



WEST DAVIS
CORRIDOR

Department of the Army Individual Permit Application

in support of the
Environmental Impact Statement

West Davis Corridor Project

Federal Highway Administration
Utah Department of Transportation

in cooperation with

U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

Utah Reclamation, Mitigation, and Conservation Commission



Project No. F-0067(14)0

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1.0 Introduction

The Utah Department of Transportation (UDOT) (the Applicant), proposes to improve regional mobility and enhance peak-period mobility in western Davis and Weber Counties by constructing a new highway in Davis County that connects with Interstate 15 (I-15) and Legacy Parkway in Farmington at Glover's Lane and extends to 1800 North (State Road 37) in West Point at approximately 4000 West.

Although the West Davis Corridor (WDC; Proposed Project) is ultimately planned to go to 1800 North in West Point., this Individual Department of the Army (DA) Permit application is for wetland impacts associated with the Proposed Project between I-15 in Farmington and 300 North (State Road 107) in West Point. Since it would be more than 5 years before construction would begin north of 300 North, a delineation and DA permit completed now would not be valid at the time of construction, and another delineation and DA permit would need to be completed prior to the Phase 2 construction. UDOT is planning on completing another wetland delineation and DA permit for the WDC for areas north of 300 North prior to construction in this area.

The completed DA Engineering Form 4345 is included with this application submittal. Most of this supporting information has been adopted from the WDC Environmental Impact Statement (EIS).

2.0 Background

The Federal Highway Administration (FHWA) is the lead federal agency for the WDC EIS process. The lead state agency and project sponsor is UDOT. In addition, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the Utah Reclamation, Mitigation, and Conservation Commission are involved as cooperating agencies.

The Proposed Project and alternatives were evaluated in detail in an EIS prepared according to the provisions of the National Environmental Policy Act (NEPA). A Notice of Intent was filed for the WDC EIS on January 25, 2010 in the Federal Register. A Draft EIS was issued on May 1, 2013. A Final EIS was issued by FHWA and UDOT on July 6, 2017. A Record of Decision (ROD) associated with the Final EIS for the Proposed Project is anticipated in 2017.

2.1 Project Description

The Proposed Project described in this DA permit application includes the sections listed below in Table 2-1 that are shown on the U.S. Geological Survey 7.5-Minute Series Quadrangle Topographic maps for Farmington, Kaysville, Clearfield, and Roy.

Table 2-1. Survey Area Public Land Survey System (PLSS) Sections

Quadrant	Township Number	Range Number	Section	Coordinates for Centroid of Section
2	4 North	2 West	5	41.1110 N, 112.0934 W
2	4 North	2 West	8	41.0965 N, 112.0935 W
2	4 North	2 West	9	41.0965 N, 112.0742 W
2	4 North	2 West	16	41.0820 N, 112.0742 W
2	4 North	2 West	17	41.0820 N, 112.0935 W
2	4 North	2 West	21	41.0675 N, 112.0742 W
2	4 North	2 West	22	41.0675 N, 112.0549 W
2	4 North	2 West	23	41.0674 N, 112.0357 W
2	4 North	2 West	25	41.0529 N, 112.0166 W
2	4 North	2 West	26	41.0529 N, 112.0358 W
2	4 North	2 West	27	41.0533 N, 112.0518 W
2	4 North	2 West	36	41.0408 N, 112.0135 W
2	4 North	1 West	30	41.0529 N, 111.9974 W
2	4 North	1 West	31	41.0384 N, 111.9975 W
2	4 North	1 West	32	41.0384 N, 111.9784 W
2	3 North	1 West	4	41.0238 N, 111.9592 W
2	3 North	1 West	5	41.0239 N, 111.9785 W
2	3 North	1 West	6	41.0264 N, 111.9944 W
2	3 North	1 West	8	41.0095 N, 111.9785 W
2	3 North	1 West	9	41.0094 N, 111.9591 W
2	3 North	1 West	15	40.9955 N, 111.9388 W
2	3 North	1 West	16	40.9955 N, 111.9591 W
2	3 North	1 West	22	40.9802 N, 111.9351 W
2	3 North	1 West	25	40.9656 N, 111.9017 W
2	3 North	1 West	26	40.9655 N, 111.9211 W
2	3 North	1 West	27	40.9679 N, 111.9336 W
2	3 North	1 West	36	40.9521 N, 111.9001 W
1	3 North	1 East	30	40.9657 N, 111.8825 W
1	3 North	1 East	31	40.9511 N, 111.8823 W

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The total area reviewed in the EIS analysis of potential alternatives for the Proposed Project was approximately 79,450 acres. The wetland delineation survey area for the Proposed Project and this DA permit is about 4,416 acres and extends northward from the Farmington-Centerville city boundary to about 1800 North in West Point, Utah.

The Proposed Project in the right-of-way will require property acquisition from private and public landowners. A list of adjacent property owners' names and addresses are attached in Appendix A of this DA permit application submittal.

The Proposed Project consists of:

Facility Type and Other Roadway Features. The WDC preferred alternative (Alternative B1) would be 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 be a 146-foot right-of-way, two-lane, limited-access highway. As described above, although the WDC is ultimately planned to go to 1800 North in West Point, this DA permit application is for wetland impacts associated with the Proposed Project in Davis County between I-15 in Farmington and 300 North in West Point. The DA permit application ends at 300 North in West Point.

This alternative would cross numerous streets and would require various cross street configurations: interchanges, overpasses, underpasses, and cul-de-sacs. Table 2- below provides an overview of the cross street configurations for the Proposed Project between I-15 in Farmington and 1800 North in West Point, including the locations of park-and-ride lots. The edge of the UDOT right-of-way will 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 1800 North in West Point. For the purposes of this DA permit, the northern terminus is 300 North in West Point.

Table 2-2. Proposed Project Cross Streets, Interchanges, and Park-and-Ride Lots

Cross Street	Road Jurisdiction ^a	WDC Cross Street Treatment				Park-and-Ride Lot
		Interchange ^b	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			
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
2700 South	Syracuse			X		
1700 South (Antelope Drive)	Syracuse	Buttonhook		X		X
3000 West	Syracuse			X		
700 South	Syracuse			X		

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Table 2-2. Proposed Project Cross Streets, Interchanges, and Park-and-Ride Lots

Cross Street	Road Jurisdiction ^a	WDC Cross Street Treatment				Park-and-Ride Lot
		Interchange ^b	Cross Street Over	Cross Street Under	Cul-de-Sac	

^a Indicates the jurisdiction where the road crosses the WDC alignment.

^b 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 the Proposed Project 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. The Proposed Project 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 stays east of the Glen Eagle Golf Course, crossing 3000 West near 1300 South, then ending at 700 South in Syracuse at about 3400 West.

