Final Environmental Impact Statement and Section 4(f) Evaluation

Submitted Pursuant to 42 U.S.C. 4332(2)(c) and 49 U.S.C. 303

October 2011

U.S. Department of Transportation
Federal Highway Administration

UDOT
CONNECTING COMMUNITIES

Provo

FHWA-UT-EIS-10-01-F

Provo Westside Connector

Interstate-15/University Avenue/1860 South Interchange to 3110 West Street
in Provo, Utah
UDOT Project No.: HPP-TI-LC49(47), PIN No.: 5502

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Submitted Pursuant to 42 U.S.C. 4332(2)(c) and 49 U.S.C. 303

by Joint Lead Agencies:

U.S. Department of Transportation—Federal Highway Administration (FHWA), Utah Department of Transportation (UDOT), and Provo City, Utah

and by Federal Cooperating Agencies:

U.S. Army Corps of Engineers, U.S. Bureau of Land Management, U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service

October 2011

10/12/11
Date of Approval

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Provo City, Utah

10/12/2011
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Abstract:

The City of Provo, in conjunction with the Federal Highway Administration and the Utah Department of Transportation, proposes to improve roadway system linkage in southwest Provo by constructing a new arterial roadway between Provo Airport and the vicinity of the I-15/University Avenue/1860 South Interchange. Existing residential collector streets 500 West and 1150 West would also be extended from their current termini to intersect with the proposed arterial. Other improvements would include a 10-foot paved bicycle and pedestrian trail adjacent to the new arterial roadway and parking pull-outs to access the trial. Four alternatives were considered in detail, a No-Build Alternative and three alternative alignments for build alternatives. Build alternatives are: the 1860 South Alternative, the University Avenue A Alternative, and the University Avenue B Alternative. Environmental impacts and mitigation measures to reduce the levels of impacts for each build alternative are discussed. The 1860 South Alternative is identified as the Preferred Alternative in this Final Environmental Impact Statement.

Comments are due by November 30, 2011 and should be sent to the FHWA Utah Division at the above address.

EXECUTIVE SUMMARY

PURPOSE AND NEED

Project Background

The City of Provo, in conjunction with the Federal Highway Administration (FHWA), and the Utah Department of Transportation (UDOT), proposes to improve roadway system linkage in southwest Provo by constructing a new arterial roadway between Provo Airport and the vicinity of the U.S. Interstate 15 (I-15) Interchange with University Avenue and 1860 South Street. (Proposed Project). This project is known as the "Provo Westside Connector" (PWC). This Final Environmental Impact Statement (FEIS) has been prepared by Provo City, FHWA, UDOT, and their project consultants (collectively referred to as the EIS team).

The Project Area is located in southwest Provo. Southwest Provo is defined by three Provo neighborhoods (Provo Bay, Sunset, and Lakewood), which are generally located south of Center Street and west of I-15. The Provo Airport is located immediately west of the Project Area.

This FEIS discloses impacts of alternatives evaluated for meeting the purpose and need of the Proposed Project. This document was developed to inform the public and to assist Federal, State, and local decision makers in objectively evaluating alternative courses of action for meeting the purpose and need.

Purpose and Need of the Proposed Project

The Proposed Project is a response to a variety of transportation needs, deficiencies, and planning objectives that have been identified in the Project Area. The purpose of the Proposed Project is to improve roadway system linkage in southwest Provo, between Provo Airport and the vicinity of the I-15/University Avenue/1860 South Interchange (the Interchange), in a manner that would:

- provide a connection to the existing arterial and freeway transportation network to support planned residential development and land use changes in southwest Provo;
- provide a more direct roadway link between Provo Airport and the Interchange to support recent and planned improvements at Provo Airport and related commercial and industrial development in the vicinity of the airport; and
- provide a more direct roadway link between the residential areas west of I-15 and the commercial center of Provo east of I-15, including the Provo Towne Centre Mall, to support the continued economic viability of the commercial center of Provo.

Secondary needs and objectives of the Proposed Project include:

- maintaining residential street traffic volumes within Provo's livability standards;
- improving emergency vehicle access and evacuation routes in southwest Provo;
- facilitating trail, walkway, and bicycle path connectivity in southwest Provo;
- accommodating access to recreation areas along the north shore of Provo Bay in Utah Lake; and
- supporting present and future public transportation service routes in southwest Provo.

RELATED ACTIONS, DOCUMENTS, AND STUDIES

Development of this FEIS has been carried out in cooperation with other ongoing actions in the Provo vicinity. These include the following:

- Mountainland Association of Governments (MAG) Utah Valley 2006 metropolitan planning organization (MPO) Transportation Improvement Program (MAG 2006)
- MAG regional transportation plan 2007–2030 (MAG 2007)
- UDOT 2005–2009 Statewide Transportation Improvement Plan (UDOT 2005)
- Provo City General Plan (Provo City 2009)
- Utah County General Plan (Utah County 2007)
- I-15 Corridor EIS, Salt Lake and Utah Counties (FHWA 2008a)
- Mountain View Corridor EIS, Salt Lake and Utah Counties (FHWA 2008b)
- Geneva Road (SR114) EIS (FHWA 2009)
- Provo/Orem Rapid Transit Corridor Final Report 2005 (MAG 2005)
- Provo/Orem Bus Rapid Transit Environmental Assessment (UTA 2007)

ALTERNATIVE DEVELOPMENT AND SCREENING

The EIS team sought to identify a broad range of alternatives in the early stages of the EIS process. Efforts to identify alternatives included monthly EIS team meetings, agency consultations and meetings, public meetings and comment opportunities, and a stakeholder forum. Following the official scoping period and receipt of comments from all sources, a "master list" of potential project alternatives was assembled. The EIS team then considered appropriate screening criteria to aid in the alternative development and screening process. The approach selected by the EIS team involved a two-level screening process focusing on factors relevant to determining the reasonableness of alternatives under regulations for implementing procedural provisions of the National Environmental Policy Act (NEPA) (40 C.F.R. Parts 1500-1508). Consideration of the Clean Water Act (CWA) Section 404(b)(1) Guidelines (40 C.F.R. Part 230) were also considered in developing this screening process.

