives of the WDC Project. Park-and-ride lots increase the interconnection between modes, provide opportunities for carpooling, and can decrease VMT.

In order to identify feasible locations for park-and-ride lots, the WDC team considered locations near the most heavily traveled routes. These locations consist of major intersecting roads that provide access to the WDC.

The WDC alternatives include a 75,000-square-foot footprint for a park-and-ride lot near the northern terminus and at every interchange for the alternatives considered for detailed study in this EIS except for the future 950 North interchange in Farmington. A park-and-ride lot was not included at the future 950 North interchange because the alignment of the future 950 North was unknown when this Final EIS was released. Park-and-ride lots were located to minimize impacts to the natural and built environment. The roadway plans in Volume IV

show the locations of the park-and-ride lots for the WDC alternatives considered for detailed study in this EIS. Each subsection of Section 2.5, Summary Comparison of Alternatives, includes a table that lists the locations of the park-and-ride lots for each alternative.

### 2.3.4 Right-of-Way Width

The 250-foot right-of-way required for the WDC four-lane highway and the 146-foot right-of-way for the two-lane highway were based on the following considerations:

- The total number of lanes required to meet the purpose of the project and achieve a level of service of LOS D
- The appropriate shoulders, lane width, clear zone, median, drainage facilities, and maintenance requirements to meet the standards of UDOT and the American Association of State Highway and Transportation Officials (AASHTO)

Figure 2-17a, Four-Lane Highway Typical Section, and Figure 2-17b, Two-Lane Highway Typical Section, in Volume IV illustrate the typical cross-sections of highway and arterials used in this EIS.

**Level of Service and Number of Lanes.** The number of general travel lanes required for both the WDC highway and arterials was based on a level of service in 2040 of LOS D as modeled in the regional travel demand model. (For more information about level of service, see Section 1.7.2.2, Level of Service.)

Typically, in urban areas, LOS C and better are considered acceptable, LOS E and LOS F are considered unacceptable, and LOS D is considered acceptable where funding constraints make it unreasonable to reach LOS C (AASHTO 2011a). WFRC uses a goal of LOS D for projects in its long-range transportation plans when addressing congestion relief. FHWA's regulation that describes how metropolitan planning organizations should address congestion relief is found in 23 CFR 150, Planning Assistance and Standards. WFRC has a congestion-management policy (WFRC 2004).

In summary, the design objective for the WDC roadway elements is LOS D for general-purpose lanes on highways. The traffic modeling conducted as part of the alternatives-screening process showed that the advanced alternatives, which are four-lane divided highways for most of each alternative with two-lane highway segments at the northern termini, would operate at LOS D or better in 2040, so additional widening to six or eight lanes on the highway segments was not evaluated further. Additionally, the traffic modeling conducted as part of the alternatives-screening process showed that these alternatives, if modeled as five-lane arterials or two-lane highways for the entire length, would not meet the purpose of the project and would not operate at LOS D or better.

#### What is level of service?

Level of service (LOS) is a measure of traffic flow efficiency and congestion and is represented by a letter "grade" from A (free-flowing traffic and little delay) to F (extremely congested, stop-and-go traffic and excessive delay). LOS B through LOS E represent progressively worse traffic conditions.

**Roadway Standards.** UDOT follows the roadway geometric standards in AASHTO’s *A Policy on the Geometric Design of Highways and Streets* (AASHTO 2011a). Table 2-10 lists the WDC right-of-way requirements for a four-lane and two-lane divided highway. The requirements are based on AASHTO standards. The roadway designs for the WDC are based on a design speed of 70 miles per hour (mph) for either the four-lane or two-lane highway. The posted speed limits would be lower than the design speed.

**Table 2-10. Cross-Section Components and Dimensions for a Four-Lane and Two-Lane Divided Highway**

Component	Width	Standard or Reference <sup>a</sup>	Notes
Side slope to right-of-way line	Varies	UDOT 2012	<ul style="list-style-type: none"> <li>• Area required to transition from edge of clear zone to existing grade.</li> <li>• Side slope varies (2:1 or flatter) depending on the height of the embankment or the depth of the cut. Slopes would meet AASHTO and UDOT criteria for maintenance and access.</li> <li>• Additional 10 feet minimum width required to provide maintenance access.</li> </ul>
Clear zone (includes shoulders) <sup>b</sup>	30 feet	AASHTO 2011a, 2011b; UDOT 2012	<ul style="list-style-type: none"> <li>• Clear zone is the unobstructed area beyond the edge of the traveled way that allows drivers to regain control of errant vehicles.</li> <li>• Area includes a minimum 10-foot paved (outside) shoulder.</li> <li>• 1:6 or flatter slope.</li> <li>• Based on design speed and average daily traffic.</li> </ul>
Travel lanes	12 feet	AASHTO 2011a; UDOT 2012	<ul style="list-style-type: none"> <li>• Lane width for general-purpose, auxiliary, and high-occupancy vehicle (HOV) lanes.</li> </ul>
Median	50 feet	AASHTO 2011b	<ul style="list-style-type: none"> <li>• Provides minimum separation for drivers to regain control of errant vehicles without hitting a barrier or traffic in opposing lanes. AASHTO recommends 50 feet to 100 feet.</li> <li>• Includes 4-foot paved (inside) shoulders.</li> <li>• UDOT’s standard follows AASHTO 2011b (50 feet).</li> </ul>

<sup>a</sup> AASHTO 2011a: *A Policy on the Geometric Design of Highways and Streets*  
AASHTO 2011b: *Roadside Design Guide*  
UDOT 2012: Standard Drawing DD 4

<sup>b</sup> A 30-foot clear zone would be required for each side of the roadway for a total of 60 feet.

### **2.3.5 Interchange Locations**

The WDC team considered several guidelines to evaluate the locations of interchanges along the alternatives. These guidelines included considering the cross street where the interchange would connect, determining whether the interchange was compatible with local plans and community future land-use plans, and calculating the distance between interchanges.

The cross street at each proposed interchange location was evaluated to determine whether the cross street could support the increase in the volume of traffic associated with the interchange. Arterials that handle larger volumes of traffic were considered acceptable, whereas smaller local roads that handle small volumes of traffic were considered unacceptable because the traffic from the interchange would cause high levels of congestion. In addition, before selecting the interchange locations, the WDC team reviewed community plans and met with representatives of the local municipalities to ensure that the interchange location was compatible with current and future land-use plans.

Finally, to improve the level of service and maintain safety, the WDC team evaluated the interchange spacing in order to provide enough distance between interchanges to meet AASHTO requirements and to minimize conflicts between vehicles entering and exiting the roadway. In order to accommodate vehicle merging and weaving and improve safety, the team attempted to keep interchanges spaced at least every 1.5 to 2 miles.

The locations of the interchanges developed in this EIS could change based on future growth, land-development patterns, and financial considerations. Any changes to the interchange locations would be considered under separate environmental documentation as required. The proposed interchanges for each alternative are listed in Section 2.4, Summary Comparison of Alternatives.

### **2.3.6 Local Street Overpasses or Closures**

As the alternatives were being developed, the WDC team evaluated each existing street that would cross the proposed highway alternatives to determine whether it should form an interchange with the highway, go under or over the highway, or terminate in a cul-de-sac. The team based its determination of the appropriate crossing on travel demand requirements, emergency vehicle access, and consultation with the affected jurisdiction. If a street had low travel demand, appropriate emergency vehicle access could be maintained, and the local jurisdiction agreed with the closure, then the street was terminated in a cul-de-sac. These streets are listed in Section 2.4, Summary Comparison of Alternatives.

## 2.3.7 Trail Considerations

A secondary objective of the WDC Project is to increase the number of bicycle and pedestrian options consistent with the adopted local and regional transportation plans. When developing the alternatives, the WDC team met with the Davis County, Weber County, and city trail planners to discuss various trail options. The purpose of the WDC trail improvements is to provide a regional, connected trail system in which the WDC trail connects the Legacy Parkway Trail and Denver & Rio Grande Western Trail with the Old Emigration Trail to provide one large, regional north-south trail system that includes an east-west component.

The WDC team worked with the county and city trail planners to develop the WDC trail improvements that would supplement and complement the existing trail system in Davis and Weber Counties.

### 2.3.7.1 Trail Improvements Included with the WDC Action Alternatives

With any of the WDC action alternatives, UDOT would fund and construct the following trail improvements (see Figure 2-18, Trail Improvements, in Volume IV):

- A new trail segment along the WDC starting at I-15 in Farmington at the Legacy Parkway Trail extending north to the southern terminus of the Old Emigration Trail in Jensen Park in Syracuse. The new trail segments from Farmington to Syracuse would be located in a 25-foot-wide right-of-way adjacent to the WDC. From I-15 to 950 North in Farmington, the trail would be on the east side of the WDC. From 950 North in Farmington to the southern end of the Old Emigration Trail in Syracuse, the trail would be on the west side of the WDC.
- A trail crossing of I-15 on Park Lane in Farmington. This trail would be located on the north side of Park Lane and would connect the Legacy Parkway Trail to the Oakridge Preserve Trail. The improvement would include expansion of the existing Park Lane bridge over I-15 to accommodate the trail.
- Connection of the Kays Creek Trail from the Kays Creek subdivision to the WDC trail. The Kays Creek Trail would be connected to the WDC trail with an overpass, with the trail going over the WDC near Weaver Lane in Layton.
- Connection of the Old Emigration Trail from 1300 North in West Point to 4500 West (Davis County), then following 4500 West from 1300 North (Davis County) to the Weber County border with Davis County to connect with the southern end of the 5500 West Trail in Weber County.

The impacts of this new section of trail are included with the roadway impacts for each WDC action alternative in the resource chapters of this EIS.

### **2.3.7.2 Trail Improvements Constructed If There Is Local Government Support and Funding**

In addition to the new trail segment described above, for this EIS, the WDC team also evaluated the impacts of other trail improvements that would enhance the existing trail systems in Davis and Weber Counties. Funding, construction, and long-term maintenance of the other trail components listed below would depend on coordination and support from the local governments. UDOT would consider implementing the trail improvements listed below only if there is coordination and support from the local governments. The following trail improvements would be implemented by local governments and UDOT if funding and support from the local governments are provided:

- Grade-separated crossings of the D&RGW Trail at:
  - Clark Lane in Farmington
  - Shepard Lane in Kaysville
  - 200 North in Kaysville
  - Layton Parkway in Layton
  - Gentile Street in Layton

The trail improvements listed above are shown in Figure 2-18, Trail Improvements, in Volume IV.

The impacts of the trail elements listed above are evaluated in this EIS in Chapter 9, Joint Development. Implementation and long-term maintenance of all trail elements would depend on coordination and support from the local governments.

In addition to the above improvements, for the B Alternatives in Syracuse and West Point, the WDC team developed a new alignment for the Old Emigration Trail, since the new Alternative B alignment in Syracuse would remove the existing trail between about 600 South and 2100 South. In this area, the existing Old Emigration Trail and the underpass under Antelope Drive would be realigned so that they are between the east side of the WDC and Bluff Road.

## 2.3.8 Changes to Alternatives after the Release of the Draft EIS

### 2.3.8.1 WDC Northern Terminus and Number of Lanes

After release of the Draft EIS, WFRC released a new RTP and travel demand model. The WDC team used this information to determine whether the northern termini and number of lanes required for the WDC had changed compared to the Draft EIS. Using version 8.1 of the WFRC travel demand model, the WDC team noticed that the logical termini and number of lanes required for each alternative changed compared to the Draft EIS. As shown in Table 2-11, the northern termini for the A and B Alternatives was reduced between 1.5 and 4 miles depending on the alternative. In addition, to meet the project purpose, less four-lane highway was needed, and the five-lane arterial was reduced to a two-lane highway. The main reason for the reduction in need for the alternatives between the release of the Draft EIS and Final EIS was that less population growth is now expected in West Point, Hooper, and West Haven in the 2015–2040 RTP compared to the 2011–2040 RTP that was used for the Draft EIS.