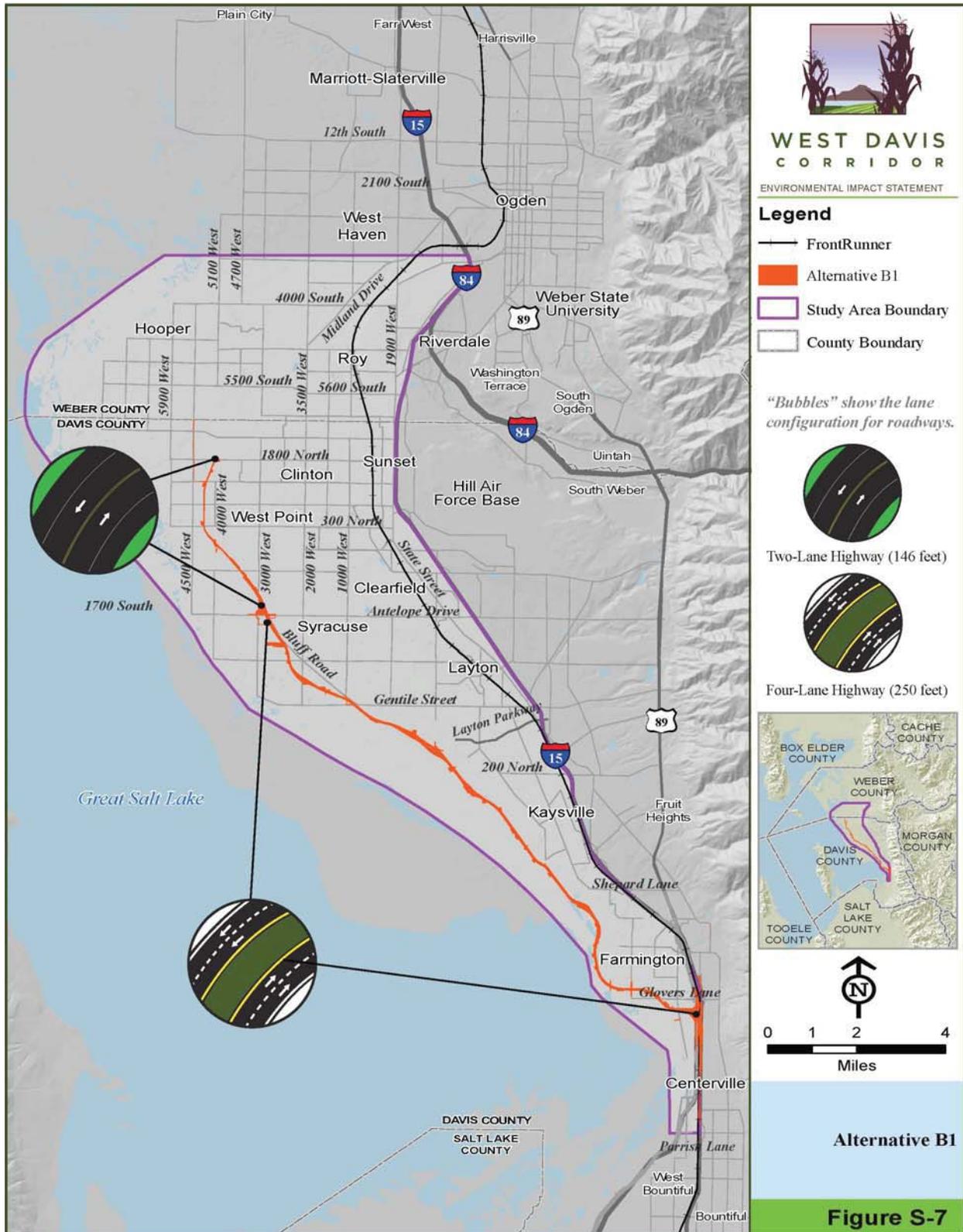
Trail Improvements Included with the Proposed Project. The following trail improvements are included with the Proposed Project:

- A new trail on the east side of the WDC from Weaver Lane in Layton to Jensen Park and the southern terminus of the Emigrant Trail in Syracuse
- A new alignment for the Emigrant Trail between 600 South and 2100 South in Syracuse

As described in Section 3.0, FHWA and UDOT have identified Alternative B1 with the Wetland Avoidance Option as the Preferred Alternative, which is the Proposed Project in this DA application. Figure 1 shows Alternative B1 and Figure 2 and Figure 3 show the four-lane and two-land highway typical sections.

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Figure 1. Alternative B1



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Figure 2. Four-Lane Highway Typical Section

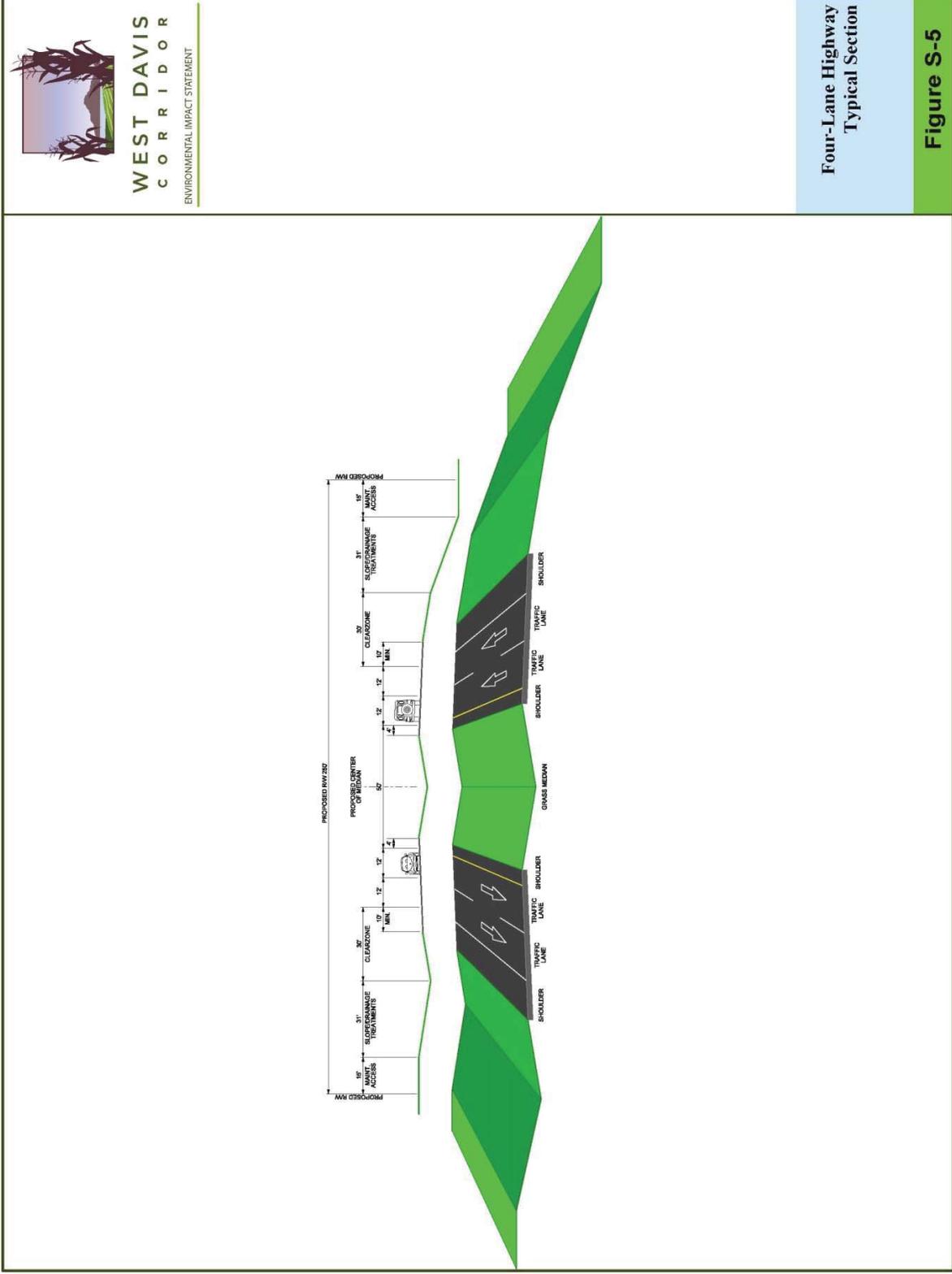
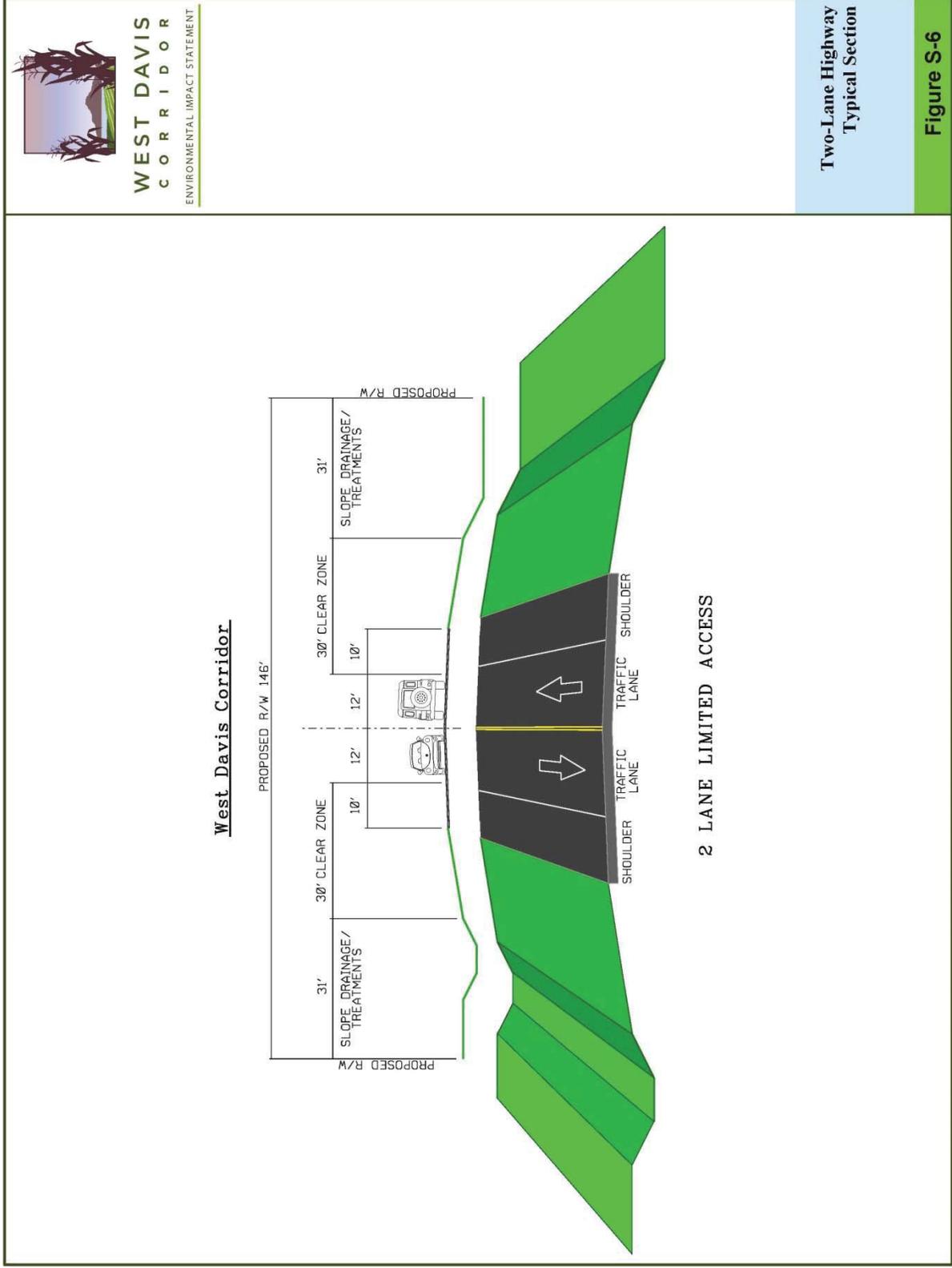