Level 1 Screening

The purpose of Level 1 screening was to (1) determine which of the suggested alternatives had the potential to meet the primary needs of the Proposed Project and therefore warranted further development and (2) determine which alternatives should be eliminated because they clearly would not meet the primary needs. Based on the purpose and need of the Proposed Project, the EIS team screened 22 initially suggested project concepts for their ability to meet three criteria:

1. ***Location of Termini:*** Would the alternative serve southwest Provo and include a connection to Provo Airport and the Interchange (either directly via a new connection to the interchange or indirectly via a connection to one of the other arterial roadways at a point near the interchange)?

2. ***Facility Type:*** Would the alternative provide an east-west arterial street consistent in functional characteristics with other arterial streets in Provo?

3. ***Design Requirements:*** Would the alternative meet applicable design standards for an arterial street and accommodate projected traffic volumes at an acceptable Level of Service (LOS) for a facility of its type?

Level 1 screening outcomes are summarized in Table ES-1. The four alternatives advanced from Level 1 screening were:

- ***1860 South Alternative:*** Build a new road on a new alignment from the Interchange to 3110 West.
- ***The I-15 Overpass/Underpass Alternative:*** Develop a new I-15 underpass or overpass and extend an east-west arterial road from this location to the project termini.
- ***Lake Alignment Alternative:*** Build an east-west causeway to Provo Airport through Provo Bay from the Interchange to 3110 West.
- ***No-Build Alternative:*** This alternative was also advanced, providing a baseline future condition in which project needs are not met for comparison to the potential build alternatives.

ES-1. Level 1 screening summary.

ALTERNATIVE	LEVEL 1 SCREENING CRITERIA[a]			ADVANCE FOR LEVEL 2 SCREENING?
	Location of termini	Facility type	Design requirements	
Expand bus service within the Project Area with connections to the Airport and Utah Lake State Park.	✖	✖	✖	No
Develop a light-rail corridor to the Provo Airport.	✖	✖	✖	No
Develop a ferry service to the Provo Airport.	✖	✖	✖	No
Develop "hovercraft" as a mode of transportation.	✖	✖	✖	No
Implement transportation system management and transportation demand management (TSM/TDM).	✖	✖	✖	No
Develop more mass transit options to address the transportation deficiencies.	✖	✖	✖	No
Improve West Center Street from Geneva Road to 3110 West.	✖	✔	✔	No
Develop an elevated expressway over existing Center Street.	✖	✖	✔	No
Develop a center-lane expressway at Center Street (similar to State Route 92).	✖	✖	✔	No
Extend east-west collector roads to 3110 West (600 South, 920 South/1150 South, 1560 South Streets).	✖	✖	✖	No
Improve east-west collector roads as higher-capacity roads (600 South, 920 South/1150 South, 1560 South Streets).	✖	✔	✔	No

ES-1. Continued.

ALTERNATIVE	LEVEL 1 SCREENING CRITERIA[a]			ADVANCE FOR LEVEL 2 SCREENING?
	Location of termini	Facility type	Design requirements	
Improve and extend one or more east-west residential collector roads (600 South and 920/1150 South Street) as (a) higher capacity road(s).	✖	✔	✔	No
Extend north-south collector roads (2050 West, 1600 West, 1100 West, 500 West Streets).	✖	✖	✖	No
Improve north-south collector roads as higher-capacity roads (2050 West, 1600 West, 1100 West, 500 West Streets).	✖	✖	✖	No
Build a road on a new alignment from the 1860 South/University Avenue Interchange to 3110 West Street.	✔	✔	✔	Yes
Develop a new I-15 underpass or overpass and extend an east-west arterial road from this location.	✔	✔	✔	Yes
Develop a shorter connector – for example, 1600 West to the I-15 interchange at 1860 South/University Avenue.	✖	✔	✔	No
Combine a new alignment with existing roads – for example, by connecting the I-15 interchange at 1860 South/University Avenue to the corner of 1560 South and 1600 West Street, follow existing 1600 West to 600 South, continue on 600 South to 3110 West Street.	✔	✖	✖	No
Build a north-south causeway through Provo Bay.	✖	✔	✔	No
Build a east-west causeway to the Provo Airport through Provo Bay from the I-15 interchange at 1860 South/University Avenue to 3110 West Street.	✔	✔	✔	Yes
Build a new road that connects the I-15 interchange at State Road 75 (Springville) to 3110 West Street in Provo.	✖	✔	✔	No
No-Build Alternative.	✖	✖	✖	Yes

[a] ✔ meets criterion, ✖ does not meet criterion.

Level 2 Screening

For each Level 2 alternative, potential roadway alignment concepts were developed to more specifically and quantitatively assess how well each build alternative could meet the needs of the project. This process required considerable effort and involved developing multiple iterations of draft roadway alignments. The overall objective of this effort was to develop potential build alternatives to a higher level of design so that the reasonableness of each alternative could be evaluated.