**Table 2-11. Comparison of Termini of A and B Alternatives and Number of Lanes between the Draft EIS and Final EIS**

Alternative	Northern Termini		Four-Lane Highway		Arterial/Highway	
	Draft EIS	Final EIS	Draft EIS	Final EIS	Draft EIS (Five-Lane Arterial)	Final EIS (Two-Lane Highway)
A1	4000 South (West Haven)	1800 North (West Point)	I-15 to 4400 South (West Haven)	I-15 to 2000 West (Syracuse)	4400 South to 4000 South	2000 West to 1800 North
A2	4000 South (West Haven)	5500 South (Hooper)	I-15 to 4400 South (West Haven)	I-15 to 2000 West (Syracuse)	4400 South to 4000 South	2000 West to 5500 South
B1	5500 South (Hooper)	1800 North (West Point)	I-15 to 5900 South (Hooper)	I-15 to Antelope Drive (Syracuse)	5900 South to 5500 South	Antelope Drive to 1800 North
B2	5500 South (Hooper)	1800 North (West Point)	I-15 to 5900 South (Hooper)	I-15 to Antelope Drive (Syracuse)	5900 South to 5500 South	Antelope Drive to 1800 North

### 2.3.8.2 Parkway Design Features

The WDC team received numerous comments on the Draft EIS regarding making the WDC highway similar to Legacy Parkway. The comments suggested that the WDC should use noise-reducing pavement, minimize the use of lights, include a trail, have no trucks, have a 55-mph speed limit, and have no billboards. The following includes the evaluation of each element.

- **Noise-reducing pavement.** This feature will be implemented.
- **Minimal use of lights.** This feature will be implemented. Lights will be provided only at interchanges along the WDC as required for safety. There will be no mainline lights. At interchanges, dark-sky lighting, which focuses the light downward to reduce light pollution to nearby areas, will be used.
- **Trail.** This feature will be implemented. See Section 2.3.8.3, Trail Revisions.
- **No trucks.** This feature will not be implemented. The WDC would not be a through highway like I-15, which carries about 15% truck traffic. Because the WDC would serve the local community, the only truck traffic would be associated with local deliveries, farming, and commercial business. Overall, truck traffic on the WDC would be 8% of the total traffic. Additionally, highways provide a safer environment for truck travel compared to local streets because they do not have traffic signals, school zones, pedestrians, or cyclists.
- **A 55-mph speed limit.** This feature will not be implemented. The speed limit on the WDC would be 65 mph. A 55-mph speed limit was evaluated using version 8.1 of the travel demand model. The modeling results showed that the WDC alternatives would not pass Level 1 screening with the slower speeds as less traffic would use the WDC because of the travel time with the 55-mph speed limit.
- **No billboards.** This feature will not be implemented by UDOT. UDOT does not allow billboards within its right-of-way. The presence of billboards is controlled by local city ordinances. UDOT has been coordinating with the Cities along the WDC alternatives so that changes to local ordinances can be made.

### 2.3.8.3 Trail Revisions

After release of the Draft EIS, the WDC team continued working with the Cities of Farmington, Kaysville, and Layton regarding trail opportunities. Based on these discussions, UDOT made the following changes to the proposed trail improvements:

- UDOT would fund and construct the trail segment along the WDC starting at I-15 in Farmington at the Legacy Parkway Trail extending north to the southern terminus of the Old Emigration Trail in Jensen Park in Syracuse. The new trail segments from Farmington to Syracuse would be located in a 25-foot-wide right-of-way adjacent to the WDC. From I-15 to 950 North in Farmington, the trail would be on the east side of the WDC. From 950 North to the Old Emigration Trail, the trail would be on the west side of the WDC.
- UDOT would fund and construct a trail crossing of I-15 on Park Lane in Farmington. This trail would be located on the north side of Park Lane and would connect the Legacy Parkway Trail to the Oakridge Preserve Trail.
- UDOT would fund and construct a connection of the Kays Creek Trail from the Kays Creek subdivision to the WDC trail. The Kays Creek Trail would be connected to the WDC trail with an overpass, with the trail going over the WDC near Weaver Lane in Layton.
- UDOT would fund and construct a connection of the Old Emigration Trail from 1300 North in West Point to 4500 West (Davis County), then following 4500 West from 1300 North (Davis County) to the Weber County border with Davis County to connect with the southern end of the 5500 West Trail in Weber County in Weber County at the Weber County border with Davis County.
- UDOT updated the design of the WDC to propose trail overpasses of the WDC at the crossings of the Buffalo Ranches Trail and Great Salt Lake Shoreline Trail in Farmington and the crossing of the Old Emigration Trail at 1000 West and 1500 West in Syracuse. The Draft EIS design had proposed trail underpasses.
- UDOT also updated the Old Emigration Trail to Fremont Park trail crossing of the WDC B Alternatives in Syracuse to be an overpass. The Draft EIS design had proposed a trail underpass.

#### 2.3.8.4 Roadway Profile

Based on comments received on the Draft EIS, the WDC team looked at ways to reduce the roadway profile so that the WDC would not block residential views of areas beyond the highway. The two factors that control the height of the roadway in flat terrain are drainage and the design of the highway to go under or over existing roads that are crossed.

In order to capture stormwater runoff from the WDC and release it at points along the right-of-way, the WDC must be elevated to provide downward flow to the release points. For projects like the WDC, this could require raising the height of the road 10 feet. In order to reduce the height, the WDC team looked at using sheet flow where possible, which would reduce the height to about 5 feet or less. Sheet flow would allow stormwater to run off the highway into vegetated filter strips which would remove pollutants. This design feature will be considered from I-15 in Farmington to Gentile Street. North of Gentile Street, the numerous cross streets and homes that line the right-of-way might not allow this feature to be used.

Where the WDC would intersect existing roads, it has been designed so that the local street crosses over the highway, thus reducing the height of the WDC when feasible. For a discussion of how cross streets will be designed for each alternative, see Section 2.4, Description of Alternatives Carried Forward for Detailed Study.

#### 2.3.8.5 Wetland Avoidance Options

Throughout the EIS process, the WDC team has been coordinating with USACE regarding wetland avoidance options. In December 2010, USACE suggested 28 segment refinements or modifications to avoid wetlands for the initial alternatives developed for the WDC Project. The segment refinements for alternatives that were advanced to the Draft EIS were considered during the preliminary engineering of the Draft EIS alternatives and were incorporated into the WDC alternatives' designs where possible.

Once the A and B Alternatives were designed, and before the Draft EIS was released, the WDC team looked at other opportunities to avoid wetland impacts. These wetland avoidance alternatives are described in Section 14.4.3.10, Summary of WDC Wetland Avoidance Measures.

After the release of the Draft EIS, USACE asked whether any other wetland avoidance options were available. The WDC team noted two options that could meet design standards while still avoiding wetlands:

- **Farmington Eastern Option.** At the corner of Prairie View Drive and West Ranches Road in Farmington, shift the A and B Alternatives about 100 feet east from the alignment of the Draft EIS Glovers Lane Option to the corner of Prairie View Drive and West Ranches Road. The Farmington Eastern Option would reduce impacts to medium-quality wetlands by 1.1 acres. The Farmington Eastern Option would also reduce the number of wetlands within 300 feet by 1.3 acres. The Farmington Eastern Option would result in two more home relocations. For more information, see Figure 2-19, Wetland Avoidance Options, in Volume IV.

- **Layton Eastern Option.** At the corner of 2200 West and 1000 South in Layton, shift the A and B Alternatives about 300 feet east from the alignment of the Draft EIS design (Figure 2-19). The Layton Eastern Option avoids all wetland impacts in this area and would reduce impacts to high-quality wetlands by about 5.7 acres compared to the Draft EIS alternatives. The Layton Eastern Option also minimizes impacts to the Great Salt Lake Shorelands Preserve by 12 acres and avoids 5.5 acres of the Utah Reclamation, Mitigation, and Conservation Commission land, which is a Department of Transportation Section 4(f) resource. However, the Layton Eastern Option would have six residential relocations, including three National Historic Preservation Act Section 106 historic properties, one of which is listed on the National Register of Historic Places [also a Department of Transportation Section 4(f) resource]. The other two historic properties are eligible for listing on the National Register of Historic Places.

After reviewing the impacts of the avoidance options, USACE requested that the Farmington eastern and Layton eastern wetland avoidance options be evaluated in the Final EIS so that an informed decision could be made regarding whether to select the options as part of the WDC A and B Alternatives. Therefore, the two wetland avoidance options are evaluated in detail in this Final EIS and can be used by Alternative A1, A2, B1, or B2.

### 2.3.8.6 Other Alignment Revisions

Other minor revisions were made to Alternatives A1, A2, B1, and B2 between the release of the Draft EIS and the Final EIS. These design changes were made based on updated design information, changes to existing land use, and comments received from property owners. The following list summarizes these changes.

- The crossing of Glovers Lane for Alternatives A1, A2, B1, and B2 was changed from an underpass to an overpass due to development of 1100 West, Canyon Creek Elementary School, and the Farmington Park subdivision that occurred between the release of the Draft EIS and the Final EIS. With this development, Glovers Lane needed to stay at grade in order to provide access.
- The alignment of Alternatives A1, A2, B1, and B2 had minor shifts in alignment between 650 West and the Buffalo Ranch development in Farmington to minimize impacts to wetlands and private property in this area.
- A local interchange to the WDC was added at 950 North in Farmington to provide access to Farmington. This new interchange was warranted based on version 8.1 of the travel demand model that was used for the Final EIS.
- The crossing of Roueche Lane was moved north to provide a better crossing location.
- South of Jensen Park in Syracuse, the alignment and design of Alternatives A1, A2, B1, and B2 were all shifted north to avoid impacts to the Stillwater Homes subdivision that was constructed between the release of the Draft EIS and the Final EIS.

- The alignment of Alternatives A1 and A2 was shifted north at 2000 West to avoid impacts to the Stillwater Homes Ski Lake subdivision that was constructed between the release of the Draft EIS and the Final EIS.
- Various park-and-ride lots and detention basins had minor shifts in location to minimize property impacts.

### 2.3.9 Consideration of a Supplemental EIS

Comments were received on the Draft EIS that a supplemental EIS should be prepared based on comments and potential changes to alternatives. FHWA's regulation at 23 CFR 771.130 (Supplemental Environmental Impact Statements) states that a supplemental EIS should be prepared under the following conditions:

- (1) Changes to the proposed action would result in significant environmental impacts that were not evaluated in the EIS; or
- (2) New information or circumstances relevant to environmental concerns and bearing on the proposed action or its impacts would result in significant environmental impacts not evaluated in the EIS.

However, a supplemental EIS will not be necessary where:

- (1) The changes to the proposed action, new information, or new circumstances result in a lessening of adverse environmental impacts evaluated in the EIS without causing other environmental impacts that are significant and were not evaluated in the EIS; or
- (2) The [Federal Highway] Administration decides to approve an alternative fully evaluated in an approved final EIS but not identified as the preferred alternative. In such a case, a revised ROD [Record of Decision] shall be prepared and circulated in accordance with § 771.127(b).

To determine whether a supplemental EIS is required, UDOT prepared a re-evaluation of the Draft EIS as required by 23 CFR 771.129 (Re-evaluations) and 23 CFR 771.130 (Supplemental Environmental Impact Statements). The re-evaluation concluded that there is no new information or circumstances relevant to environmental concerns and bearing on the proposed action or its impacts that would result in significant environmental impacts not evaluated in the Draft EIS. For these reasons, a supplemental or new Draft EIS was not warranted consistent with 23 CFR 771.130 (West Davis Corridor Team 2017d).

## 2.4 Description of Alternatives Carried Forward for Detailed Study

The WDC team advanced the following alternatives to this Final EIS for detailed study:

- No-Action Alternative
- Alternative A1
- Alternative A2
- Alternative B1
- Alternative B2

### 2.4.1 No-Action Alternative

NEPA requires an analysis of the No-Action Alternative. This alternative serves as a baseline so that decision-makers can compare the environmental effects of the action alternatives. An analysis of the No-Action Alternative used for the WDC Project is described in *Technical Memorandum 2: EIS No-Build (No-Action) Alternative* (West Davis Corridor Team 2011a).

The No-Action Alternative does not include a new WDC but does include all other projects in the 2040 WFRC RTP. These RTP projects would also be built independent of the WDC as part of the action alternatives. Table 1-2, Transportation Projects in the Needs Assessment Study Area, lists all of the transportation projects in the needs assessment study area that are in the 2040 WFRC RTP and that are therefore assumed as part of the background conditions for both the No-Action and action alternatives.

### 2.4.2 Alternative A1

Figure 2-20, Alternative A1, in Volume IV shows the facility type, interchange locations, and alignment for Alternative A1.

**Facility Type and Other Roadway Features.** Alternative A1 is a four-lane divided highway with a 250-foot right-of-way from I-15 in Farmington to 2000 West in Syracuse in Davis County. From 2000 West to 1800 North in Davis County, it is a 146-foot, two-lane, limited-access highway. This alternative would cross numerous streets and would require various cross street configurations: interchanges, overpasses, underpasses, and cul-de-sacs.