Figure 3. Two-Lane Highway Typical Section



WEST DAVIS
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ENVIRONMENTAL IMPACT STATEMENT

Two-Lane Highway
Typical Section

Figure S-6

The cost estimate for the Proposed Project is \$729 million. This estimate 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. UDOT and FHWA transportation engineers involved with developing the preliminary design consider these cost estimates to be within the industry standard cost range for the type of project proposed.

Phasing. To date, no portion of the Proposed Project has been constructed. Since it would be more than 5 years before construction would begin north of 300 North in West Point, a delineation and DA permit completed now would not be valid at the time of construction, and another delineation and DA permit would need to be completed prior to the Phase 2 construction. UDOT is planning on completing another wetland delineation and DA permit for the WDC for areas north of 300 North prior to construction in this area.

2.2 Environmental Setting

2.2.1 West Davis Corridor Study Area

The study area for assessing the need for the WDC consists of an area of about 79,450 acres west I-15 in Davis and Weber Counties. The study area contains parts of 14 incorporated cities in Davis and Weber Counties as well as unincorporated land in each county. Located west of the Wasatch Mountains and east of the Great Salt Lake, the survey area ranges in elevation from just below 4,212 to around 4,260 feet above mean sea level and generally decreases from east to west. Topography in the survey area includes relatively subtle depressions, gently lake sloped terraces and plains, small rolling knolls, and the toe of a relatively large bluff.

The specific boundaries of the study area, which are shown in Figure 1-1, West Davis Corridor Needs Assessment Study Area, in Volume IV are:

- Northern boundary: 3000 South in Hooper and West Haven
- Southern boundary: about Parrish Lane in Centerville
- Western boundary: just east of the Great Salt Lake
- Eastern boundary: I-15

Northern Boundary. The West Davis Corridor team established the northern boundary of the needs assessment study area based on the projections of growth, development, and related travel in the region in 2040. The WFRC travel projections for 2040 indicate that, north of 4000 South in Hooper and West Haven, the travel demand on the road system will operate with an acceptable level of service of Level of Service (LOS) D or better, and there will be no need for transportation improvements beyond the planned improvements north of 4000 South.

Although 4000 South is the northern boundary for the area that will need a transportation improvement, the northern boundary for the needs assessment study area was set at about

3000 South to ensure that the boundary captured any roadway design, level of service, and safety standards that could influence the need for the WDC.

Southern Boundary. The WDC team established the southern boundary of the needs assessment study area using WFRC’s travel projections for 2040, which show that transportation need south of this boundary would be met by the planned improvements to the existing transportation system (I-15, Legacy Parkway, U.S. Highway 89 [US 89], and the FrontRunner commuter-rail system). In addition, this boundary would allow the southern end of any improvement to connect logically into the planned transportation system.

Western Boundary. The western boundary of the needs assessment study area is based on the location of the Great Salt Lake and the sensitive habitats associated with the lake.

Eastern Boundary. The eastern boundary of the needs assessment study area is I-15 (including I-15 and the FrontRunner commuter-rail line) and is based on the projected transportation system and travel demand in the region in 2040. I-15 is the eastern boundary because transportation improvements east of this highway, such as US 89, would have little effect on north-south or east-west travel west of I-15. For more information about the boundaries of the needs assessment study area, see *Technical Memorandum 3: EIS Transportation Need Study Area*.

2.2.2 Affected Environment

This section summarizes key information from Final EIS and *Aquatic Resource Delineation Report* for WDC (delineation report; HDR 2017a). The Final EIS provides detailed information and analysis on resources in the following chapters:

- Chapter 3, Land Use
- Chapter 4, Farmland
- Chapter 5, Community Impacts
- Chapter 6, Environmental Justice
- Chapter 7, Transportation
- Chapter 8, Economics
- Chapter 9, Joint Development
- Chapter 10, Consideration Related to Pedestrians and Bicyclists
- Chapter 11, Air Quality
- Chapter 12, Noise
- Chapter 13, Water Quality
- Chapter 14, Ecosystem Resources
- Chapter 15, Floodplains
- Chapter 16, Historic, Archeological, and Paleontological Resources
- Chapter 17, Hazardous Waste Sites
- Chapter 18, Visual Resources
- Chapter 19, Energy Impacts
- Chapter 20, Construction Impacts
- Chapter 21, Short-Term Uses versus Long-term Productivity



- Chapter 22, Irreversible and Irrecoverable Commitment of Resources
- Chapter 23, Indirect Effects
- Chapter 24, Cumulative Impacts
- Chapter 25, Permits and Clearances
- Chapter 26, Mitigation Summary
- Chapter 27, Section 4(f)/6(f) Evaluation

West Davis Corridor Ecosystem Impact Analysis Area

Ecosystem Impact Analysis Area. The ecosystem impact analysis area is the area bounded by the southern extent of the Great Salt Lake on the south, Willard Bay on the north, the Great Salt Lake on the west, and the lowest benches of the Wasatch Mountains on the east. Many bird species that use this area travel great distances to feed and rest at the Great Salt Lake and its adjacent habitats. In order to provide specific information about habitats that are likely to be affected by the WDC, the WDC EIS focuses on the areas within or adjacent to the project alternatives.