The Level 2 screening step was completed to determine which of the build alternatives advanced from Level 1 were "reasonable alternatives" from the standpoint of the NEPA. Table ES-2 summarizes information assembled for Level 2 screening. Screening for "reasonableness" included an assessment of:

- ability to meet purpose and need;
- estimated construction costs;
- impacts on the natural environment including wetlands, floodplains, and habitat;
- impacts on communities, including relocations; and
- consistency with transportation and land use plans.

Consideration of Clean Water Act (CWA) Section 404(b)(1) Guidelines

The EIS team determined that all of the build alternatives considered in Level 2 screening would have impacts to Waters of the United States, including wetlands. Any of these alternatives would require an individual permit from the U.S. Army Corps of Engineers (the Corps) under Section 404 of the CWA.

When deciding whether to issue a CWA Section 404 permit, the Corps must apply the CWA Section 404(b)(1) Guidelines, which are contained in 40 C.F.R. Part 230. The CWA Section 404 Guidelines prohibit the Corps from issuing a permit (40 C.F.R. § 230.10 [a]) for a project 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." This requirement means that an alternative must be selected if:

- it is "practicable,"
- would have "less adverse impact on the aquatic ecosystem," and
- would not cause "other significant adverse environmental consequences."

The CWA Section 404 Guidelines define "practicable" to mean "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 C.F.R. § 230.10[a][2]). The CWA Section 404 Guidelines establish a presumption, for non water-dependent projects such as roads, that practicable alternatives are available to avoid aquatic resources.

The CWA Section 404 Guidelines also contain several other requirements, including a requirement that the selected alternative would not cause a violation of other laws; would not cause or contribute to significant degradation of Waters of the United States; and includes appropriate and practicable steps to minimize harm to the aquatic ecosystem (see 40 C.F.R. § 230.10[b]-[d]).

As part of the screening process, the EIS team has considered the requirements of the CWA Section 404(b)(1) Guidelines, with the goal of ensuring that the alternatives analysis in the EIS can be

Table ES-2. Information assembled for Level 2 screening of build alternatives.

DATA FOR NEPA REASONABLENESS SCREENING	*1860 SOUTH ALTERNATIVE*	*I-15 OVERPASS/UNDERPASS ALTERNATIVE*			*LAKE ALIGNMENT ALTERNATIVE*
		UNIVERSITY AVENUE ALIGNMENT	*DOUBLE FLYOVER ALIGNMENT*	*EAST BAY BLVD. ALIGNMENT*	
Transportation performance indicators					
System-wide signal delay (hours)[a] Total for signalized intersections weighted by intersection volume	183	211	169	195	183
East-west travel time (minutes)[a] Weighted travel times between 500 West and East Bay Boulevard/1860 South	3.6	3.7	2.8	4.5	3.6
I-15 access (minutes)[a] Weighted travel times between 500 West and I-15 on-/off-ramps	1.5	2.9	3.0	4.3	1.5
Total vehicles served[a] Total vehicles entering system	9,575	9,547	9,405	9,430	9,575
Cost and impact indicators					
Estimated construction costs (millions)	$57.2	$58.7	$78.6	$81.9	$187.0
Wetland impact (acres of fill)	9.3	5.2	4.6	2.5	34.3
Residential relocations	0	0	0	24	0
Commercial property take (square feet)	11,000	24,000	114,000	40,000	11,000
Decision					
Advance for detailed analysis?	**Yes**	**Yes**	**No**	**No**	**No**

[a] Transportation performance measures are based on year 2030 modeling of the evening peak hour traffic volume.

used by the Corps as the basis for CWA Section 404 permit decision-making. Specifically, the EIS team considered each of the alternatives that was recommended for elimination in Level 2 of the screening process to determine whether its elimination is consistent with the CWA Section 404(b)(1) Guidelines. The EIS team has concluded that alternatives eliminated in Level 2 screening is consistent with the CWA Section 404(b)(1) guidelines. The EIS team will continue to work with the Corps and other permitting agencies to develop the information needed to apply the CWA Section 404 Guidelines when selecting among the alternatives that have been advanced for detailed study. Additional refinements may be made to those alternatives as part of the CWA Section 404 permit process, including refinements to further avoid and reduce impacts to aquatic resources.

Alternatives Advanced for Detailed Analysis

Based on the screening process described above, the EIS team decided to carry forward three build alternatives for detailed study. The first is the 1860 South Alternative. Two versions of the I-15 Overpass/Underpass Alternative, the University Avenue A Alternative and the University Avenue B Alternative, were also advanced. These three alternatives are illustrated in Figure ES-1. The No-Build Alternative is also analyzed in detail as required by regulations for implementing the NEPA.

ENVIRONMENTAL CONSEQUENCES

A brief summary of the environmental impacts anticipated to result from the build alternatives for the Proposed Project is shown in Table ES-3. Complete evaluations of impacts are presented in Chapter 3.

PREFERRED ALTERNATIVE

After review of public and agency comments on the Draft Environmental Impact Statement, released for public review in June 2010 and completing additional resource analyses contained in this FEIS, the joint lead agencies selected the 1860 South Alternative as the Preferred Alternative. The analysis completed for selection of the Preferred Alternative is summarized in Table ES-4. In the table, positive factors supporting a given alternative are indicated in green-colored text; factors detracting from an alternative are indicated in red. This analysis shows that the build alternatives are not different from one another for most resource issues (with detailed analyses presented in Chapter 3). Differences which led to selection of the Preferred Alternative are discussed in detail in Chapter 2. In brief, the 1860 South Alternative was selected as the Preferred Alternative based on public comment preferences, agency comment preferences, reduced land use impacts, superior transportation performance, lack of visual impacts, lack of noise impacts, fewer commercial property impacts, and practicable avoidance and minimization of wetland impacts.