Table 2-12 below provides an overview of the cross street configurations for Alternative A1 including the locations of park-and-ride lots. The edge of the UDOT right-of-way would include a chain link or similar type of fence.

**Southern Terminus.** The southern terminus is the Glovers Lane system interchange connection to I-15 and Legacy Parkway in Farmington.

**Northern Terminus.** The northern terminus is 4100 West/1800 North in West Point.

**Table 2-12. Alternative A1 Cross Streets, Interchanges, and Park-and-Ride Lots**

Cross Street	Road Jurisdiction <sup>a</sup>	WDC Cross Street Treatment				Park-and-Ride Lot
		Interchange <sup>b</sup>	Cross Street Over	Cross Street Under	Cul-de-Sac	
I-15	Farmington	Freeway to freeway				
Tippetts Lane	Farmington			X		
Davis County Road (~700 West)	Farmington				X	
Glovers Lane	Farmington			X		
1200 West	Farmington				X	
1525 West	Farmington		X			
Future Shepard Lane extension (950 North)	Farmington	Diamond	X			
Central Davis Sewer District access road (about 2150 South)	Kaysville			X		
Roueché Lane	Kaysville			X		
200 North	Kaysville	Diamond		X		X
Weaver Lane	Layton				X	
2700 West	Layton	Diamond		X		X
3200 West	Layton			X		
Gentile Street	Syracuse			X		
2000 West	Syracuse	Diamond		X		X
3000 West	Syracuse			X		
2700 South	Syracuse			X		
2200 South	Syracuse			X		
1700 South (Antelope Drive)	Syracuse	Diamond		X		X
1425 South	Syracuse				X	
1315 South	Syracuse			X		
1235 South	Syracuse				X	
700 South	Syracuse			X		

(continued on next page)

**Table 2-12. Alternative A1 Cross Streets, Interchanges, and Park-and-Ride Lots**

Cross Street	Road Jurisdiction <sup>a</sup>	WDC Cross Street Treatment				Park-and-Ride Lot
		Interchange <sup>b</sup>	Cross Street Over	Cross Street Under	Cul-de-Sac	
300 North	West Point			X		
800 North	West Point			X		
1300 North	West Point			X		
1800 North	West Point	Signalized intersection				X

<sup>a</sup> Indicates the jurisdiction where the road crosses the WDC alignment.

<sup>b</sup> Interchange types are provided for reference but might be modified during the final design phase of the project to take specific conditions into account.

**Alignment.** From south to north, the alignment of Alternative A1 uses the Glovers Lane alignment in Farmington and connects to I-15 with a system interchange south of Glovers Lane in Farmington. From I-15, the alignment goes northwest, crossing Glovers Lane east of 1200 West, then turns north near 2000 West, heading north until it reaches a point southwest of the Central Davis Sewer Treatment Plant in Kaysville, where it turns northwest on the east side of the Rocky Mountain Power corridor. Alternative A1 then follows the Rocky Mountain Power corridor, crossing to the west side of the power corridor north of Angel Street in Kaysville, then follows the west side of the power corridor for about 1.5 miles before turning to the northwest to cross 200 North in Kaysville just east of its intersection with 2950 West.

From 200 North, the alignment continues northwest, crossing the eastern edge of the Great Salt Lake Shorelands Preserve southwest of the 1000 South/2200 West intersection in Layton. The alignment continues to the northwest, staying north and east of the Great Salt Lake Shorelands Preserve to about 600 West in Syracuse, where it heads northwest for about 0.2 mile before reaching Gentile Street just west of the Bluff Road/Gentile Street intersection in Syracuse.

From Gentile Street the alignment goes west, transitioning to a two-lane, limited-access highway west of the 2000 West interchange, then crossing 3000 West just north of Gentile Street. The alignment then turns northwest to about 3900 West, then turns north, crossing Antelope Drive just west of 4000 West. The alignment then goes north, staying west of 4000 West in West Point, crossing 300 North at about 4300 West. From 300 North, the alignment goes north between 300 North and 1300 North, then goes northeast, terminating at 1800 North and 4100 West with a signalized intersection.

**Trail Improvements Included with Alternative A1.** The following trail improvements are included with Alternative A1:

- A new trail segment along the WDC starting at I-15 in Farmington at the Legacy Parkway Trail extending north to the southern terminus of the Old Emigration Trail in Jensen Park in Syracuse. The new trail segments from Farmington to Syracuse would be located in a 25-foot-wide right-of-way adjacent to the WDC. From I-15 to 950 North in Farmington, the trail would be on the east side of the WDC. From 950 North to the Old Emigration Trail, the trail would be on the west side of the WDC.
- A trail crossing of I-15 on Park Lane in Farmington. This trail would be located on the north side of Park Lane and would connect the Legacy Parkway Trail to the Oakridge Preserve Trail. The trail would include expansion of the existing Park Lane bridge over I-15 to accommodate the trail.
- Connection of the Kays Creek Trail from the Kays Creek subdivision to the WDC trail. The Kays Creek Trail would be connected to the WDC trail with an overpass with the trail going over the WDC near Weaver Lane in Layton.
- Connection of the Old Emigration Trail from 1300 North in West Point to 4500 West (Davis County), then following 4500 West from 1300 North (Davis County) to the southern end of the 5500 West Trail in Weber County at the Weber County border with Davis County.

***Trail Improvements Constructed If There Is Local Government Support and Funding.***

The following trail improvements would be constructed if there is local government support and funding:

- Grade-separated crossings of the D&RGW Trail at:
  - Clark Lane in Farmington
  - Shepard Lane in Kaysville
  - 200 North in Kaysville
  - Layton Parkway in Layton
  - Gentile Street in Layton

Funding, construction, and long-term maintenance of these trail improvements would depend on coordination and support from the local governments.

### **2.4.3 Alternative A2**

Figure 2-21, Alternative A2, in Volume IV shows the facility type, interchange locations, and alignment for Alternative A2.

***Facility Type and Other Roadway Features.*** Alternative A2 is a four-lane divided highway with a 250-foot right-of-way width from I-15 in Farmington to 2000 West in Syracuse in Davis County. From 2000 West to 5500 South in Weber County, it is a 146-foot-right-of-way, two-lane, limited-access highway. This alternative would cross numerous streets and would require various cross street configurations: interchanges, overpasses, underpasses, and cul-de-sacs. Table 2-13 below provides an overview of the cross street configurations for Alternative A2 including the locations of park-and-ride lots. The edge of the UDOT right-of-way would include a chain link or similar type of fence.

***Southern Terminus.*** The southern terminus is the Glovers Lane system interchange connection to I-15 and Legacy Parkway in Farmington.

***Northern Terminus.*** The northern terminus is 5400 West/5500 South in Weber County.

**Table 2-13. Alternative A2 Cross Streets, Interchanges, and Park-and-Ride Lots**

Cross Street	Road Jurisdiction <sup>a</sup>	WDC Cross Street Treatment				Park-and-Ride Lot
		Interchange <sup>b</sup>	Cross Street Over	Cross Street Under	Cul-de-Sac	
I-15	Farmington	Freeway to freeway				
Tippetts Lane	Farmington			X		
Davis County Road (~700 West)	Farmington				X	
Glovers Lane	Farmington			X		
1200 West	Farmington				X	
1525 West	Farmington		X			
Future Shepard Lane extension (950 North)	Farmington	Diamond	X			
Central Davis Sewer District access road (about 2150 South)	Kaysville			X		
Roueché Lane	Kaysville			X		
200 North	Kaysville	Diamond		X		X
Weaver Lane	Layton				X	
2700 West	Layton	Diamond		X		X
3200 West	Layton			X		
Gentile Street	Syracuse			X		
2000 West	Syracuse	Diamond		X		X
3000 West	Syracuse			X		
2700 South	Syracuse			X		
2200 South	Syracuse			X		
1700 South (Antelope Drive)	Syracuse	Diamond		X		X
1425 South	Syracuse				X	
1315 South	Syracuse			X		
1235 South	Syracuse				X	
700 South	Syracuse			X		

(continued on next page)

**Table 2-13. Alternative A2 Cross Streets, Interchanges, and Park-and-Ride Lots**

Cross Street	Road Jurisdiction <sup>a</sup>	WDC Cross Street Treatment				Park-and-Ride Lot
		Interchange <sup>b</sup>	Cross Street Over	Cross Street Under	Cul-de-Sac	
300 North	West Point			X		
800 North	West Point			X		
4500 West	West Point			X		
1300 North	West Point			X		
1800 North	West Point	Diamond		X		X
2425 North	West Point			X		
4500 West	West Point			X		
5900 South	Hooper			X		
5500 South	Hooper	Signalized intersection				X

<sup>a</sup> Indicates the jurisdiction where the road crosses the WDC alignment.

<sup>b</sup> Interchange types are provided for reference but might be modified during the final design phase of the project to take specific conditions into account.

**Alignment.** From south to north, the alignment of Alternative A2 uses the Glovers Lane alignment in Farmington and connects to I-15 with a system interchange south of Glovers Lane in Farmington. From I-15, the alignment goes northwest, crossing Glovers Lane east of 1200 West, then turns north near 2000 West, heading north until it reaches a point southwest of the Central Davis Sewer Treatment Plant in Kaysville, where it turns northwest on the east side of the Rocky Mountain Power corridor. Alternative A2 then follows the Rocky Mountain Power corridor, crossing to the west side of the power corridor north of Angel Street in Kaysville, then follows the west side of the power corridor for about 1.5 miles before turning to the northwest to cross 200 North in Kaysville just east of its intersection with 2950 West.

From 200 North, the alignment continues northwest, crossing the eastern edge of the Great Salt Lake Shorelands Preserve southwest of the 1000 South/2200 West intersection in Layton. The alignment continues to the northwest, staying north and east of the Great Salt Lake Shorelands Preserve to about 600 West in Syracuse, where it heads northwest for about 0.2 mile before reaching Gentile Street just west of the Bluff Road/Gentile Street intersection in Syracuse.

From Gentile Street the alignment goes west, transitioning to a two-lane, limited-access highway west of the 2000 West interchange, then crossing 3000 West just north of Gentile Street. The alignment then turns northwest to about 3900 West, then turns north, crossing Antelope Drive just west of 4000 West. The alignment then goes north, staying west of 4000 West in West Point, crossing 300 North at about 4300 West and crossing the Hooper Canal, 800 North, and 4500 West. Alternative A2 then turns north to cross 1800 North at about 4800 West, then turns northeast in Hooper to terminate at 5500 South (Weber County) at about 5400 West with a signalized intersection.

**Trail Improvements.** The trail improvements included with Alternative A2 are the same as those for Alternative A1.

## 2.4.4 Alternative B1

Figure 2-22, Alternative B1, in Volume IV shows the facility type, interchange locations, and alignment for Alternative B1.

**Facility Type and Other Roadway Features.** Alternative B1 is a four-lane divided highway with a 250-foot right-of-way width from I-15 in Farmington to Antelope Drive in Syracuse in Davis County. From north of Antelope Drive at about 850 South to 1800 North in Davis County, it is a 146-foot-right-of-way, two-lane, limited-access highway. This alternative would cross numerous streets and would require various cross street configurations: interchanges, overpasses, underpasses, and cul-de-sacs. Table 2-14 below provides an overview of the cross street configurations for Alternative B1 including the locations of park-and-ride lots. The edge of the UDOT right-of-way would include a chain link or similar type of fence.

**Southern Terminus.** The southern terminus is the Glovers Lane system interchange connection to I-15 and Legacy Parkway in Farmington.

**Northern Terminus.** The northern terminus is 4100 West/1800 North in West Point.

**Table 2-14. Alternative B1 Cross Streets, Interchanges, and Park-and-Ride Lots**

Cross Street	Road Jurisdiction <sup>a</sup>	WDC Cross Street Treatment				Park-and-Ride Lot
		Interchange <sup>b</sup>	Cross Street Over	Cross Street Under	Cul-de-Sac	
I-15	Farmington	Freeway to freeway				
Tippetts Lane	Farmington			X		
Davis County Road (~700 West)	Farmington				X	
Glovers Lane	Farmington			X		
1200 West	Farmington				X	
1525 West	Farmington		X			
Future Shepard Lane extension (950 North)	Farmington	Diamond	X			
Central Davis Sewer District access road (about 2150 South)	Kaysville			X		
Roueche Lane	Kaysville			X		
200 North	Kaysville	Diamond		X		X
Weaver Lane	Layton				X	
2700 West	Layton	Diamond		X		X
3200 West	Layton			X		
Gentile Street	Syracuse			X		
2000 West	Syracuse	Diamond		X		X
2700 South	Syracuse			X		
1700 South (Antelope Drive)	Syracuse	Buttonhook		X		X
3000 West	Syracuse			X		
700 South	Syracuse			X		
300 North	West Point			X		
800 North	West Point			X		
1300 North	West Point			X		
1800 North	West Point	Signalized intersection				X

<sup>a</sup> Indicates the jurisdiction where the road crosses the WDC alignment.