The western edge of the WDC study area is nearly all wetlands and is a mosaic of wetland and water types—marsh, wet meadow, playa, and small ponds and channels.

Because the eastern edge of the WDC study area is I-15, most of the land along this border is predominantly urbanized developments from Farmington to Ogden. However, there are a few remaining pockets of undeveloped habitat, such as in some large, undeveloped pastures in the southern part of the study area in Kaysville and Farmington.

The central part of the WDC study area is a mixture of developments, pastures, and croplands. Historically, this area was probably dominated by agricultural land interspersed with small towns or communities. However, now urban developments are spreading west from the I-15 urban corridor, replacing the agricultural land use with residential and commercial development. Because the land is very low in elevation, sometimes only 20 feet or less above the historic 4,217-foot level of the Great Salt Lake, many of the existing pastures are also wetlands. This area also contains streams, such as Howard Slough, Farmington Creek, and Kays Creek, along with many irrigation canals and ditches. Although most of the land in the central part of the WDC study area has been manipulated by people in some way over the last 150 years, it still contains wet meadows, marshes, and playas or other alkaline mud flats. Even in their modified state, these areas still have value for wildlife species.

As discussed in Chapter 14 of the Final EIS, to evaluate the existing habitat quality, the WDC team in consultation with USFWS and UDWR developed a rapid assessment checklist involving the eight representative species and their associated habitats. Table 2-2 summarizes the results of the field surveys using the rapid assessment checklist as compiled into the six quality rank categories for the sensitive-species habitat.

Table 2-2. Quality of Sensitive-Species Habitat in the WDC Study Area

Quality Rank Category ^a	Number of Parcels	Total Acres	Percentage of Total Project Area
None	502	31,452	48.4
Very Low	693	15,018	23.1
Low	108	1,918	3.0
Medium	94	3,100	4.8
Medium-High	34	2,816	4.3
High	32	10,649	16.4

^a Category definitions:

None = 0.00 to 0.24

Medium = >2.00 to 3.00

Very Low = >0.24 to 1.00

Medium-High = >3.00 to 4.00

Low = >1.00 to 2.00

High = >4.00 to 6.00

Figures 14-6 and 14-7, Wildlife by Habitat Quality Ranking, in Volume IV of the Final EIS show the distribution of the quality rank categories for sensitive-species habitat area. Over 70% of the area is within the two lowest ranks (the None and Very Low categories), which is not surprising since about 48% of this area is urbanized areas that have a value of 0. The middle ranks, Low to Medium-High, include about 12.1% of the total. The highest rank (the High category), at 16.4%, contains the lakeshore wetlands, playas, and marshes that make up the western edge of the WDC study area along with some higher-quality areas elsewhere in the WDC study area.

Delineated Aquatic Resources

Wetlands and various bodies of water are located throughout the ecosystem impact analysis area. These become more prevalent toward the western edge of the area where the lakeshore wetlands of the Great Salt Lake begin. Formal wetland delineations were not conducted for the entire ecosystem impact analysis area because of the large size of this area. As described in the delineation report (HDR 2017a), the WDC Project team completed a delineation of wetlands and other aquatic resources in accordance with USACE requirements within a 4,416-acre delineation survey area for the WDC Project. This survey area encompasses areas for the alternatives carried forward for detailed study in the EIS, plus buffer areas, and parcels identified as potential sites for compensatory mitigation (see Section 6.0 Mitigation).

Through review and coordination with USACE, the delineation was updated during 2017 and finalized in July 2017.

Wetlands

One Hundred ninety-six wetlands totaling 732.65 acres were delineated within the survey area. Based on the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979), two wetland habitat types are present in the survey area: palustrine emergent marsh and palustrine unconsolidated bottom. Areas identified as “playa” (described below) are technically a distinct aquatic resource from wetlands, but are included with



wetlands in this application. The delineation team categorized wetland communities in the survey area by three general vegetation cover classes: emergent marsh, playa, and wet meadow. The Wetland Delineation Report provides detailed maps, wetland boundaries, data sheets, site wetland delineation forms, photographs, and other information relevant information for the wetland delineation.

A separate report, *West Davis Corridor Wetland Functional Assessment Report* (HDR 2017b), describes methods and results of the functional assessment conducted for the delineated wetlands. The WDC Project team conducted functional assessment in accordance with the UDOT Wetland Functional Assessment Method (UWFAM). UWFAM was developed as a science-based, rapid, economical, and repeatable wetland evaluation method applicable to Utah (UDOT 2006). UWFAM was designed to provide functional ratings for wetlands through qualitatively assigning ratings to multiple scoring parameters to assess biological and hydrological functions.

Parameters used to assess biological functions include:

- Level of disturbance (both within each wetland assessment area and within 600 feet or each wetland assessment area)
- Plant community composition
- Habitat for threatened, endangered, or state-listed sensitive species
- General habitat, for fish, amphibians, and other wildlife.

Habitat ratings for each wetland assessment area were determined based on field observations, available wildlife survey data from the Utah Division of Wildlife Resources (UDWR) and The Nature Conservancy (TNC), and coordination with UDWR and the U.S. Fish and Wildlife Service.

Parameters used to assess hydrological functions include:

- Flood attenuation
- Short- and long -term surface water storage
- Sediment, nutrient, and toxicant retention and removal
- Sediment and shoreline stabilization

The UWFAM rates each biological and hydrological function as low, moderate, or high and scores each metric on a scale of 0.1 (lowest) to 1 (highest) “functional point.” The percentage is then used in conjunction with other criteria to provide an overall ranking of the wetland in one of four categories:

- **Category I** – Wetlands that are of exceptionally high quality or that are important from a regulatory standpoint.
- **Category II** – Wetlands that are more prevalent than Category I wetlands and may provide habitat for sensitive species of plants and animals, function at high levels for wildlife habitat, or be assigned a high rating for many of the assessed values.

- **Category III** – Wetlands that are more prevalent than Category I and II wetlands, generally have a moderate to low plant community composition rating, and have a higher level of disturbance than Category I and II wetlands.
- **Category IV** – Wetlands that are generally small and isolated and are rated low for plant community composition. These wetlands provide little in the way of wildlife habitat.

Based on review of WMFAM methodology and the overall ranking considerations, the USACE indicated that Category II wetlands should be considered highly functional, Category III wetlands as moderately functional, and Category IV wetlands as low functional, while Category I wetlands should be considered as a special category, above the Category II rating.

Based on the results of the functional assessment, within the survey area there are 93 Category I wetlands (375.30 acres), 42 Category II wetlands (200.92 acres), 65 Category III wetlands (158.36 acres), and no Category IV wetlands. Most wetlands that received a Category I rating were identified as wetlands that are either known or likely to provide habitat for sensitive wildlife species. Refer to the West Davis Corridor Wetland Functional Assessment Report for additional information on UWFAM methods and the results of the assessment for the Proposed Project. Additionally, the functional assessment ratings are incorporated into the compensatory mitigation plan.

Other Aquatic Resources

Other (non-wetland) aquatic resources waters were delineated based on the presence of bed and bank, an OHWM, and evidence of carrying a relatively permanent flow of water. A total of 60.85 acres of other waters were delineated within the survey area that consisted of seven streams, 63 other linear water features (such as ditches, canals, and drainage channels), and fourteen open-water features. These features include the named creeks of Haight Creek, Kays Creek, Bair Creek, Farmington Creek, and Holmes Creek. Each of these streams has been altered and channelized to varying extents within the survey area. The delineation report provides maps, labeled depictions, and more detailed information for these features within the survey area.