SECTION 4(f) EVALUATION

Section 4(f) refers to Section 4(f) of the 1966 Department of Transportation Act, which provides protection to public parks and recreation areas, wildlife and waterfowl refuges, and significant historic sites from impacts by Federal transportation actions. Any of the three build alternatives would have a *de minimis* impact on one Section 4(f) resource. This Section 4(f) resource is a historic canal and irrigation system. The irrigation system is constructed through much of the wetlands and low-lying agricultural lands located south of Center Street and between the eastern shoreline of Utah Lake and the I-15 corridor. Construction of the irrigation system began during the 1850s, shortly after settlement of the area, to facilitate farming.

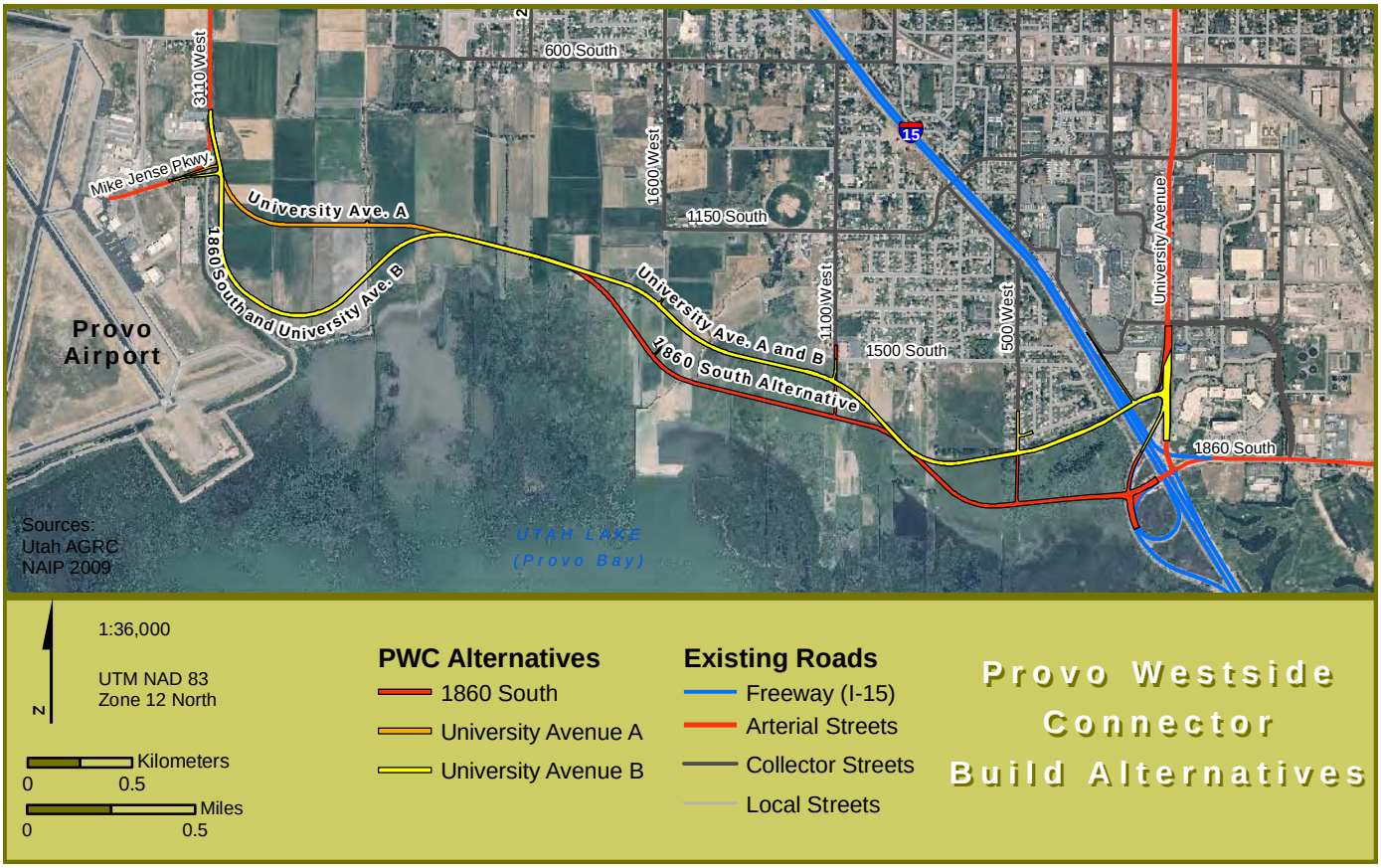

Figure ES-1. Build alternatives advanced for detailed analysis.

The Proposed Project would affect a relatively small portion of the overall site and would not substantially impact or alter the irrigation system as a whole or any of its character-defining features, which determined the site's eligibility for the National Register of Historic Places. See Chapter 4: Section 4(f) Evaluation.

MITIGATION SUMMARY

Most of the impacts associated with project construction and operation will be minimized by adherence to UDOT's *Standard Specification for Road and Bridge Construction, Temporary Erosion and Sediment Control Standards*, and *Temporary Water Pollution Control Standards*. Additionally, UDOT's policy of compensation for ROW acquisition will alleviate some of the major socioeconomic concerns for landowners. Additional mitigation measures are presented below by resource component. Adherence to these measures during final design and construction would be assured by UDOT.