<sup>b</sup> Interchange types are provided for reference but might be modified during the final design phase of the project to take specific conditions into account.

**Alignment.** From south to north, the alignment of Alternative B1 uses the Glovers Lane alignment in Farmington and connects to I-15 with a system interchange south of Glovers Lane in Farmington. From I-15, the alignment goes northwest, crossing Glovers Lane east of 1200 West, then turns north near 2000 West, heading north until it reaches a point southwest of the Central Davis Sewer Treatment Plant in Kaysville, where it turns northwest on the east side of the Rocky Mountain Power corridor. Alternative B1 then follows the Rocky Mountain Power corridor, crossing to the west side of the power corridor north of Angel Street in Kaysville, then follows the west side of the power corridor for about 1.5 miles before turning to the northwest to cross 200 North in Kaysville just east of its intersection with 2950 West.

From 200 North, the alignment continues northwest, crossing the eastern edge of the Great Salt Lake Shorelands Preserve southwest of the 1000 South/2200 West intersection in Layton. The alignment continues to the northwest, staying north and east of the Great Salt Lake Shorelands Preserve to about 600 West in Syracuse, where it heads northwest for about 0.2 mile before reaching Gentile Street just west of the Bluff Road/Gentile Street intersection in Syracuse.

From Gentile Street the alignment goes northwest, crossing 2000 West near 3100 South, then turns north, crossing 2700 South at 2300 West and crossing Antelope Drive just west of Bluff Road. The alignment then transitions to a two-lane, limited-access highway at about 850 South while staying east of the Glen Eagle Golf Course. The alignment crosses 3000 West near 1300 South, then turns northwest in West Point and stays northwest to about 300 North/4300 West in West Point. From this point, Alternative B1 goes north between 300 North and 1300 North, then goes northeast, terminating at 1800 North and 4100 West with a signalized intersection.

**Trail Improvements Included with Alternative B1.** The following trail improvements are included with Alternative B1:

- A new trail segment along the WDC starting at I-15 in Farmington at the Legacy Parkway Trail extending north to the southern terminus of the Old Emigration Trail in Jensen Park in Syracuse. The new trail segments from Farmington to Syracuse would be located in a 25-foot-wide right-of-way adjacent to the WDC. From I-15 to 950 North in Farmington, the trail would be on the east side of the WDC. From 950 North to the Old Emigration Trail, the trail would be on the west side of the WDC.
- A trail crossing of I-15 on Park Lane in Farmington. This trail would be located on the north side of Park Lane and would connect the Legacy Parkway Trail to the Oakridge Preserve Trail.
- Connection of the Kays Creek Trail from the Kays Creek subdivision to the WDC trail. The Kays Creek Trail would be connected to the WDC trail with an overpass with the trail going over the WDC near Weaver Lane in Layton.
- Connection of the Old Emigration Trail from 1300 North in West Point to 4500 West (Davis County), then following 4500 West from 1300 North (Davis County) to connect with the southern end of the Weber County 5500 West trail at the Weber County border with Davis County.
- A new alignment for the Old Emigration Trail between 600 South and 2100 South in Syracuse.

***Trail Improvements Constructed If There Is Local Government Support and Funding.***

The following trail improvements would be constructed if there is local government support and funding:

- Grade-separated crossings of the D&RGW Trail at:
  - Clark Lane in Farmington
  - Shepard Lane in Kaysville
  - 200 North in Kaysville
  - Layton Parkway in Layton
  - Gentile Street in Layton

Funding, construction, and long-term maintenance of these trail improvements would depend on coordination and support from the local governments.

## **2.4.5 Alternative B2**

Figure 2-23, Alternative B2, in Volume IV shows the facility type, interchange locations, and alignment for Alternative B2.

***Facility Type and Other Roadway Features.*** Alternative B2 is a four-lane divided highway with a 250-foot right-of-way width from I-15 in Farmington to Antelope Drive in Syracuse in Davis County. From north of Antelope Drive at about 850 South to 1800 North in Davis County, it is a 146-foot-right-of-way, two-lane, limited-access highway. This alternative would cross numerous streets and would require various cross street configurations: interchanges, overpasses, underpasses, and cul-de-sacs. Table 2-15 below provides an overview of the cross street configurations for Alternative B2 including the locations of park-and-ride lots. The edge of the UDOT right-of-way would include a chain link or similar type of fence.

***Southern Terminus.*** The southern terminus is the Glovers Lane system interchange connection to I-15 and Legacy Parkway in Farmington.

***Northern Terminus.*** The northern terminus is 4800 West/1800 North in West Point in Davis County.

**Table 2-15. Alternative B2 Cross Streets, Interchanges, and Park-and-Ride Lots**

Cross Street	Road Jurisdiction <sup>a</sup>	WDC Cross Street Treatment				Park-and-Ride Lot
		Interchange <sup>b</sup>	Cross Street Over	Cross Street Under	Cul-de-Sac	
I-15	Farmington	Freeway to freeway				
Tippetts Lane	Farmington			X		
Davis County Road (~700 West)	Farmington				X	
Glovers Lane	Farmington			X		
1200 West	Farmington				X	
1525 West	Farmington		X			
Future Shepard Lane extension (950 North)	Farmington	Diamond	X			
Central Davis Sewer District access road (about 2150 South)	Kaysville			X		
Roueche Lane	Kaysville			X		
200 North	Kaysville	Diamond		X		X
Weaver Lane	Layton				X	
2700 West	Layton	Diamond		X		X
3200 West	Layton			X		
Gentile Street	Syracuse			X		
2000 West	Syracuse	Diamond		X		X
2700 South	Syracuse			X		
1700 South (Antelope Drive)	Syracuse	Buttonhook		X		X
3000 West	Syracuse			X		
700 South	Syracuse			X		
300 North	West Point			X		
800 North	West Point			X		
4500 West	West Point			X		
1300 North	West Point			X		
1800 North	West Point	Signalized intersection				X

<sup>a</sup> Indicates the jurisdiction where the road crosses the WDC alignment.

<sup>b</sup> Interchange types are provided for reference but might be modified during the final design phase of the project to take specific conditions into account.

**Alignment.** From south to north, the alignment of Alternative B2 uses the Glovers Lane alignment in Farmington and connects to I-15 with a system interchange south of Glovers Lane in Farmington. From I-15, the alignment goes northwest, crossing Glovers Lane east of 1200 West, then turns north near 2000 West, heading north until it reaches a point southwest of the Central Davis Sewer Treatment Plant in Kaysville, where it turns northwest on the east side of the Rocky Mountain Power corridor. Alternative B2 then follows the Rocky Mountain Power corridor, crossing to the west side of the power corridor north of Angel Street in Kaysville, then follows the west side of the power corridor for about 1.5 miles before turning to the northwest to cross 200 North in Kaysville just east of its intersection with 2950 West.

From 200 North, the alignment continues northwest, crossing the eastern edge of the Great Salt Lake Shorelands Preserve southwest of the 1000 South/2200 West intersection in Layton. The alignment continues to the northwest, staying north and east of the Great Salt Lake Shorelands Preserve to about 600 West in Syracuse, where it heads northwest for about 0.2 mile before reaching Gentile Street just west of the Bluff Road/Gentile Street intersection in Syracuse.

From Gentile Street the alignment goes northwest, crossing 2000 West near 3100 South, then turns north, crossing 2700 South at 2300 West and crossing Antelope Drive just west of Bluff Road. The alignment then transitions to a two-lane, limited-access highway at about 850 South while staying east of the Glen Eagle Golf Course. The alignment crosses 3000 West near 1300 South, then turns northwest in West Point and stays northwest to about 300 North/4300 West in West Point. From this point, Alternative B2 goes northwest, crossing the Hooper Canal, 800 North, and 4500 West, then turns north to terminate at 1800 North at about 4800 West with a signalized intersection.

**Trail Improvements.** The trail improvements included with Alternative B2 are the same as those for Alternative B1.

## 2.4.6 Wetland Avoidance Options

The WDC team is considering two wetland avoidance options to reduce impacts to wetlands from the A and B Alternatives. After the release of the Draft EIS, USACE asked whether any other wetland avoidance options were available. The WDC team responded that two options could meet design standards while still avoiding wetlands. The two wetland avoidance options being evaluated in this Final EIS are shown in Table 2-16. The Farmington and Layton options could be implemented with any of the A or B Alternatives. Figure 2-20, Alternative A1, in Volume IV shows the two options.

**Table 2-16. Components of the Wetland Avoidance Options**

Option	Location	City	Description
Farmington	Prairie View Drive and West Ranches Road	Farmington	Shift the A and B Alternatives in Farmington about 150 feet east to the southwest side of the intersection of Prairie View Drive and West Ranches Road.
Layton	2200 West and 1000 South	Layton	Shift the A and B Alternatives in Layton about 500 feet east to the northeast side of the intersection at 2200 West and 1000 South.

## 2.5 Summary Comparison of Alternatives

### 2.5.1 Purpose and Need Comparison

Table 2-17 and Chart 2-1 to Chart 2-5 below summarize how the action alternatives compare in meeting the elements of the project purpose. The table shows the reduction in the hours of daily delay, the number of lane-miles in both the north-south and east-west directions that would have less congestion, and the reduction in the number of VMT and VHT in congestion. As shown in the table, all of the action alternatives would substantially reduce daily delay and peak-period congestion and would provide similar transportation benefits.

Of the travelers from the WDC study area, those who travel to Salt Lake City would experience the greatest benefit. These travelers would experience a 66% reduction in delay in the peak period compared to the total delay with the No-Action Alternative (for more information, see Chapter 7, Transportation). This is a result of the travelers being able to use the WDC instead of more-congested east-west arterials to travel to I-15, which would also have some congestion. The main benefit illustrated by the table is that, by implementing one project (the WDC), the total hours of delay in the study area would be reduced by about 32%. That would provide a substantial benefit to overall regional mobility.

**Table 2-17. Comparison of Regional Delay and Congestion Benefits from the WDC Action Alternatives**

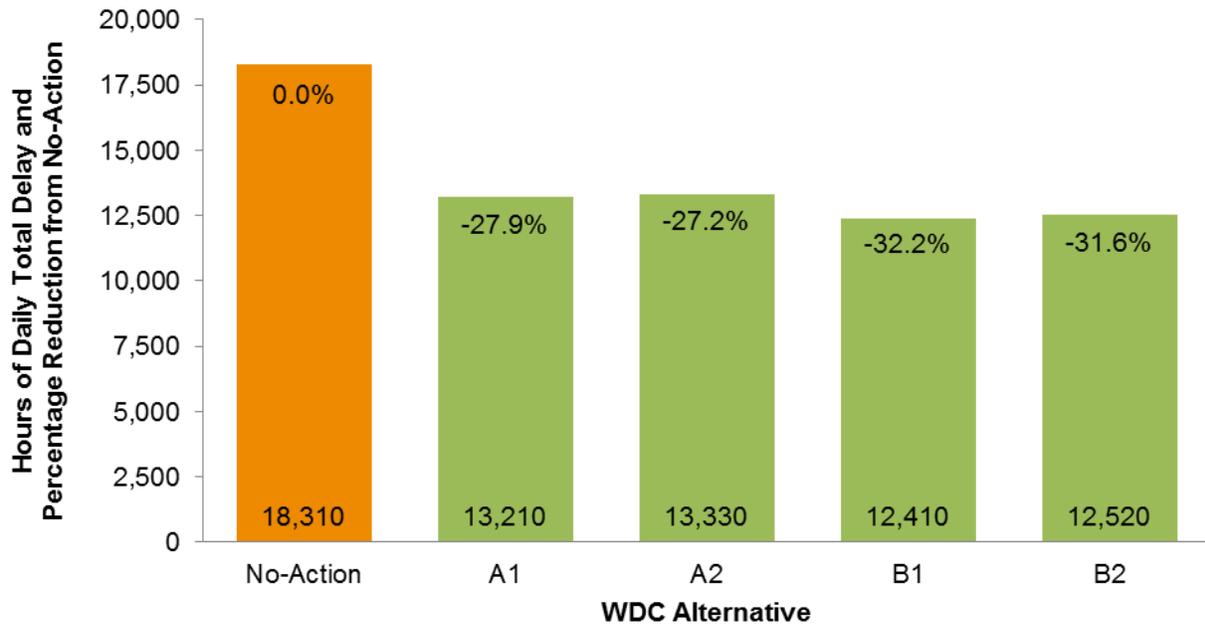
Alternative	Percentage Change from the No-Action Alternative in 2040 in the PM Peak Period <sup>a</sup>				
	Hours of Daily Total Delay	Lane-Miles of North-South Roads in Congestion <sup>b</sup>	Lane-Miles of East-West Roads in Congestion <sup>b</sup>	Vehicle-Miles Traveled (VMT) in Congestion <sup>c</sup>	Vehicle-Hours Traveled (VHT) in Congestion <sup>c</sup>
A1 – Glovers Lane/4700 W	-27.9%	-32.8%	-45.2%	-35.5%	-38.4%
A2 – Glovers Lane/5100 W	-27.2%	-30.2%	-45.2%	-33.9%	-37.0%
B1 – Glovers Lane/4100 W	-32.2%	-31.0%	-51.6%	-35.3%	-40.0%
B2 – Glovers Lane/4800 W	-31.6%	-28.4%	-51.6%	-33.6%	-38.5%

<sup>a</sup> The PM peak period is between 3 PM and 6 PM.