2.3 Purpose of the Proposed Project

The WDC is intended to achieve the following purposes:

- **Improve Regional Mobility.** Improve regional mobility in the WDC needs assessment study area for automobile, transit, and freight trips by substantially reducing user delay on the road system compared to the No-Action conditions through the consideration of all transportation modes. (For more information about the No-Action conditions, see Final EIS Section 1.7, Needs Assessment, in Chapter 1, Purpose of and Need for Action.)
- **Enhance Peak-Period Mobility.** Substantially enhance mobility in the WDC needs assessment study area during the AM and PM peak periods for the main travel direction (north-south) to help accommodate the projected travel demand in the needs

assessment study area in 2040. (For a detailed discussion of the peak-period travel direction, see Final EIS Section 1.7.3, Travel Patterns, in Chapter 1, Purpose of and Need for Action.)

The WDC Project will also achieve the following secondary objectives:

- **Increase the Interconnection between Transportation Modes.** Improve regional mobility in the WDC needs assessment study area by improving the connections between transportation modes such as automobile, transit, bicycle, and pedestrian travel compared to the No-Action conditions.
- **Support Local Growth Objectives.** Support the objectives of the adopted local land-use and transportation plans for communities west of I-15 in Weber and Davis Counties.
- **Increase Bicycle and Pedestrian Options.** Increase bicycle and pedestrian options consistent with the adopted local and regional plans in the parts of the needs assessment study area in Weber and Davis Counties.

The major transportation needs in the WDC study area are a result of the rapidly growing population and employment projected for this area. The existing road network in the study area west of I-15 primarily consists of arterial streets that are not intended to accommodate a high volume of long-distance trips and freight movements.

These conditions will result in the following deficiencies in 2040:

- Decreased mobility and increased traffic congestion in the AM and PM peak periods (inadequate roadway capacity).
- Lack of adequate north-south transportation capacity to serve the main travel direction (north to south) in the AM and PM peak periods. This will lead to increased east-west congestion.
- Increased user delay and lost productivity.
- Inadequate interconnection of transportation modes.
- Lack of continuous pedestrian and bicycle facilities.

3.0 Alternatives Analysis

3.1 Alternatives Development and Screening Process

Section 2.1, Alternatives-Development Process, in Chapter 2, Alternatives, 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 EIS. The alternatives-development process consisted 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

As a result of this process, the following nine alternatives were carried forward for detailed study in this EIS:

- No-Action Alternative
- Alternatives A1 through A4
- Alternatives B1 through B4

For more information about the alternatives-development process, see Final EIS Chapter 2, Alternatives.

3.2 Alternatives Analysis Summary

As described in the Final EIS *Technical Memorandum 15: Alternatives Screening Report*, the WDC team re-evaluated the Draft EIS practicability analysis for the Final EIS. The 2016 Level 2 screening process resulted in the same two alternatives—Alternative 11A (Alternative B in the Draft EIS) and Alternative 13A (Alternative A in the Draft EIS)—passing Level 2 screening. Alternatives 05, 08, 9A, 10A, and 12A were not advanced past Level 2 screening during the 2016 screening process. Alternatives 11A and 13A with the Glovers Lane southern option were advanced past Level 2 screening to be evaluated in detail in the Final EIS. These alternatives passed Level 2 screening because they best meet the purpose of and need for the project while having the lowest overall levels of impacts to both the human environment and natural resources and having reasonable costs. The WDC team determined that the alternatives that were advanced to the Final EIS were the best-performing, least-impactful reasonable versions of each alternative. Table 3-1 below compares the resource impacts of the four WDC action alternatives with and without the Wetland Avoidance Option (described in Section 4.0). This table provides a quantitative comparison among the alternatives for the resources evaluated in Final EIS. For more information, see the individual resource chapters of the Final EIS.

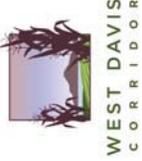


Table 3-1. Summary Comparison of Cost and Resource Impacts by WDC Action Alternative

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 ^a	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) ^b	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 ^c	Number	1	3	1	3	9	9	9	9
Residential plats affected ^d	Number	0	0	1	1	0	0	1	1
Business relocations	Number	5	6	5	6	4	5	4	5
Potential business relocations ^c	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 ^e	No	No	No	No	No	No	No	No

(continued on next page)

Table 3-1. 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		
Existing trails relocated	Number	0	0	0	0	1	1	1	1	1	1
Existing trails crossed	Number	8	7	8	7	7	6	7	6	7	6
Consistent with air quality conformity regulations	Yes/no ^f	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Residential noise receptors above criteria	Number	131	132	132	133	193	185	194	186	186	186
Stream/canal crossings	Number	6	7	6	7	6	6	6	6	6	6
Direct impacts to wetlands	Acres	28.1	26.9	21	19.9	47.9	46.6	40.9	39.6	39.6	39.6
• Category I wetlands ^g	Acres	15.9	15.2	13.7	13.1	15.7	15.1	13.6	13.0	13.0	13.0
• Category II wetlands	Acres	8.2	7.7	3.3	3.8	15.3	14.8	10.4	9.9	9.9	9.9
• Category III wetlands	Acres	4.0	4.0	4.0	4.0	16.9	16.7	16.9	16.7	16.7	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	73.3	73.3
Direct impacts to high-quality wildlife habitat ^h	Acres	49.5	45.8	36.8	33.2	48.9	45.3	36.3	32.7	32.7	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	72.3	72.3
Direct impacts to floodplains	Acres	187.7	187.7	183.7	183.7	187.7	187.7	183.7	183.7	183.7	183.7
Adverse effects on cultural resources	Number	3	3	5	5	5	5	7	7	7	7
Direct impacts to hazardous waste sites	Number	0	0	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	Low-high	Low-high
Section 4(f) uses ⁱ	Number	3	3	5	5	5	5	7	7	7	7
Section 4(f) <i>de minimis</i> uses	Number	13	17	12	16	13	14	12	13	13	13
Section 4(f) least overall harm	Rank ^j	7	8	5	6	3	4	1	2	2	2

(continued on next page)



Table 3-1. 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
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

- a Conservation easements include Farmington City-held conservation easements and the Black Agriland conservation easement held by the Utah Department of Agriculture and Food.
- b The adopted Farmington City Transportation Plan shows a future WDC on Glovers Lane (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.
- c A potential relocation occurs when the right-of-way required for the WDC would affect the property and would be between 1 foot and 15 feet away from the structure.
- d A residential plat is a lot that has been approved for residential development by the local jurisdiction but has not been developed.
- e Yes or no: Would the alternative have a disproportionately high and adverse effect on an environmental justice population?
- f Yes or no: Is the alternative consistent with air quality conformity regulations under the Clean Air Act?
- g 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, of this Final EIS. Wetland impact acres could change during the Clean Water Act Section 404 permitting process after the Final EIS is released.
- h High-quality wildlife habitats were determined by evaluating parcels for their habitat suitability for eight different wildlife species representative of the WDC study area. For more information, see Chapter 14, Ecosystem Resources, of this Final EIS and *Technical Memorandum 9: Wildlife Assessment Methodology – Existing Conditions*.
- i Section 4(f) is part of an FHWA regulation that requires a project to avoid the use of eligible or potentially eligible historic properties and recreation and wildlife areas unless there is no feasible and prudent alternative to such use. Even then, all measures must be taken to minimize harm to these properties. For publicly owned 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.
- j A Section 4(f) least overall harm analysis determines which alternative would have the least overall harm considering the seven factors listed in 23 Code of Federal Regulations 774.3(c). In this table, a rank of 1 indicates the least overall harm and 8 indicates the greatest overall harm.