Land Use

Direct impacts will be mitigated through the ROW acquisition process. In acquiring ROW, Provo City must comply with the Uniform Relocation Assistance and Real Property Acquisition Polices Act of 1970, as amended (42 USC 4601 *et seq*., as amended 1989). New or altered access to bisected private properties will be necessary for some parcels. If this access could not be provided, compensation will be provided in accordance with the acquisition process.

Table ES-3. Summary of environmental consequences.

ENVIRONMENTAL ISSUE	*NO-BUILD ALTERNATIVE*	*1860 SOUTH ALTERNATIVE*	*UNIVERSITY AVENUE A ALTERNATIVE*	*UNIVERSITY AVENUE B ALTERNATIVE*
Land Use	No property acquisition required.	121.6 acres acquired for right-of-way (ROW).	108.5 acres acquired for ROW.	116.6 acres acquired for ROW.
	Ongoing conversion of agricultural land uses to residential and commercial land uses (urban development) would continue.	Indirect land use not impacted; anticipated development is equivalent to No-Build Alternative.		
	The pace of urban development may be slower pace than what would occur with implementation of a build alternative.	Development for some parcels may occur sooner than what would occur under No-Build (particularly those closer to the new roadway); however, this depends on individual landowner decisions, which are not known.		
Farmlands	No protected farmlands or Agricultural Protection Areas affected.			
Social Environment	Inconsistent with community planning goals.	Consistent with community planning goals.		
	No benefits for access and travel times for local residents.	Positive effects on access and travel times for local residents.		
	New recreation facility (North Bay Trail) not constructed.	New recreation facility (North Bay Trail).		
	No adverse effects on public safety.	No adverse effects on public safety.		
	No adverse effects on social interactions, relationships, or community cohesion.	No adverse effects on social interactions, relationships, or community cohesion.		

Table ES-3. Continued.

ENVIRONMENTAL ISSUE	NO-BUILD ALTERNATIVE	1860 SOUTH ALTERNATIVE	UNIVERSITY AVENUE A ALTERNATIVE	UNIVERSITY AVENUE B ALTERNATIVE
Economic Conditions	Project Area employment is expected to increase.	Project Area employment is expected to increase.		
	Potential commercial employment earnings would continue to increase while earnings from agricultural activities would decline.	Potential commercial employment earnings would continue to increase while earnings from agricultural activities would decline.		
	Economic growth could occur at a slower rate than if an arterial road provided increased access and increased area-wide mobility.	Because impediments to travel in and out of the area would be reduced, the rate at which economic development occurs may be faster.		
	Inconsistent with local economic development strategies. Opportunities for economic development may diminish in number or scale, reflecting limited available transportation infrastructure.	Improved transportation infrastructure consistent with local economic development strategies.		
	No project-related construction employment or construction-related expenditures.	Positive impacts of construction employment and construction-related expenditures.		

Table ES-3. Continued.

ENVIRONMENTAL ISSUE	*NO-BUILD ALTERNATIVE*	*1860 SOUTH ALTERNATIVE*	*UNIVERSITY AVENUE A ALTERNATIVE*	*UNIVERSITY AVENUE B ALTERNATIVE*
Transportation	Segments of two streets would operate at Level of Service (LOS) F by 2030.	One segment of one street would operate at LOS E by 2030.		
	Segments of two streets exceed Provo City livability standards by 2030.	Segments of two streets exceed Provo City livability standards by 2030.		
	Response times from Fire Station 4 (closest to Provo Airport) would approach or exceed the 4-minute initial-response standard at every time of day by 2030.	Slight improvement in emergency response times compared to No-Build Alternative.		
Pedestrians and Bicyclists	Planned North Bay Trail not constructed. Other planned trials constructed but reduced connectivity of trails.	North Bay Trail provides new facility and improved connectivity to other trails.		
Air Quality	No impact.			
Noise	No impact.	No impact.	Twenty-three residences would experience increases of at least 10 dBA or more above 66 dBA.	
Visual Resources	No impact.	• 7 weak contrasts. • 3 moderate contrasts. • 1 strong contrast. • 22 imperceptible contrasts. • Overall weak contrasts for Lakewood neighborhood area.	• 5 weak contrasts. • 5 moderate contrasts. • 4 strong contrasts. • 19 imperceptible contrasts. • Overall strong contrasts for Lakewood neighborhood area.	• 6 weak contrasts. • 3 moderate contrasts. • 5 strong contrasts. • 19 imperceptible contrasts. • Overall strong contrasts for Lakewood neighborhood area.

Table ES-3. Continued.

ENVIRONMENTAL ISSUE	NO-BUILD ALTERNATIVE	1860 SOUTH ALTERNATIVE	UNIVERSITY AVENUE A ALTERNATIVE	UNIVERSITY AVENUE B ALTERNATIVE
Cultural Resources	No impact.	A prehistoric artifact scatter site would be impacted by road construction and associated earth moving activities.	A prehistoric artifact scatter site would be impacted by road construction and associated earth moving activities.	A prehistoric artifact scatter site would be impacted by road construction and associated earth moving activities.
Paleontological Resources	No impact.			
Wetlands	No wetland impacts.	9.3 acres of wetlands impacted.	5.2 acres of wetlands impacted.	5.3 acres of wetlands impacted.
	No stream crossings.	1,593.9 linear feet of stream crossings.	1,417.4 linear feet of stream crossings.	1,434.1 linear feet of stream crossings.
Water Resources	No impact.	• Incremental increase in total dissolved solids to Utah Lake, 0.0076%. • Incremental increase in phosphorus to Utah Lake, 0.004%.	• Incremental increase in total dissolved solids to Utah Lake, 0.0068%. • Incremental increase in phosphorus to Utah Lake, 0.0036%.	• Incremental increase in total dissolved solids to Utah Lake, 0.0073%. • Incremental increase in phosphorus to Utah Lake, 0.0036%
		Incremental increase in metals to Utah Lake (copper, lead, zinc).		
Floodplain Impacts	No impact.	Insignificant (0.02 inch) increase in Base Flood Elevation.	Insignificant (0.02 inch) increase in Base Flood Elevation.	Insignificant (0.02 inch) increase in Base Flood Elevation.
Threatened and Endangered Species – June sucker	No impact.	May affect, not likely to adversely affect. Would not jeopardize the continued existence of the species.	May affect, not likely to adversely affect. Would not jeopardize the continued existence of the species.	May affect, not likely to adversely affect. Would not jeopardize the continued existence of the species.