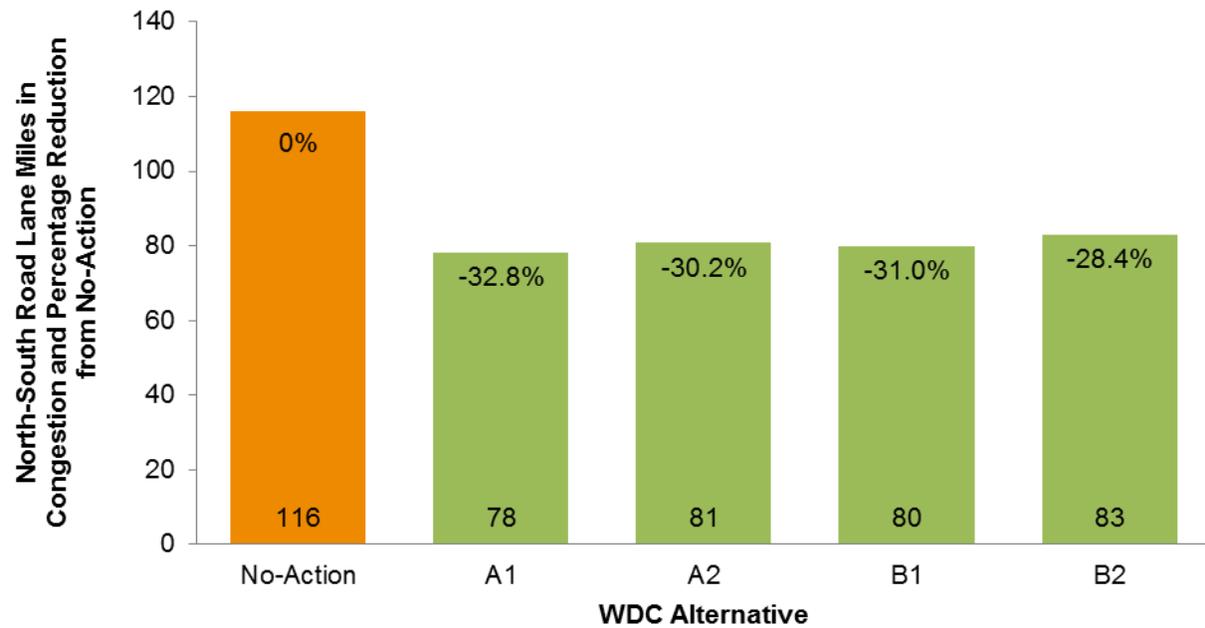
<sup>b</sup> Includes reduction in congestion on roads with a V/C ratio greater than 0.90 (LOS E and F) during the PM peak period. Roads include freeways (I-15), principal and minor arterials, and collector streets in the WDC study area. Volume to capacity, or V/C, is a measure of the actual traffic volume on a road compared to 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 LOS E or F (congested, stop-and-go traffic).

<sup>c</sup> Includes reduction in congestion for VMT and VHT on roads with a V/C ratio greater than 0.90 (LOS E and F) during the PM peak period. Roads include freeways (I-15), principal and minor arterials, and collector streets in the WDC study area.

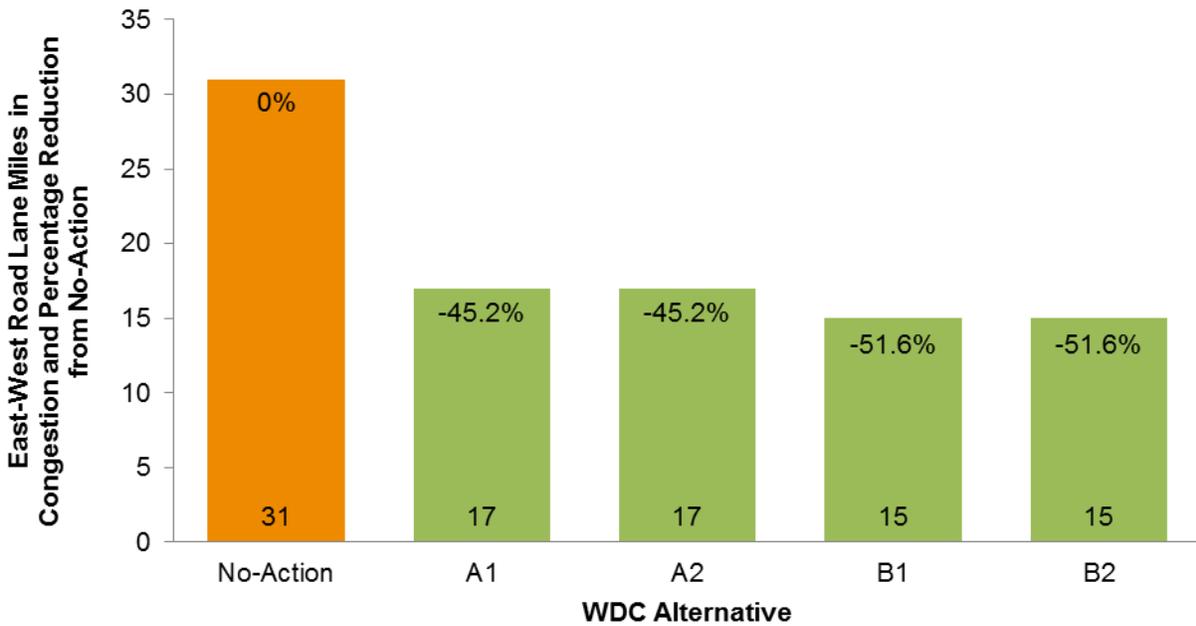
**Chart 2-1. Hours of Daily Total Delay in the WDC Study Area, by Alternative**



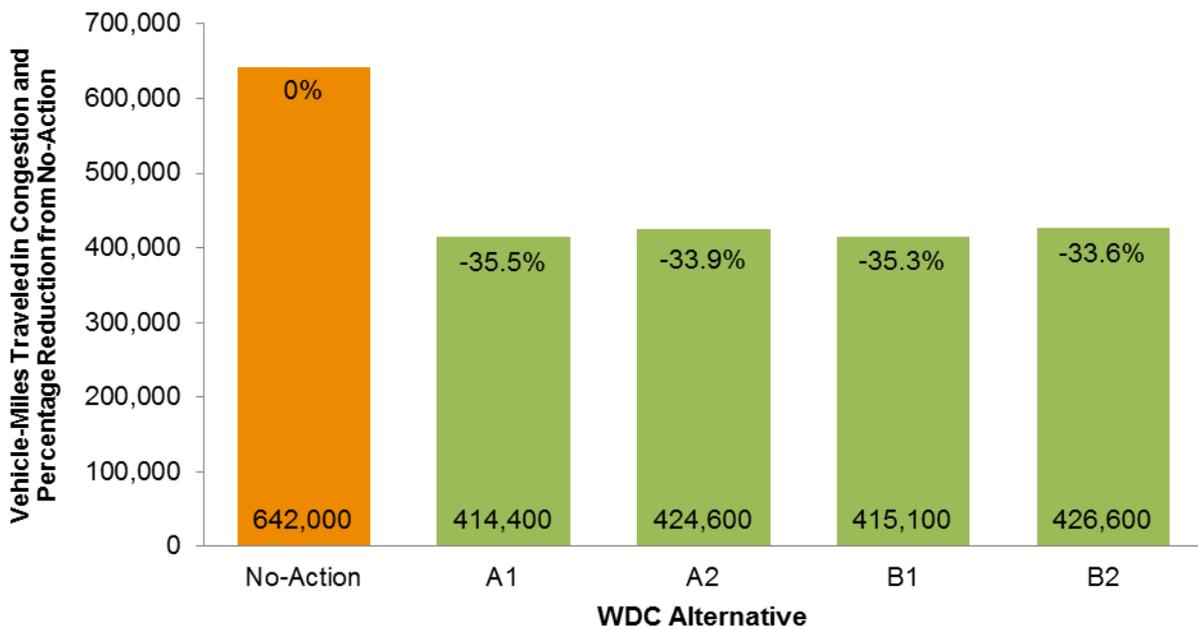
**Chart 2-2. Lane-Miles of North-South Roads in Congestion, by Alternative**



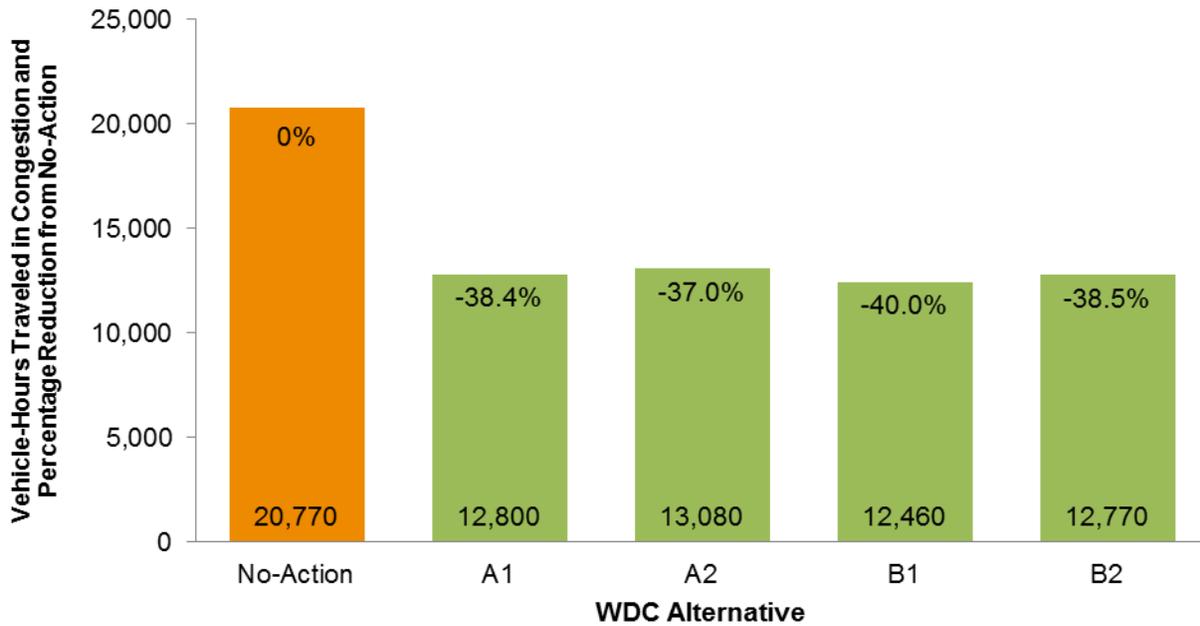
**Chart 2-3. Lane-Miles of East-West Roads in Congestion, by Alternative**



**Chart 2-4. Vehicle-Miles Traveled in Congestion, by Alternative**



**Chart 2-5. Vehicle-Hours Traveled in Congestion, by Alternative**



When reviewing the regional transportation performance for each alternative, the WDC team also compared the daily traffic volumes. The WDC team considers 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 2-18 shows the daily traffic volumes for the WDC action alternatives in 2040.