FHWA and UDOT have identified Alternative B1 with the Wetland Avoidance Option as the Preferred Alternative. This alternative would be 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 would be a 146-foot right-of-way, two-lane, limited-access highway. The divided highway would likely have a posted speed limit of 65 miles per hour (mph), and the arterial road would likely have a posted speed limit of 45 mph. About 6.3 million vehicle-miles would be traveled each day in the WDC study area in 2040. It is anticipated that about 92% of the WDC vehicles would be automobiles and 8% would be trucks. As a comparison, I-15 has about 85% automobiles and 15% trucks. Of the travelers from the study area, those who travel to Salt Lake City would experience the greatest benefit. These travelers would experience a 66% reduction in total delay in the peak period compared to the total delay with the No-Action Alternative

4.0 Wetland Avoidance and Minimization

The WDC team made an extensive effort to avoid wetland impacts to the extent practicable while considering highway safety design requirements. This section summarizes the avoidance measures that the WDC team implemented as part of the WDC design process.

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. The segment refinements for alternatives that were not advanced to the Draft EIS were not considered further.

During the screening process, several alignment options were eliminated because other alternatives could be implemented that would avoid wetland impacts. These options include the following.

- The WDC team screened out other potential alternatives that would connect to I-15 and Legacy Parkway farther south of the current Glovers Lane Option. Although a connection farther south would have avoided impacts to a business area, it would have affected a wetland complex. To avoid the wetland impacts, the WDC team moved the alignment as far north as possible while still meeting design constraints with the Glovers Lane crossing of Legacy Parkway and I-15.
- The public requested alternatives that would have avoided or reduced community impacts by placing the Glovers Lane Option south of Glovers Lane and west of the Farmington conservation easements. The WDC team eliminated this option because an option north of Glovers Lane closer to the community and within the Farmington conservation easements avoided extensive wetland areas.
- The public in Kaysville and Layton suggested alternatives farther west than the current alignment to avoid and minimize community impacts. The WDC team

eliminated the westerly options to avoid large wetland complexes along the Great Salt Lake.

- The public and Cities recommended that the WDC alternatives north of Gentile Street should follow the alignment from the 2001 *North Legacy Transportation Corridor Study* (2001 alignment) along the bluff in Syracuse and West Point. The WDC team eliminated sections of the 2001 alignment to avoid large wetland complexes along the bluff.

Once the practicable alternatives were identified, the WDC team refined the alternatives further to avoid wetland impacts as follows.

- Grovers Lane in Farmington
 - The system interchange with I-15 and Legacy Parkway was refined to locate the alignment on farmland north of wetlands on the Farmington–Centerville border.
 - The Grovers Lane Option was shifted north of Grovers Lane between 900 West and 1525 West. This resulted in more direct and indirect effects on the community as a result of this alignment. This shift avoided impacts to wetlands and placed the Grovers Lane Option farther from Farmington Bay WMA.
 - Curves in the Grovers Lane Option on the Farmington conservation easements are entirely for wetland avoidance. These shifts resulted in placing the Grovers Lane Option closer to existing residential development in the area. Many residents have requested a change to the Grovers Lane alignment to move it farther west in these locations.
- All WDC alternatives between Farmington and Gentile Street
 - The WDC alignments were placed east of the Rocky Mountain Power corridor between the Central Davis Sewer District property and Angel Street in Kaysville. This alignment avoids a large wetland area west of the power corridor. The WDC team received many comments from residents requesting that the alignment be moved to the west side of the power corridor in this area.
 - The WDC alignments were placed adjacent to the power corridor between Angel Street and about 200 North in Kaysville. This alignment avoids impacts to wetlands in the area and the Great Salt Lake Shorelands Preserve. The WDC team received many comments from residents requesting that the WDC alignment be moved farther west in this area to avoid residential impacts.
 - The WDC alignment was placed on upland farmlands between 2200 West and 3700 West in Layton. This alignment avoids all wetlands and direct impacts to the Great Salt Lake Shorelands Preserve in this area. Layton City and many residents have requested that the WDC alignment be moved farther west in this area.
 - The WDC alternatives were placed adjacent to residential developments south of Gentile Street, on the eastern edge of the Great Salt Lake Shorelands Preserve



near Gentile Street. This alignment avoids wetland impacts. The WDC team received many comments from residents requesting that the WDC alternatives be placed farther west in this area to reduce community impacts.

- B Alternatives in Syracuse
 - The WDC team refined the 2001 alignment along Bluff Road to an alignment farther west between Gentile Street and 2300 South in Syracuse to avoid wetland impacts. This alignment shift resulted in community impacts on 2000 West. The WDC team received many comments from residents requesting that the WDC use the 2001 Bluff Road alignment for the WDC in this area.
- Alternative B1 in West Point
 - The WDC team moved the Alternative B1 alignment west of the 2001 Bluff Road alignment, which included many parcels that UDOT had previously acquired for corridor-preservation purposes. The WDC team received comments from many residents and Cities requesting that the 2001 Bluff Road alignment should be used for the WDC in West Point. The shift to the west of the bluff in this area greatly avoided wetland impacts.

Additionally, The WDC team developed the wetland avoidance options, which could be implemented with all of the WDC alternatives. The two wetland avoidance options proposed in the Final EIS (in Farmington and Layton) would result in about 7 acres fewer of total wetland impacts. Of these 7 acres, 2.1 acres would be Category I wetlands and 4.9 acres would be Category II wetlands. The wetland avoidance options would result in about 12 fewer acres of wetlands within 300 feet of the right-of-way. Together, the Farmington and Layton wetland avoidance options are referred to as the Wetland Avoidance Option.

Table 4-1. 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.

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Figure 4. Wetland Avoidance Options



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When feasible, during the final design phase of the project, UDOT will apply design modifications and further minimizations including shifts of the highway within the right-of-way to avoid or minimize wetland impacts through sensitive, high-quality wetland areas and adjacent to terrestrial areas that support aquatic-dependent wildlife species. The design minimization effort will look at the potential to shift the right-of-way or the highway within the right-of-way to preserve upland buffers between wetlands and the roadway to reduce the potential for indirect effects.

4.1 Nonpracticable Impact Avoidance and Minimization

Table 4-2 lists wetland areas that could not be avoided (Draft EIS impact acreages).

Table 4-2. List of Unavoidable Impacted Wetland Areas

Wetland Area	Approximate Impact (acres)	Location	Alternative	Reason why wetlands cannot be avoided
Glovers Lane interchange between Union Pacific RR & Legacy Parkway	2.25	Farmington	Glovers Lane (B1,B2,A1,A2)	Engineering roadway and structural design requirements for interchange ramps do not allow much design flexibility in this location.
Between Glovers Lane and D&RGW	1.1 (+0.25 with Glovers overpass)	Farmington	Glovers Lane (B1,B2,A1,A2)	Wetlands are linear and road has to cross. Design has minimized impacts at this crossing.
Buffalo Ranch water crossing	0.7	Farmington	Glovers Lane (B1,B2,A1,A2)	Wetlands and water are linear and road has to cross. Design has minimized impacts at this crossing.
Farmington Ranches Conservation Easement	3.5	Farmington	Glovers Lane (B1,B2,A1,A2)	Wetlands are linear and road has to cross. Design has minimized impacts at this crossing.
I-15 wetlands	4.0	Farmington	Shepard Lane (B3,B4,A3,A4)	Wetlands are adjacent to I-15. Required roadway widening has no way to avoid the wetlands.
Haight Creek wetlands	3.3	Farmington	Shepard Lane (B3,B4,A3,A4)	Engineering roadway and structural design requirements for interchange ramps do not allow much design flexibility in this location.
Small streams and wetland fingers in Kaysville between Kays Creek and Central Davis Sewer District	1.45	Kaysville	All Alternatives (A1-A4, B1-B4)	Wetlands and waters in this area are linear and the road has to cross. Design has minimized impacts at the crossings. The location of the powerlines limit roadway options after Angel Street. WDC is adjacent to powerlines in most of this area.