Table ES-3. Continued.

ENVIRONMENTAL ISSUE	*NO-BUILD ALTERNATIVE*	*1860 SOUTH ALTERNATIVE*	*UNIVERSITY AVENUE A ALTERNATIVE*	*UNIVERSITY AVENUE B ALTERNATIVE*
Threatened and Endangered Species – Ute ladies'-tresses	No impact.	May affect, not likely to adversely affect. Would not jeopardize the continued existence of the species.	May affect, not likely to adversely affect. Would not jeopardize the continued existence of the species.	May affect, not likely to adversely affect. Would not jeopardize the continued existence of the species.
Wildlife and Fisheries	No impacts on habitat communities.	• 93.0 acres mixed-use agriculture habitat. • 15.3 acres residential wildlife habitat. • 9.3 acres wetland habitat.	• 85.9 acres mixed-use agriculture habitat. • 13.1 acres residential wildlife habitat. • 5.2 acres wetland habitat.	• 93.7 acres mixed-use agriculture habitat. • 13.1 acres residential wildlife habitat. • 5.3 acres wetland habitat.
Hazardous Materials	No impact.			
Geology and Soil	No impact.	121.6 acres Pavement and fill material over existing soils.	108.5 acres Pavement and fill material over existing soils.	116.6 acres Pavement and fill material over existing soils.
Utilities	No impact.	• No regional power poles impacted. • 12-13 local utility poles moved or raised.	• 2-3 regional electric power poles moved or raised. • 1-3 local electric power poles moved or raised.	• 2-3 regional electric power poles moved or raised. • 1-3 local electric power poles moved or raised.
Energy and Climate Change	No impact.			
Environmental Justice	No impact.			
Section 4(f) Resource Use	No Section 4(f) use.	*de minimis* use of one resource (historic canal and irrigation system).		

Table ES-4. Preferred alternative selection.

ENVIRONMENTAL ISSUE	1860 SOUTH PREFERRED ALTERNATIVE	UNIVERSITY AVENUE A ALTERNATIVE	UNIVERSITY AVENUE B ALTERNATIVE
Cost	Similar construction cost	Similar construction cost	Similar construction cost
Transportation Performance	Better transportation performance indicators	Worse, though adequate transportation performance indicators	Worse, though adequate transportation performance indicators
	Better regional connectivity, consistency with driver expectation when transferring to a regionally significant corridor	Creates connectivity in an already congested area, inconsistent with driver expectation when transferring to a regionally significant corridor	Creates connectivity in an already congested area, inconsistent with driver expectation when transferring to a regionally significant corridor
Relocations	None	None	None
Commercial property take	Less commercial property take	More commercial property take	More commercial property take
Community input – public meetings and comments	29 comments supporting this alternative	No comments supporting this alternative	3 comments supporting the west end of this alternative (equivalent to the 1860 South Alternative in this area)
Agency input	Preferred by Provo City and Mountainland Association of Governments (MAG)	Not preferred by Provo City and MAG; no agency comments supporting	Not preferred by Provo City and MAG; no agency comments supporting
Land Use	Similar direct land use impacts	Similar direct land use impacts	Similar direct land use impacts
	Indirect impact: less likely to have proposed development south of the road, with 106 upland acres south of the raodway.	Indirect impact: More likely to have proposed development south of the road, with 227 upland acres south of the roadway.	Indirect impact: More likely to have proposed development south of the road, with 198 upland acres south of the roadway.
Farmlands	No protected farmlands or Agricultural Protection Areas affected.	No protected farmlands or Agricultural Protection Areas affected.	No protected farmlands or Agricultural Protection Areas affected.

Table ES-4. Continued.

ENVIRONMENTAL ISSUE	1860 SOUTH PREFERRED ALTERNATIVE	UNIVERSITY AVENUE A ALTERNATIVE	UNIVERSITY AVENUE B ALTERNATIVE
Social and Economic Effects	Similar impacts	Similar impacts	Similar impacts
Air Quality	No impacts	No impacts	No impacts
Noise	No impacts	23 homes impacted	23 homes impacted
Visual Resources	No significant visual impacts	Significant visual impacts	Significant visual impacts
Cultural Resources	Similar impacts	Similar impacts	Similar impacts
Paleontological Resources	No impacts	No impacts	No impacts
Wetlands	9.3 acres impacted	5.2 acres impacted	5.3 acres impacted
Water Resources	Similar impacts	Similar impacts	Similar impacts
Floodplains	Similar impacts	Similar impacts	Similar impacts
Threatened and Endangered Species	Similar impacts	Similar impacts	Similar impacts
Wildlife and Fisheries	Similar impacts	Similar impacts	Similar impacts
Hazardous Materials	No impacts	No impacts	No impacts
Geology and Soil	Similar impacts	Similar impacts	Similar impacts
Utilities	Similar impacts	Similar impacts	Similar impacts
Energy and Climate Change	No impacts	No impacts	No impacts
Environmental Justice	No impacts	No impacts	No impacts
Section 4(f) Resource Use	Similar impacts	Similar impacts	Similar impacts