**Table 2-18. Comparison of Daily Traffic Volumes for the WDC Action Alternatives in 2040**

Alternative	Daily Traffic Volume (vehicles per day)
A1	19,400
A2	18,900
B1	27,600
B2	26,000

As shown above in Table 2-18, the following observations can be made about the daily traffic volumes:

- Alternative B1 would carry the most daily traffic of any of the WDC action alternatives (27,600 vehicles per day).
- Alternative A2 would carry the least daily traffic of any of the WDC action alternatives (18,900 vehicles per day).
- The B Alternatives (B1–B2) would both carry more daily traffic than the A Alternatives (A1–A2).

Overall, at a regional level, Alternative B1 would provide the greatest reduction in daily delay and VHT in congestion and would carry the most traffic of any WDC action alternative. Therefore, Alternative B1 would provide the best overall traffic performance and has the highest degree of meeting the project purpose.

## **2.5.2 Degree to Which the Alternatives Meet the Project Purpose**

### **2.5.2.1 Improve Regional and Peak-Period Transportation Performance**

Section 2.5.1, Purpose and Need Comparison, describes how the WDC action alternatives would meet the project purpose. As previously shown in Table 2-17, Comparison of Regional Delay and Congestion Benefits from 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 2-18, Comparison of Daily Traffic Volumes for the WDC Action Alternatives in 2040, over the length of the whole alternative, both of the B Alternatives would carry between 34% and 46% more daily traffic than either of the A Alternatives, with Alternative B1 carrying the greatest traffic volumes. In addition, Alternative B1 would result in the greatest reduction in daily delay of any of the WDC action alternatives.

### **2.5.2.2 Increase Interconnection between Transportation Modes**

All of the WDC action alternatives would equally support increased interconnection between transportation modes. The WDC would increase interconnection between transportation modes by providing park-and-ride lots at proposed interchanges and providing a trail crossing of I-15 on Park Lane in Farmington. This trail would be located on the north side of Park Lane and would connect the Oakridge Preserve Trail to the Legacy Parkway Trail and the Farmington FrontRunner commuter-rail station.

### 2.5.2.3 Support Local Growth Objectives

The criterion of supporting local growth objectives is based on how consistent a WDC action alternative is with local and regional land-use plans. Alternative B1 is the only alternative that is consistent with all land-use and transportation plans of the cities through which the WDC action alternatives would pass. Alternative B2 is not consistent with one land-use plan, and the A Alternatives are not consistent with two local land-use plans.

### 2.5.2.4 Increase Bicyclist and Pedestrian Options

All of the WDC action alternatives would equally support increased bicyclist and pedestrian options by providing the following trail connections:

- A new trail segment along the WDC starting at I-15 in Farmington at the Legacy Parkway Trail extending north to the southern terminus of the Old Emigration Trail in Jensen Park in Syracuse.
- A trail crossing of I-15 on Park Lane in Farmington. This trail would be located on the north side of Park Lane and would connect the Oakridge Preserve Trail to the Legacy Parkway Trail and the Farmington FrontRunner commuter-rail station.
- Connection of the Kays Creek Trail from the Kays Creek subdivision to the WDC trail. The Kays Creek Trail would be connected to the WDC trail.
- Connection of the Old Emigration Trail from 1300 North in West Point to 4500 West (Davis County), then following 4500 West from 1300 North (Davis County) to the Weber County border with Davis County.

## 2.5.3 Estimated Cost

Table 2-19 compares the estimated costs of the WDC action alternatives. The cost estimate below includes design, right-of-way, construction, utility relocations, and environmental mitigation. This cost estimate is based on current unit prices for recently completed, similar projects that were escalated to 2017 dollars. The actual cost of construction would likely be higher because of inflation between 2017 and the year of construction but is expected to increase proportionally among the various alternatives.

**Table 2-19. Estimated Costs of the WDC Action Alternatives**

Alternative	2017 Cost
A1	\$682 million
A2	\$723 million
B1	\$725 million
B2	\$728 million

## 2.5.4 Operational Characteristics of the WDC

The WDC would likely have a posted speed limit of 65 mph. Based on the WFRC travel demand model version 8.1, the WDC team expects that, by 2040, between 18,900 and 27,600 vehicles per day would use the WDC. For comparison, Legacy Parkway currently has between 22,500 and 32,200 vehicles per day, and I-15 in Davis County has between 100,000 and 140,000 vehicles per day. About 92% of the WDC vehicles would be automobiles and 8% would be trucks. This is a much lower truck percentage than on I-15, which has about 85% automobiles and 15% trucks. The heaviest travel periods on the WDC would be during the morning and afternoon work commutes.

## 2.5.5 Summary Comparison of Resource Impacts by Alternative

Table 2-20 below compares the environmental impacts of the eight WDC action alternatives. This table provides a quantitative comparison among the alternatives for the resources evaluated in this EIS. Although impacts are quantified for all of the impact categories below, not all resources listed favored one alternative or another. This section summarizes the impacts by resource; a detailed evaluation of each alternative's impacts is in the relevant resource chapters of this Final EIS.

As shown in Table 2-20, 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 2-20 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 provide relevant information for weighing alternatives. Impact context and intensity are included as appropriate in each resource chapter of this Final EIS for all alternatives. This information is used and summarized in Section 2.6, Identification of the Preferred Alternative.

**Table 2-20. Summary Comparison of Cost and Resource Impacts by WDC Action Alternative**

Impact Category	Unit	Alternative							
		Without Wetland Avoidance Option		With Wetland Avoidance Option		Without Wetland Avoidance Option		With Wetland Avoidance Option	
		A1	A2	A1	A2	B1	B2	B1	B2
Route length	Miles	20.37	22.28	20.38	22.29	19.21	19.31	19.22	19.32
Route cost (2017)	Million \$	682	723	682	724	725	728	725	729
Land converted to roadway use	Acres	815	878	822	883	871	872	878	879
Direct impacts to the Great Salt Lake Shorelands Preserve	Acres	75	75	64	64	75	75	64	64
Direct impacts to land with a conservation easement <sup>a</sup>	Acres	91	91	91	91	77	77	77	77
Consistent with city plans (out of six cities for A1, B1, and B2 and seven cities for A2) <sup>b</sup>	Number	4	5	4	5	6	5	6	5
Direct impacts to prime farmland	Acres	134	138	125	129	104	104	94	94
Direct impacts to irrigated cropland	Acres	544	605	540	601	529	532	525	528
Direct impacts to non-irrigated cropland	Acres	85	85	84	84	79	79	78	78
Direct impacts to Agriculture Protection Areas	Acres	24	42	24	42	3	4	3	4
Indirect farmland impacts	Acres	41	50	40	49	28	36	27	35
Residential relocations	Number	25	29	32	36	18	19	25	26
Potential residential relocations <sup>c</sup>	Number	1	3	1	3	9	9	9	9
Residential plats affected <sup>d</sup>	Number	0	0	1	1	0	0	1	1
Business relocations	Number	5	6	5	6	4	5	4	5
Potential business relocations <sup>c</sup>	Number	5	5	5	5	5	5	5	5
Congestion cost savings compared to No-Action Alternative	Million \$	48	47	48	47	56	55	56	55
Direct impacts to recreation areas	Number	3	3	3	3	4	4	4	4
Direct impacts to community facilities	Number	1	2	1	2	1	2	1	2
Environmental justice populations affected	Yes/no <sup>e</sup>	No	No	No	No	No	No	No	No
Existing trails relocated	Number	0	0	0	0	1	1	1	1
Existing trails crossed	Number	8	7	8	7	7	6	7	6
Consistent with air quality conformity regulations	Yes/no <sup>f</sup>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Residential noise receptors above criteria	Number	131	132	132	133	193	185	194	186
Stream/canal crossings	Number	6	7	6	7	6	6	6	6

(continued on next page)

**Table 2-20. Summary Comparison of Cost and Resource Impacts by WDC Action Alternative**

Impact Category	Unit	Alternative							
		Without Wetland Avoidance Option		With Wetland Avoidance Option		Without Wetland Avoidance Option		With Wetland Avoidance Option	
		A1	A2	A1	A2	B1	B2	B1	B2
Direct impacts to wetlands	Acres	28.1	26.9	21	19.9	47.9	46.6	40.9	39.6
• Category I wetlands <sup>g</sup>	Acres	15.9	15.2	13.7	13.1	15.7	15.1	13.6	13.0
• Category II wetlands	Acres	8.2	7.7	3.3	3.8	15.3	14.8	10.4	9.9
• Category III wetlands	Acres	4.0	4.0	4.0	4.0	16.9	16.7	16.9	16.7
Wetlands within 300 feet of the right-of-way	Acres	80.5	64.3	68.7	52.4	101.6	85.2	89.7	73.3
Direct impacts to high-quality wildlife habitat <sup>h</sup>	Acres	49.5	45.8	36.8	33.2	48.9	45.3	36.3	32.7
High-quality wildlife habitat within 300 feet of the right-of-way	Acres	119.4	107.8	105.0	93.4	98.4	86.7	84.0	72.3
Direct impacts to floodplains	Acres	187.7	187.7	183.7	183.7	187.7	187.7	183.7	183.7
Adverse effects on cultural resources	Number	3	3	5	5	5	5	7	7
Direct impacts to hazardous waste sites	Number	0	0	0	0	0	0	0	0
Visual changes	Category	Low–high	Low–high	Low–high	Low–high	Low–high	Low–high	Low–high	Low–high
Section 4(f) uses	Number	3	3	5	5	5	5	7	7
Section 4(f) <i>de minimis</i> uses	Number	13	17	12	16	13	14	12	13
Section 4(f) least overall harm <sup>i</sup>	Rank <sup>i</sup>	7	8	5	6	3	4	1	2
Mode share (percent of all home-based work trips)	Percent	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8

<sup>a</sup> Conservation easements include Farmington City–held conservation easements and the Black Agriland conservation easement held by the Utah Department of Agriculture and Food.

<sup>b</sup> The adopted Farmington City Transportation Plan shows a future WDC on Glovers Lane (all action alternatives). However, city officials have passed a resolution supporting a WDC alignment on Shepard Lane; this alignment was eliminated after the release of the Draft EIS for not meeting design standards.

<sup>c</sup> 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.

<sup>d</sup> A residential plat is a lot that has been approved for residential development by the local jurisdiction but has not been developed.

<sup>e</sup> Yes or no: Would the alternative have a disproportionately high and adverse effect on an environmental justice population?

<sup>f</sup> Yes or no: Is the alternative consistent with air quality conformity regulations under the Clean Air Act?

<sup>g</sup> Wetland quality was determined using the UDOT Wetland Functional Assessment Method. Category I wetlands have the highest quality and Category III the lowest. For more information, see Chapter 14, Ecosystem Resources. Wetland impact acres could change during the Clean Water Act Section 404 permitting process after the Final EIS is released.

<sup>h</sup> 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*.

<sup>i</sup> A Section 4(f) least overall harm analysis determines which alternative would have the least overall harm considering the seven factors listed in 23 CFR 774.3(c). In this table, a rank of 1 indicates the least overall harm and 8 indicates the greatest overall harm.

## 2.6 Identification of the Preferred Alternative

This section identifies and provides FHWA and UDOT's basis for identifying the preferred alternative. The final selection of an alternative will be made by FHWA in the Record of Decision for the WDC Project. As part of the Clean Water Act permitting process, the U.S. Army Corps of Engineers will decide, when making a Clean Water Act permit decision, which alternative satisfies the Section 404(b)(1) guidelines.

FHWA and UDOT identified the preferred alternative based on its transportation performance, cost, and impacts to the natural and human environment while considering the Clean Water Act permitting process. As part of identifying the preferred alternative, FHWA and UDOT considered public and agency input during the scoping process; the alternatives-development, screening, and refinement process; comments made to the Draft EIS; and the project file.

Note that there are strengths and weaknesses for each alternative. No alternative had the best transportation performance, the lowest cost, and the fewest impacts to all resources. All of the action alternatives would affect Section 4(f) resources, wetlands, and farmland and would require residential and business acquisitions.

During the resource-identification process, FHWA and 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, collective and individual avoidance of all of these resources was not possible. All of the action alternatives would affect Section 4(f) resources protected by the Department of Transportation Act, 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.

### 2.6.1 FHWA and UDOT's Evaluation of the Action Alternatives

FHWA and UDOT have identified **Alternative B1 with the Wetland Avoidance Option** as the preferred alternative for the WDC Project.

As shown in Figure 2-22, Alternative B1, in Volume IV, Alternative B1 consists of a connection at Glovers Lane in Farmington and the 4100 West/1800 North northern option. FHWA and UDOT's preferred alternative is based on the selection of the Wetland Avoidance Option in Farmington and Layton. The rationale for these three decisions is described in the following Section 2.6.2 through Section 2.6.4.