Layton 1000 South/2200 West area wetlands	5.7	Layton	All Alternatives (A1-A4, B1-B4)	Avoiding wetland impacts would cause impacts to houses and farmlands, including three historic properties.
Gentile Street area wetlands	1.65 – south of Gentile (all Alts.) 3.9 north of Gentile – A 3.8 north of Gentile – B	Layton & Syracuse	All Alternatives (A1-A4, B1-B4)	Going west in this area would push WDC alternatives further into the Preserve. Going east would impact houses and require additional structures for road crossings and the re-alignment of existing roads.
2000 West area wetlands	1.4	Syracuse	A Alternatives (A1-A4)	Wetlands are linear and road has to cross. Design has minimized impacts at this crossing.
2000 West area wetlands	0.95	Syracuse	B Alternatives (B1-B4)	Wetlands are linear and road has to cross. Design has minimized impacts at this crossing.
Various stream crossings and associated wetlands between 3000 West in Syracuse and northern terminus.	0.3 – A2/A4- 0.4 – A1/A3	Syracuse, West Point, Hooper, West Haven	A Alternatives (A1-A4)	Wetlands and waters in this area are linear and the road has to cross. Design has minimized impacts at the crossings.
Antelope Drive area wetlands	15.85	Syracuse	B Alternatives (B1-B4)	Going west in this area to avoid the wetlands would result in impacts to houses, Syracuse Arts Academy, and Fremont Park. Going east in this area to avoid the wetlands would result in impacts to houses and the relocation of other Syracuse City roads.
700 South area wetlands	10.4 – B1 and B3 10.3 – B2 and B4	West Point	B Alternatives (B1-B4)	Going east in this area would impact the Schneider's Bluff Golf Course and more houses. Going west would impact more wetlands.
Various wetlands and stream crossings between 300 North and northern terminus	0.1	West Point	B2 & B4	Wetlands and waters in this area are linear and the road has to cross. Design has minimized impacts at the crossings.
B1/B3 between 300 North and northern terminus	4.3	West Point	B1 & B3	Going further east in this area would impact more wetlands and more homes. Going west would impact more wetlands and more homes.

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4.2 Indirect Impact Avoidance and Minimization

4.2.1 Alignment Considerations

In part, the Alternative B1 with the Wetland Avoidance Option was selected as the Preferred Alternative because it avoids direct impacts to the Farmington Bay Waterfowl Management Area and, along with Alternative B2 with the Wetland Avoidance Option, would have the lowest overall impact to the Great Salt Lake Shorelands Preserve. Both of these wildlife habitat reserves include extensive wetlands and are located adjacent to (east of) additional expansive wetlands and other waters along the eastern shorelands of the Great Salt Lake.

4.2.2 Water Quality

To minimize WDC stormwater runoff indirectly affecting wetlands, the WDC would be designed so that drainage diversions and detention basins would be included with the WDC design anywhere there are wetlands within 20 feet of the WDC right-of-way. To protect water quality during construction, UDOT would use appropriate erosion and sediment control measures to ensure that no construction-related discharges of stormwater to wetlands occur. See Final EIS Chapter 13, Water Quality, for more discussion.

4.2.3 Hydrology

Another concern that must be addressed concerning indirect effects on wetlands is the effect that the WDC could have on hydrology. The Clean Water Act Section 404(b)(1) Guidelines list fluctuating water levels as a secondary impact that must be evaluated.

The WDC design would include structures (for example, pipes, culverts, or bridges) that would allow the conveyance and hydrologic connection of all surface waters crossed by the WDC. Culverts would be designed and constructed at channelized drainages to maintain surface flow, thereby maintaining hydrology in open-water areas, areas abutting riparian wetlands, and hydrologically connected adjacent wetlands. During the final design phase of the project, UDOT will conduct additional evaluation of the hydrologic connection of wetlands to minimize impacts to natural hydrologic connection features and try to maintain hydrologic connectivity comparable to the existing hydrologic conditions. However, the WDC would change the connectivity compared to existing conditions, which could affect the wetlands adjacent to the highway.

Along the Proposed Project right-of-way are four locations where wetlands would be bisected. These locations are a complex south of Glovers Lane in Farmington where a small drainage feature connects the wetlands, a wetland area in west Farmington on the conservation easements where a drainage feature connects the wetlands, a wetland area north and west of the intersection of Gentile Street and Bluff Road which is connected by groundwater, and immediately south of 1800 North and 4100 West where wetlands are connected by a drainage feature that has been altered by development. In these locations, UDOT will try to maintain hydraulic connectivity through the use of culverts and other design features.

The WDC would be constructed above the natural ground elevation, so it would not directly affect the shallow groundwater aquifer. However, the fill material used to construct the highway could change soil conditions and possibly restrict shallow groundwater flows under the highway. For more information, see Final EIS Chapter 13, Water Quality.

To help minimize potential impacts to fish and amphibians, when designing crossings of the WDC over water, UDOT will consider using natural-bottom culverts, maintaining existing gradients, and not adding any new points where slope changes could impede the movements of fish or amphibians.

5.0 Anticipated Effects to Waters of the United States

Table 5-1 below provides a summary on anticipated effects to waters of the U.S. from the Proposed Project. Appendix B provides a map series that depicts wetlands inside the right-of-way and within 300 feet of the Proposed Project.

Table 5-1. Summary Impacts to Waters of the U.S.

Type of Waters of the U.S.	Amount
Wetlands	
Direct impacts within the right-of-way (acres)	
Category I	14.97
Category II	12.61
Category III	15.91 19.59
Total	43.4947.17
Wetlands within 300 feet of the right-of-way (acres)	
Total	57.2978.60
Other (non-wetland) Waters	
Streams (linear feet)	4,972
Other Drainages (linear feet)	10,052
Open Waters (acres)	2.44

5.1 Wetlands

Wetlands within the Right-of-Way

The Proposed Project for this DA application (Alternative B1 with the Wetland Avoidance Option to 300 North in West Point) would remove ~~43.49~~47.17 acres of jurisdictional wetlands including ~~15.91~~19.59 acres of Category III, 12.61 acres of Category II, and 14.97 acres of Category I wetlands. Overall, Alternative B1 would have the highest number of direct wetland impacts of any of the action alternatives. The segment of this alternative with the highest number of wetland impacts would be from Gentile Street in Syracuse to 700 South in West Point because this segment goes through wet areas north of Gentile Street along Bluff Road. Most of the impacts to wetlands in this segment would be to Category II wetlands (11.65 acres), followed by 10.59 acres of Category III wetlands, and 6.36 acres of Category I

wetlands. From the southern terminus to Gentile Street in Syracuse, the impacts from Alternative B1 would be the same as the impacts from Alternative A1.

Based on the results on the wetlands functional assessment for WDC, to varying degrees as indicated by functional ratings, these wetlands provide biological and hydrological functions including general wildlife habitat, habitat for sensitive species, flood attenuation, surface water storage, retention and removal of sediments, nutrients, and toxicants, and sediment stabilization.

Wetlands within 300 Feet of the Right-of-Way

~~57.29~~78.60 acres of wetlands are located within 300 feet of the right-of-way of the Proposed Project. These wetlands could be indirectly affected by Alternative B1. Alternative B1 has the greatest number of wetland acres within 300 feet of the right-of-way. As described in Section 4.2.3, there are four locations where wetlands would be bisected. UDOT would design the highway to maintain hydrologic connections to wetlands and would implement a stormwater management system to minimize impacts to wetlands adjacent to the highway. Although UDOT would implement measures to minimize water quality and hydrologic impacts to wetlands adjacent to the highway, there is a potential for some indirect impacts including reduced water quality and changes in hydrology. These effects and others (such as edge effects, fragmentation, and barrier effects) would also degrade plant and animal communities associated with these wetlands. In summary, UDOT anticipates that biological and hydrological functions provided by wetlands within 300 feet of right-of-way will be indirectly affected. In developing the final compensatory mitigation plan for the Proposed Project, UDOT will continue to coordinate with the USACE in determining the extent to which these wetlands are likely to be adversely affected.