Vehicular and farm access for private property will be accommodated by providing adequate access from the new roadway and/or by providing access from a frontage road. Access to these lands could be temporarily restricted during some phases of project construction (see Section 3.20: Construction Impacts). Whenever practicable, Provo City, in coordination with UDOT, will maintain the access and productivity of existing agricultural lands by such means as purchasing and developing ROW easements for field entry, making minor alignment alterations to preserve access points and field integrity, and providing access to alternate water sources to replace any interrupted irrigation.

Access to a Federally owned parcel administered by the BLM may be temporarily blocked during

construction, but permanent administrative access will be provided after construction by building an access point or access road from the Provo Westside Connector as determined in the final design and in consultation with the BLM.

Noise

If the University Avenue A or University Avenue B alternative is selected, a noise wall along the southern border of the Lakeview neighborhood appears to be reasonable and feasible in accordance with the UDOT Noise Abatement Policy. The final decision regarding construction of the wall would be determined by public balloting during final design of the roadway as stated in the UDOT Noise Abatement Policy.

Visual Resources

Fill slopes will be vegetated as practicable to help blend the new roadway into the natural and agricultural landscape.

Visual impacts for the University Avenue A or B Alternatives for the Lakewood Neighborhood would represent a permanent change in visual character of the neighborhood and cannot be fully mitigated, however the visual impacts could be softened for the residents that will be most affected by the retaining wall and possible noise barriers. Elements that could possibly be incorporated into the design include:

- ***Neutral colors:*** mimicking the palette of the natural landscape could be used for all hardscape features to aid in blending the retaining wall and hard surfaces into the background.

- ***Plantings:*** Landscape plantings that feature predominantly taller plants and trees along the base of the retaining wall and berms as appropriate. If possible in final design, maintaining some or all existing vegetation (trees along berm).

- ***Landowner participation:*** Landowners most affected by the proposed changes would have additional input opportunities regarding specific design elements of the roadway and possible noise wall.

Cultural Resources

A Memorandum of Agreement (MOA) to resolve adverse effects to 42UT1618 will be prepared, agreed upon, and executed by FHWA, UDOT, and the SHPO. The Advisory Council on Historic Preservation will also be included in the MOA, should they choose to participate in consultation.

While avoided, project construction would occur in the vicinity of cultural site 42UT111. This site will be fenced during construction to ensure that cultural resources are not inadvertently impacted.

The UDOT Standard Specification 01355, Part 1.13–Discovery Clause will be followed if any cultural resources are discovered during project construction.

Wetlands

A CWA Section 404 Individual Permit will be required for project construction. Mitigation measures will be outlined in the CWA Section 404 Permit application and the approved Mitigation Plan from the Corps.

Water Resources

Additional geotechnical and hydrogeological investigation and analyses will be completed as part of designing the roadway to address potential adverse impacts to the road from groundwater,

potential subsurface soil compression, and to design drainage layers to convey shallow groundwater beneath the roadway. These engineered drainage layers will be designed to ensure that groundwater in the shallow unconfined aquifer will continue to supply water to existing wetlands and to Utah Lake. The investigations would include borings, cone penetration testing, and the installation of piezometers (PB Americas 2007). The roadway design may need to include elements for returning any groundwater intercepted by trenches or similar features back to the subsurface.

Surface water quality impacts will be mitigated through proper installation, use, and maintenance of appropriate BMP's. A Storm Water Pollution Prevention Plan (SWPPP) would be required as part of the application for a construction Utah Pollution Discharge Elimination System (UPDES) permit. The SWPPP will also detail the BMPs that will be used to control stormwater during active construction.

Curb and gutter will not be installed on the south side of the proposed roadway, instead a vegetated swale will be designed. Infiltration basins will be designed to capture runoff from the curb and gutter on the north side of the roadway.

The final roadway design will accommodate access to wells, ditches, pipes, and other conveyance structures. If a well would need to be relocated, Provo City and UDOT would purchase the water right or the land associated with the right or negotiate an agreement with the water right owner to replace the well. Affected wells will be abandoned by a licensed well driller in accordance with Utah Administrative Code Section 655-4-12. The driller must contact the State Engineer and provide an abandonment log when the closure is completed. Neat cement grout, sand cement grout, unhydrated bentonite, or bentonite grout will be used to abandon wells and boreholes (UAC R655-4).

Floodplains

To minimize impacts to floodplains, the final design for a build alternative will allow for free movement of floodwater to the north side of the roadway. This design will not impair the current functioning of the floodplain. Per Federal regulation 44 CFR 65.12(a), Provo City must obtain conditional approval from the Federal Emergency Management Agency before project construction is undertaken.

Threatened and Endangered Species

Prior to construction activities, the identified Ute Ladies'-Tresses (*Spiranthes diluvialis*) population will be environmentally fenced to ensure no construction vehicles or personnel inadvertently utilize and trample this area. In addition, best management practices (BMPs) such as the use of silt fence will be followed throughout construction phasing to ensure bare soil and sediment is not transported into the area. These BMPs will be specified in the Stormwater Pollution Prevention Plan (SWPPP).