## 2.6.2 FHWA and UDOT's Evaluation of the Wetland Avoidance Option

UDOT and FHWA have identified the Wetland Avoidance Option as part of the preferred alternative. The reasons for this selection are primarily to reduce impacts to wetlands and the Great Salt Lake Shorelands Preserve. The Wetland Avoidance Option would not change the transportation performance of Alternative B1. The primary benefits of the Wetland Avoidance Option are:

- The Wetland Avoidance Option would result in about 7 acres fewer total wetland impacts compared to the action alternatives without the Wetland Avoidance Option. Of these 7 acres, 2.1 acres would be Category I wetlands (high quality), and 4.9 acres would be Category II wetlands (medium quality).
- The Wetland Avoidance Option would result in about 12 fewer acres of wetlands within 300 feet of the right-of-way compared to the action alternatives without the Wetland Avoidance Option.
- The Wetland Avoidance Option would result in 13 fewer acres of wildlife habitat affected compared to the action alternatives without the Wetland Avoidance Option. All of the habitat affected would be high-quality wildlife habitat.
- The Wetland Avoidance Option would be about 200 to 250 feet farther from the Great Salt Lake Shorelands Preserve for about 0.4 mile in an area of high-quality wetlands and wildlife habitat. This location would slightly reduce wildlife impacts compared to the action alternatives without the Wetland Avoidance Option.
- Within the Great Salt Lake Shorelands Preserve, the Wetland Avoidance Option would result in 5 fewer acres of direct wetland impacts and 11 fewer acres of wetlands within 300 feet of the right-of-way compared to the action alternatives without the Wetland Avoidance Option. The Wetland Avoidance Option would result in 10 fewer acres of direct wildlife habitat affected compared to the action alternatives without the Wetland Avoidance Option.
- The Wetland Avoidance Option would avoid acquisition and use of 5.5 acres of the Utah Reclamation, Mitigation, and Conservation Commission (URMCC) property in this area. This property has been set aside for the preservation of wildlife and wetlands and is part of the Great Salt Lake Shorelands Preserve managed by The Nature Conservancy. The URMCC property is a Section 4(f) resource.

Compared to the action alternatives without the Wetland Avoidance Option, the Wetland Avoidance Option would require the acquisition of seven additional homes, one of which is a historic property that is eligible for listing on the National Register of Historic Places. In addition, a historic cabin listed on the National Register would be directly impacted (that is, it would be within the WDC right-of-way). The cabin was moved to its current location by the owner, so it is not in its original setting. UDOT would move the cabin to a new location as requested by the owner. The impacts to these two historic properties are also considered Section 4(f) uses.

UDOT and FHWA believe that the benefit provided by the avoidance of wetlands including high-quality wetlands, the reduction in impacts to high-quality wildlife habitat, avoidance of the URMCC property [a Section 4(f) resource] in this area, and less impacts to the Great Salt Lake Shorelands Preserve outweigh the additional home acquisitions and impacts to the two historic properties [which impacts are also Section 4(f) uses]. This is consistent with the least overall harm analysis described in Section 27.6.7.1, Least Overall Harm Analysis, and would be a prudent and feasible alternative as defined in 23 CFR 774.17.

Because the eligibility of the historic cabin is not associated with its location and the cabin can therefore be moved, FHWA and UDOT determined that the Wetland Avoidance Option would provide less overall harm because of the avoidance of the URMCC property in this area and less impacts to high-quality wetlands and wildlife habitat. The Wetland Avoidance Option would be a practicable alternative under the Clean Water Act Section 404(b)(1) guidelines and would likely be selected by the U.S. Army Corps of Engineers during the Clean Water Act permitting process. The Wetland Avoidance Option would also meet the intent of Executive Order 11990, Protection of Wetlands.

### **2.6.3 FHWA and UDOT's Evaluation of Northern Alternatives**

FHWA and UDOT identified the **B Alternatives (B1 and B2)** as their preferred northern alternatives.

FHWA and UDOT identified the B Alternatives as the preferred northern alternatives because they would have the best transportation performance; were determined in the Section 4(f) evaluation to have the least overall harm; would have the lowest amount of impacts to APAs and other farmland, the most consistency with local land-use and transportation plans, the fewest relocations, and 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 FHWA and UDOT identified the B Alternatives as the preferred northern alternatives.

#### **2.6.3.1 Degree to Which the Alternative Meets the Project Purpose**

##### **Improve Regional and Peak-Period Transportation Performance**

Section 2.5.1, Purpose and Need Comparison, describes how the WDC action alternatives would meet the project purpose. As previously shown in Table 2-17, Comparison of Regional Delay and Congestion Benefits from 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 2-18, Comparison of Daily Traffic Volumes for the WDC Action Alternatives in 2040, over the length of the whole alternative, both of the B Alternatives would carry between 34% and 46% more daily traffic than any of the A Alternatives. In addition, the B Alternatives would result in a greater reduction in overall delay.

## **Local Performance**

At a local scale, the B Alternatives would carry about 10,600 more vehicles per day in Syracuse (a 78% increase), and about 1,500 more vehicles per day in West Point (a 17% increase), than the A Alternatives. Additionally, the overall length of the B Alternatives is about 1.2 to 3.1 miles shorter than the A Alternatives. The B Alternatives—with a shorter length and more vehicle use per day—would provide a better overall transportation benefit than the A Alternatives.

## **Increase Interconnection between Transportation Modes**

All of the WDC action alternatives would equally support increased interconnection between transportation modes. See Section 2.5.2, Degree to Which the Alternatives Meet the Project Purpose, for more details.

## **Support Local Growth Objectives**

The criterion of supporting local growth objectives is based on how consistent a WDC action alternative is with local and regional land-use plans. The main cities north of Gentile Street through which the alternatives pass are Syracuse and West Point. The B Alternatives would be consistent with Syracuse and West Point Cities' land-use and transportation plans, which show the WDC in the general vicinity of the B Alternatives. The A Alternatives would not be consistent with these plans because of their westerly alignment.

## **Increase Bicyclist and Pedestrian Options**

All of the WDC action alternatives would equally support increased bicyclist and pedestrian options. See Section 2.5.2, Degree to Which the Alternatives Meet the Project Purpose, for more details.

### **2.6.3.2 Resource Impacts**

Table 2-21 below summarizes the costs and impacts of the two northern alternatives between Gentile Street and the northern termini in Weber County. The data in Table 2-21 include only the impacts for the two northern alternatives, not for the complete lengths of the alternatives.

**Table 2-21. Summary of Environmental Impacts from the Northern Alternatives  
(from Gentile Street to North Project Termini)**

Impact Category	Unit	Alternatives	
		A Alternatives	B Alternatives
Route length	Miles	8.4 to 10.7	7.2 to 7.3
Route cost (2017)	Dollars	171 to 213	213 to 217
Land converted to roadway use	Acres	247 to 310	299
Direct impacts on the Great Salt Lake Shorelands Preserve	Acres	0	0
Direct impacts on land with a conservation easement <sup>a</sup>	Acres	14	0
Consistent with city plans (2 Cities)	Number	0 to 1	1 to 2
Direct impacts on prime farmland	Acres	31 to 34	0
Direct impacts on irrigated cropland	Acres	170 to 232	145 to 157
Direct impacts on non-irrigated cropland	Acres	30	24
Direct impacts on Agriculture Protection Areas	Acres	24 to 42	3 to 4
Indirect farmland impacts	Acres	16 to 25	3 to 11
Residential relocations	Number	22 to 26	15 to 16
Potential residential relocations <sup>b</sup>	Number	1 to 3	9
Residential plats affected <sup>c</sup>	Number	0	0
Business relocations	Number	0 to 1	0 to 1
Potential business relocations <sup>b</sup>	Number	2	2
Direct impacts on recreation areas	Number	1	2
Direct impacts on community facilities	Number	0 to 1	0 to 1
Existing trails relocated	Number	0	1
Existing trails crossed	Number	3 to 4	2 to 3
Residential noise receptors above criteria	Number	21 to 22	75 to 83
Stream/canal crossings	Number	1	0
Direct impacts on wetlands	Acres	7.8 to 8.8	27.3 to 28.6
• Category I wetlands <sup>d</sup>	Acres	0 to 1	4.5 to 5.4
Wetlands within 300 feet of the right-of-way	Acres	18.3 to 34.6	39.2 to 55.6
Direct impacts on high-quality wildlife habitat <sup>e</sup>	Acres	0.5 to 4	7 to 11
High-quality wildlife habitat within 300 feet of the right-of-way	Acres	31 to 42	9 to 21
Direct impacts on floodplains	Acres	0	0
Adverse effects on cultural resources	Number	0	2
Direct impacts on hazardous waste sites	Number	0	0

(continued on next page)

**Table 2-21. Summary of Environmental Impacts from the Northern Alternatives (from Gentile Street to North Project Termini)**

Impact Category	Unit	Alternatives	
		A Alternatives	B Alternatives
Section 4(f) uses	Number	0	2
Section 4(f) <i>de minimis</i> uses	Number	4 to 9	3 to 5

- <sup>a</sup> Conservation easements include the Black Agriland conservation easement held by the Utah Department of Agriculture and Food.
- <sup>b</sup> 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.
- <sup>c</sup> A residential plat is a lot that has been approved for residential development by the local jurisdiction but has not been developed.
- <sup>d</sup> Wetland quality was determined using the UDOT Functional Assessment. Category I wetlands have the highest quality and Category III the lowest. For more information, see Chapter 14, Ecosystem Resources, of the Final EIS.
- <sup>e</sup> 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 Final EIS and *Technical Memorandum 9: Wildlife Assessment Methodology – Existing Conditions*.

## Environmental Impacts

As shown above in Table 2-21, the A Alternatives are longer. They also would have greater impacts to conservation areas, APAs, other types of farmland, and prime farmland; would require more acquisitions; and would have greater harm according to the Section 4(f) evaluation. The A Alternatives are also less consistent with city plans. On the other hand, the B Alternatives would have more direct impacts to wetlands and would have more residential noise receptors above UDOT’s noise-abatement criteria. On balance, FHWA and UDOT consider the B Alternatives to have the lowest overall impacts on the natural and human environment. Specific regulatory requirements are discussed below.

**Farmland.** The A Alternatives would have greater impacts to APAs, prime farmland, irrigated cropland, and non-irrigated cropland. The A Alternatives would also have more indirect impacts to farmland. 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 three cities in the northern part of the WDC study area (Syracuse, West Point, and Hooper) have all adopted the alignment identified in the 2001 *North Legacy Transportation Corridor Study (North Legacy Study)*. This alignment is identified in the city plans. The B Alternatives would be more consistent with city plans than the A Alternatives because the B Alternatives are located close to the bluff in Syracuse, which was identified in the *North Legacy Study* as the preferred location for the North Legacy Project. Therefore, the B Alternatives are more consistent with how the cities are planned to develop in the future.

***Land with Conservation Easements.*** The A Alternatives would directly affect 14 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. This 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 preserve. Converting this conservation easement to roadway use with the A Alternatives would negate the intended use of the conservation easement.

***Impacts to the Great Salt Lake Shorelands Preserve.*** Although the A Alternatives would not directly affect the Great Salt Lake Shorelands Preserve north of Gentile Street, they would be immediately adjacent to the northern boundary of the preserve for about 1 mile. The A Alternatives would directly affect 14 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. This 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 preserve. The B Alternatives would not affect the Black Agriland conservation easement and would not be close to the preserve north of Gentile Street. For more information, see the discussion of wildlife habitat below.

***Relocations.*** The A Alternatives would involve acquiring 22 to 26 residences, and the B Alternatives would involve acquiring 15 to 16 residences. Most of the A Alternatives' acquisition and relocation impacts are associated with the Bridgeway Island subdivision.

***Noise and Indirect Community Impacts.*** In addition to the direct-relocation impacts to the Bridgeway Island subdivision, the A Alternatives would also cause noise and visual impacts to the remaining residents in the subdivision. The currently cohesive Bridgeway Island neighborhood would be bisected by the A Alternatives. Although roadway and pedestrian access would be moved and maintained, the 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 to subdivisions. However, as previously shown in Table 2-21, the B Alternatives would have 53 to 62 more residential noise receptors above UDOT's noise-abatement criteria than would the A Alternatives.

***Wetlands.*** The B Alternatives would fill about 18 to 19 acres more wetlands than would the A Alternatives (27 to 28 acres for the B Alternatives versus 7 to 8 acres for the A Alternatives).