5.2 Other (non-wetland) Water of the United States

Approximately 4,972 linear feet (1.44 acres) of seven named stream channel segments are located within the right-of-way of the Proposed Project. Additionally, the right-of-way includes approximately 10,052 linear feet (2.03 acres) of 28 other linear surface waters (such as ditches, canals, and drainages with relatively permanent flows), and 2.44 acres of open water impoundments. Each of the named streams (Haight Creek, Kays Creek, Bair Creek, Farmington Creek, and Holmes Creek) has been altered and channelized to varying extents within the survey area. None of these streams are designated fisheries, but do support warm water fish species such as carp. All of the unnamed linear features and open waters appear to be constructed for irrigation or drainage purposes. Based on individual characteristics and maintenance status, these features include riparian vegetation that provide limited wildlife habitat to varying degrees.

Cross drainage of linear surface water channels (including streams) will be maintained across the right-of-way through construction of culverts. UDOT will consider using natural-bottom culverts, maintaining existing gradients, and not adding any new points where slope changes could impede the movements of fish or amphibians. Open water impoundments within the right-of-way will likely be drained or filled in.

6.0 Mitigation

6.1 Compensation for Unavoidable Impacts

To meet Clean Water Act and Section 4(f) requirements and to provide compensatory mitigation for unavoidable direct and indirect impacts to wetlands and associated habitat, UDOT proposes to purchase and perform mitigation on privately owned properties within and around the Great Salt Lake Shorelands Preserve boundary and properties on the eastern and northern border of the Farmington Bay WMA. USACE, USFWS, and EPA felt that wetland and wildlife impacts should be mitigated in locations that would enhance the Great Salt Lake Shorelands Preserve or the Farmington Bay WMA. Mitigation on these parcels would provide the opportunity to provide a large, unfragmented Great Salt Lake wetland complex from Farmington Bay WMA to the north end of the Great Salt Lake Shorelands Preserve. UDOT anticipates that it will acquire about 1,111 acres for mitigation of impacts to wetlands, wildlife, and the Great Salt Lake Shorelands Preserve.

A draft mitigation plan was submitted to the USACE in March 2017 (HDR 2017c). The WDC team coordinated with The Nature Conservancy, URMCC, and UDWR to develop the specific details for wildlife and wetland mitigation described in this EIS. In addition, the WDC team conducted field visits to the proposed mitigation parcels with The Nature Conservancy, URMCC, UDWR, USFWS, and USACE. The WDC team received and reviewed comments to the draft mitigation plan and continues to coordinate development of a final mitigation plan with the USACE.

Based on baseline conditions and mitigation potential at different sites, the mitigation plan will prescribe preservation, enhancement, rehabilitation, or establishment measures. Overall, preservation is anticipated to be the predominant mitigation type. Mitigation ratios presented in the draft mitigation plan will be revised based on coordination with the USACE.

The WDC wetland mitigation plan process will follow the requirements of 33 CFR 332.4, Planning and Documentation. This plan will include detailed written specifications and work descriptions for the compensatory mitigation project and a description of long-term management as defined in 33 CFR 332.7, Management. An endowment process will evaluate the long-term management needs, evaluate the annual cost estimates for these needs, and identify the funding mechanism that will be used to meet those needs. UDOT is currently working with The Nature Conservancy (the future land manager) to develop the endowment for properties within the Great Salt Lake Shorelands Preserve.

6.2 Other Mitigation Measures

FHWA and UDOT will require the construction contractor to limit ground and wetland disturbance to the area necessary for the highway improvement that is defined in the Section 404 permit. However, during construction, if any activities not covered by the Section 404 permit would affect wetlands, the contractor would need to coordinate with UDOT to determine appropriate action and permitting requirements.

Where vegetation is disturbed or destroyed, the contractor will reseed these areas with a seed mix of native wetland plants approved by the appropriate agency. Additionally, the contractor will take steps to ensure that noxious weeds are not introduced into wetland plant communities (UDOT Special Provision Section 02924S, Invasive Weed Control). Best management practices required by FHWA and UDOT will require that construction equipment entering the highway construction site be washed to remove noxious weed seeds.

The WDC design will include structures (for example, pipes, culverts, or bridges) that would allow the conveyance and hydrologic connection of all surface waters crossed by the WDC. Culverts would be designed and constructed at channelized drainages to maintain surface flow, thereby maintaining hydrology in open-water areas, areas abutting wetlands, and hydrologically connected adjacent wetlands. During the final design phase of the project, UDOT will conduct additional evaluation of the hydrologic connection of wetlands to minimize impacts to hydrologic connection features comparable to the existing hydrologic conditions. UDOT will also conduct pre- and post-construction monitoring of the upper aquifer to better understand how the WDC could change subsurface water flows under the highway.

Along the WDC action alternatives are four locations where wetlands would be bisected. These locations are a complex south of Glovers Lane in Farmington where a small drainage feature connects the wetlands, a wetland area in west Farmington on the conservation easements where a drainage feature connects the wetlands, a wetland area north and west of the intersection of Gentile Street and Bluff Road which is connected by groundwater, and immediately south of 1800 North and 4100 West where wetlands are connected by a drainage feature that has been altered by development. In these locations, UDOT will attempt to maintain hydraulic connectivity through the use of culverts and other design features.

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7.0 Other Required Permits and Approvals

Chapter 25 of the WDC Final EIS lists other required permits and approvals needed for the WDC Proposed Project. This table is presented below as Table 7-1. Final EIS Appendix 16B provides documentation regarding compliance with Section 106 of the National Historic Preservation Act of 1966, including a *Programmatic Agreement* for WDC with the Utah State Historic Preservation and a *Determinations of Eligibility and Findings of Effect*. Final EIS Appendix 14B includes documentation regarding compliance with the Section 7 of Endangered Species Act 1973, including a “no effect” determination.



Table 7-1. Permits and Clearances Required for the WDC Project

Permit	Granting Agency(ies)	Applicant	Application Time	Granting Time	Applicable Portion of Project
<i>Federal Permits, Reviews, and Approvals</i>					
Water quality certification under Section 401 of the Clean Water Act	Utah Division of Water Quality	UDOT	Concurrent with Section 404 individual permit	Concurrent with Section 404 individual permit	Required if the project could discharge fill into navigable waters
Approval of addition or modification of access points	FHWA	UDOT	EIS phase	Concurrent with Record of Decision	Interstate access changes
Compliance with Section 106 of the National Historic Preservation Act	Utah SHPO and Advisory Council on Historic Preservation	FHWA	Concurrent with EIS	Final EIS	Considerations of impacts to historic properties; includes consultation between agencies and interested parties
<i>State Permits, Reviews, and Clearances</i>					
UPDES permit under Section 402 of the Clean Water Act	Utah Division of Water Quality	Contractor	Construction phase	Before construction	Stormwater quality during construction phase
Stream alteration permit	Utah Division of Water Rights	UDOT	Final design phase	Before construction	Required for new or modified stream crossings proposed as part of the preferred alternative
Air quality approval order	Utah Division of Air Quality	Contractor	Construction phase	Before construction	Air quality during construction phase (emissions from equipment)
Certificate of registration	Utah Division of Wildlife Resources	Contractor	Construction phase	Before construction	Impacts to raptor nests from construction
<i>Local Permits and Clearances</i>					
Floodplain development permit	Local jurisdictions	UDOT	Final design phase	Final design phase	Portions of roadway or structure in FEMA floodplain
Construction-related permits	Various agencies	Contractor	Contractor	Before construction	Impacts associated with offsite activities such as activities in construction staging areas, borrow areas, batch plant sites, and so on



8.0 References

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- 2017 West Davis Corridor, Final Environmental Impact Statement. FHWA. July 6, 2017.

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- 2017a Technical Memorandum 28: Aquatic Resource Delineation Report. West Davis Corridor Project. July.
- 2017b Technical Memorandum: West Davis Corridor Wetland Functional Assessment Report. West Davis Corridor Project. July.
- 2017c Draft Mitigation Plan. West Davis Corridor Project. March 10, 2017.
- 2017d Final EIS Addendum to Technical Memorandum 15: Alternatives Screening Report. West Davis Corridor Project. May.

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- 2006 UDOT Wetland Functional Assessment Method. Report No. UT-06.12