***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 7 to 11 acres of high-quality wildlife habitat. The A Alternatives would affect 0.5 to 4 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. FHWA and UDOT believe that, on balance, the A Alternatives would affect more wildlife habitat. This determination is supported by comments received from URMCC and The Nature Conservancy, the owners and managers of the Great Salt Lake Shorelands Preserve.

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

## Regulatory Considerations

**Section 4(f).** As described in Chapter 27, Section 4(f)/6(f) Evaluation, FHWA and UDOT anticipate that all alternatives would use Section 4(f) resources. Although the B Alternatives would use more Section 4(f) resources, the evaluation of least overall harm for the entire alternative determined that the B Alternatives would have the least overall harm. Therefore, FHWA and UDOT have determined 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. Although the B Alternatives would fill a larger area (27 to 28 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. The wetlands directly impacted by the B Alternatives are primarily surrounded by development and roads and have associated urban runoff and noise impacts. Some of these wetlands are considered isolated wetlands and are not under the regulatory jurisdiction of the Clean Water Act. The A Alternatives would be adjacent to important high-quality wetlands and wildlife habitat associated with the Great Salt Lake Shorelands Preserve.

The U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service felt that the A Alternatives' proximity impacts to the preserve would result in a greater impact to the aquatic ecosystem than would the direct wetland impacts from the B Alternatives.

### What is a *de minimis* use?

For publicly owned public parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* use is one that would not adversely affect the activities, features, or attributes of the property. For historic sites, a finding of *de minimis* use means FHWA has determined that either the project would not affect the historic property or the project would have "no adverse effect" on the historic property.

***Executive Order 11990, Protection of Wetlands.*** As previously shown in Table 2-21, all of the WDC action alternatives would have some impacts to wetlands. There was no practicable WDC action alternative that would avoid impacts to wetlands. Although the B Alternatives would fill a larger area (27 to 28 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.

***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 2-21, both of the northern alternatives would affect APAs. There was no prudent and feasible alternative that would avoid all impacts to APAs. However, the B Alternatives would affect only 3 to 4 acres from 1 to 2 APAs. The A Alternatives would affect a total of 24 to 42 acres from 6 to 11 APAs. The B Alternatives would have the fewest impacts on APAs. Therefore, FHWA and UDOT consider the selection of the B Alternatives to be consistent with the requirements of the Utah Agricultural Protection Act.

### **2.6.3.3 Summary**

FHWA and UDOT identified the B Alternatives as the preferred northern alternatives because they would have the best transportation performance; were determined to have the least overall harm according to the Section 4(f) evaluation; would have the lowest amount of impacts to APAs and other farmland, the most consistency with local land-use and transportation plans, and the fewest relocations; and because they would not be located immediately adjacent to the Great Salt Lake Shorelands Preserve along Gentile Street.

## **2.6.4 FHWA and UDOT's Evaluation of Northern Options for Alternatives B1 and B2**

FHWA and UDOT identified the B Alternatives' **4100 West Option** at 1800 North (**Alternative B1**) as their preferred northern option.

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

The sections below summarize the reasons why FHWA and UDOT identified the 4100 West Option as the preferred northern option.

## **2.6.4.1 Degree to Which the Option Meets the Project Purpose**

### **Improve Regional and Peak-Period Transportation Performance**

Section 2.5.1, Purpose and Need Comparison, describes how the WDC action alternatives would 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 would carry 1,600 more trips per day than Alternative B2.

### **Local Performance**

At a local scale, the 4100 West Option would carry about 2,700 more vehicles per day in West Point (a 30% increase) than the 4800 West Option. Additionally, the 4100 West Option is about 0.1 mile shorter than the 4800 West Option, since the 4800 West Option goes farther to the west between 700 South in West Point and 1800 North in Davis County. With its shorter length and more vehicle use per day, the 4100 West Option provides a better overall transportation benefit than the 4800 West Option.

### **Increase Interconnection between Transportation Modes**

Both northern options would equally support increased interconnection between transportation modes. See Section 2.5.2, Degree to Which the Alternatives Meet the Project Purpose, for more details.

### **Support Local Growth Objectives**

The criterion of supporting local growth objectives is based on how consistent an option is with local and regional land-use plans. Both northern options are consistent with Syracuse City's land-use and transportation plans. The 4100 West Option is consistent with West Point City's land-use and transportation plans. However, because the 4800 West Option is a more westerly alignment in West Point, it is not consistent with West Point City's plans.

### **Increase Bicyclist and Pedestrian Options**

Both northern options would equally support increased bicyclist and pedestrian options. See Section 2.5.2, Degree to Which the Alternatives Meet the Project Purpose, for more details.

## **2.6.4.2 Resource Impacts**

Table 2-22 below 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 1800 North in Davis County. The data in Table 2-22 include only the impacts for these two northern options, not for the complete lengths of the alternatives.

**Table 2-22. Summary of Environmental Impacts from the B Alternatives' Northern Options (from 700 South to 1800 North)**

Impact Category	Unit	B Alternatives' Northern Options	
		4800 West Option (Alternative B2)	4100 West Option (Alternative B1)
Route length	Miles	2.9	2.8
Route cost (2017)	Dollars	\$44 million	\$41 million
Land converted to roadway use	Acres	70	70
Direct impacts to the Great Salt Lake Shorelands Preserve	Acres	0	0
Direct impacts on land with a conservation easement <sup>a</sup>	Acres	0	0
Consistent with city plans (1 City)	Number	0	1
Direct impacts on prime farmland	Acres	0	0
Direct impacts on irrigated cropland	Acres	46	43
Direct impacts on non-irrigated cropland	Acres	4	4
Direct impacts on Agriculture Protection Areas	Number	2	0
Indirect farmland impacts	Acres	11	3
Residential relocations	Number	4	3
Potential residential relocations <sup>b</sup>	Number	1	1
Residential plats affected <sup>c</sup>	Number	0	0
Business relocations	Number	1	0
Potential business relocations <sup>b</sup>	Number	0	0
Direct impacts on recreation areas	Number	0	0
Direct impacts on community facilities	Number	1	0
Existing trails relocated	Number	0	0
Existing trails crossed	Number	0	1
Residential Noise receptors above criteria	Number	0	8
Stream/canal crossings	Number	0	0
Direct impacts on wetlands	Acres	4.4	5.7
• Category I wetlands <sup>d</sup>	Acres	0	0.6
Wetlands within 300 feet of the right-of-way	Acres	25.5	42.0
Direct impacts on high-quality wildlife habitat <sup>e</sup>	Acres	0	3.6
High-quality wildlife habitat within 300 feet of the right-of-way	Acres	0	11.7
Direct impacts on floodplains	Acres	0	0
Adverse effects on cultural resources	Number	0	0
Direct impacts on hazardous waste sites	Number	0	0

(continued on next page)

**Table 2-22. Summary of Environmental Impacts from the B Alternatives' Northern Options (from 700 South to 1800 North)**

Impact Category	Unit	B Alternatives' Northern Options	
		4800 West Option (Alternative B2)	4100 West Option (Alternative B1)
Section 4(f) uses	Number	0	0
Section 4(f) <i>de minimis</i> uses	Number	2	0

- <sup>a</sup> Conservation easements include Farmington City–held conservation easements and the Black Agriland conservation easement held by the Utah Department of Agriculture and Food.
- <sup>b</sup> 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.
- <sup>c</sup> A residential plat is a lot that has been approved for residential development by the local jurisdiction but has not been developed.
- <sup>d</sup> Wetland quality was determined using the UDOT Functional Assessment. Category I wetlands have the highest quality and Category III the lowest. For more information, see Chapter 14, Ecosystem Resources, of the Final EIS.
- <sup>e</sup> 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 Final EIS and *Technical Memorandum 9: Wildlife Assessment Methodology – Existing Conditions*.

## Environmental Impacts

As shown above in Table 2-22, the 4800 West Option is longer. The 4800 West Option also would have greater impacts to APAs and more residential acquisitions and would be less consistent with city plans. On the other hand, the 4100 West Option would have more direct impacts to wetlands and would have slightly more residential noise receptors above UDOT's noise-abatement criteria. On balance, FHWA and UDOT consider the 4100 West Option to have the lowest overall impacts on the natural and human environment. Specific regulatory requirements are discussed below.

**Farmland.** The 4800 West Option would have greater impacts to APAs and irrigated cropland. The 4800 West Option would also have more indirect impacts to farmland.

**Consistency with City Plans.** The two cities in the northern part of the study area (Syracuse and West Point) have both adopted the alignment identified in the *North Legacy Study*. This alignment is identified in the city plans. Both northern 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 *North Legacy Study* as the preferred location for the North Legacy Project.

**Land with Conservation Easements.** Neither of the northern options would affect any land with conservation easements.

**Relocations.** The 4800 West Option would involve acquiring four residences and would potentially acquire one more. The 4100 West Option would involve acquiring three residences and would potentially acquire one more.

**Noise and Indirect Community Impacts.** The 4100 West Option would have eight residential noise receptors above UDOT's noise-abatement criteria, the 4800 West Option would not have any residential noise receptors above the criteria.

**Wetlands.** The 4100 West Option would fill about 1.3 acres more wetlands than would the 4800 West Option (5.7 acres versus 4.4 acres). The 4100 West Option's additional wetland impacts would occur near the 1800 North intersection along the bluff in West Point. The 4800 West Option would avoid these wetland impacts.

**Floodplains.** Neither the 4100 West Option nor the 4800 West Option would affect floodplains.

**Wildlife Habitat.** The 4100 West Option would directly affect 3.6 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 to community facilities, hazardous waste facilities, trail crossings, and stream and 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 to these resources would not provide a meaningful basis for differentiating between options.

## Regulatory Considerations

**Section 4(f).** As previously shown in Table 2-22, the 4100 West Option would not have any Section 4(f) uses. The 4800 West Option would have *de minimis* uses of two Section 4(f) resources. Therefore, FHWA and UDOT anticipate 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 to all wetlands and waters of the U.S. The 4100 West Option would fill a larger area (5.7 acres) of wetlands than would the 4800 West Option (4.4 acres). However, the 4800 West Option would be about 3,700 feet farther west and thus would be closer to the Great Salt Lake wetlands. The closer proximity could affect about 86 more acres of high-quality wildlife habitat and associated wetlands based on the 3,900-foot buffer zone used in this Final EIS (for more information, see Section 14.4.5, Alternatives B1–B2). In contrast, the 1.3 acres more of wetland impacts associated with the 4100 West Option would be in an area surrounded by residential development. Based on these factors, FHWA and UDOT believe that the direct wetland impacts from Alternative B1 would result in a lesser overall impact to the aquatic ecosystem than would the impacts from Alternative B2, given Alternative B2's closer proximity to the Great Salt Lake.

**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 to wetlands. The 4100 West Option would fill a larger area (5.7 acres) of wetlands than would the 4800 West Option (4.4 acres).

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

***Utah Agricultural Protection Act.*** As previously shown in Table 2-22, only the 4800 West northern option would affect APAs. The 4100 West northern option would avoid all impacts to APAs. Therefore, FHWA and UDOT consider the selection of the 4100 West Option to be consistent with the requirements of the Utah Agricultural Protection Act.

### **2.6.4.3 Summary**

FHWA and UDOT identified the 4100 West northern option as the 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, and the most consistency with local land-use and transportation plans

## **2.6.5 FHWA and UDOT's Preferred Alternative – Alternative B1 with Wetland Avoidance Option**

As described in Section 2.6.2 through Section 2.6.4, Alternative B1 consists of a WDC connection at Glovers Lane, the segment common to all alternatives between the Farmington–Kaysville border and Gentile Street in Syracuse with the Wetland Avoidance Option, the B Alternatives northern alternative, and the 4100 West northern option.

Compared to the other WDC action alternatives, Alternative B1 with Wetland Avoidance Option would have the best overall transportation performance because it uses a more efficient eastern alignment in Syracuse and West Point.

As previously shown in Table 2-20, Summary Comparison of Cost and Resource Impacts by WDC Action Alternative, Alternative B1 with the Wetland Avoidance Option was also found to have the least overall harm according to the Section 4(f) evaluation and would have the least impacts to APAs. It would also have least residential and business relocations and community impacts, would be the most consistent with local plans, and would have the least impact to farmland and conservation easements.

## **2.6.6 Conclusion**

FHWA and UDOT identified Alternative B1 with the Wetland Avoidance Option as their preferred alternative for the WDC Final EIS. The final selection of an alternative will be made by FHWA in the project's Record of Decision. As part of the Clean Water Act permitting process, USACE will make the decision about whether the alternative submitted to USACE in the permit application satisfies the Section 404(b)(1) guidelines.

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West Davis Corridor Team (*continued*)

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