To prevent hydrologic changes, the final roadway design will allow surface water and groundwater flows to be maintained, preserving hydrology for both wetlands and Ute Ladies'-Tresses populations.

Impacts to potential June sucker (*Chasmistes liorus*) habitat will be substantially reduced through (1) appropriate BMPs for stormwater control during roadway construction, (2) installation of a roadway design allowing for unimpeded subsurface groundwater flow, (3) incorporation of a design that allows floodwaters to continue to inundate the floodplain, and (4) installation of a stormwater detention system designed to slow roadway runoff and capture pollutants.

Water resources mitigations include replacement of curb and gutter on the south side of the proposed roadway with a vegetated swale and use of infiltration basins instead of stormwater detention basins. With these mitigation elements in place, a build alternative would reduce phosphorous loads to Utah Lake over estimated loads from existing land uses for the footprint of the roadway.

Wildlife and Fisheries

Direct impacts to wetland habitat due to fill would be mitigated through Section 404 of the CWA in consultation with the U.S. Army Corps of Engineers.

There is potential to introduce or spread invasive weed species during construction because any of the build alternatives would involve earthwork, grading, introduction of fill material, and re-landscaping of fill slopes and park strip areas. The UDOT Special Provision 02924S, *Invasive Weed Control*, specifies BMPs for reducing this potential and will be included in the contract documents. Fill slopes and disturbed areas will be revegetated with native species or nonnatives that will not naturalize.

Removal of riparian vegetation, including willow (*Salix* spp.) and cottonwood (*Populus* spp.), will be avoided wherever possible. If riparian vegetation must be removed, the revegetation plan shall include replacement or enhancement with equivalent acreage.

In keeping with the Migratory Bird Treaty Act, active nests will not be disturbed during project construction. The project contractor will be required to follow UDOT Standard Specification 01355 Part 1.13; if bats or migratory birds are discovered on structures the contractor must notify the UDOT Engineer who in turn notifies the UDOT Region Environmental Manager and the UDOT Wildlife Biologist to determine the necessary course of action.

Additionally, grubbing of vegetation prior to construction will be planned to take place outside of the nesting window from April 15 to August 15. If grubbing activities within the ROW are required within this window, nest surveys will be conducted. If active nests are found, construction activities will not occur until after birds have fledged.

Final design of the roadway will include appropriate structures at Big Dry Creek that would allow fish to potentially swim upstream.

Hazardous Materials and Hazardous Waste Sites

No known hazardous materials or hazardous waste sites were identified for properties that would be acquired or partially acquired for ROW. Should construction workers encounter previously undocumented soil contamination or other hazardous waste during construction, the contractor will follow UDOT Standard Specification 01355. Under this specification, construction activity will cease until the hazard is evaluated and appropriate protection measures are implemented.

Geology and Soils

Development of a SWPPP and implementation of BMPs will minimize any soil transport to waterways (see Section 3.13: Water Resources). Mitigation will include implementation of UDOT's *Standard Specifications for Road and Bridge Construction, Temporary Erosion and Sediment Control Standards*, and *Temporary Water Pollution Control Standards* to minimize impacts to soils.

In final design, a pavement subsurface drainage system will be planned in any areas where subsurface water conveyance would be a concern during the life of the roadway. To facilitate proper engineering design and to accommodate soil features and groundwater that could impact the

roadway, a site-specific geotechnical evaluation will be required as part of the final design. Geotechnical engineering oversight during construction will also occur (PB Americas 2007). Monitoring of these implementations and instituting remedial measures will ensure continued effectiveness.

Temporary erosion- and sediment-control devices will be installed as described in UDOT's *Temporary Erosion and Sedimentation Control Drawings*. Actions to minimize environmental impacts during construction include:

- stabilizing all cut and fill slopes to prevent erosion and slope instability;
- installing silt fences or other sediment-retention devices, as needed, around the base of disturbed areas adjacent to Project Area streams and ditches;
- performing major construction in the drier months;
- avoiding ponding;
- addressing moisture-sensitive soils;
- limiting heavy equipment travel on subgrade; and
- using crushed rock or geosynthetic material to protect subgrade surfaces.

Utilities

Utility pole relocations could be potentially reduced with project design modifications during final design. Coordination with electrical utility service providers will be necessary prior to and during project construction.

OTHER REQUIRED GOVERNMENTAL ACTIONS

Storm Water General Permit for Construction Activities. A Storm Water General Permit, which grants authorization to discharge under the Utah Pollutant Discharge Elimination System, is required for projects that disturb more than one acre of surface area during construction. If a build alternative is selected, a Storm Water General Permit will be required. As part of the requirements for this permit, a SWPPP will be developed and incorporated into the final design of the selected build alternative. A Notice of Intent form will be submitted to the Utah Division of Water Quality prior to any construction. Upon completion of the Proposed Project, a Notice of Termination will be submitted to the same agency.

Section 404 of the CWA—Wetland Permit. The Proposed Project must comply with the CWA Section 404(b)(1) Guidelines. A CWA Section 404 Permit is required for discharging any material or dredging below the ordinary high-water mark in waters of the United States, including wetlands. Some wetlands would be impacted by any of the proposed build alternatives. If a build alternative is selected, an Individual Permit issued by the Corps will be necessary prior to construction.

State of Utah Stream Alteration Permit (General Permit 40). If a build alternative is selected, a Stream Alteration Permit will be required from the Utah Department of Natural Resources, Division of Water Rights, for all activities that affect the bed or banks of natural streams. The State's permit is subject to approval from the Corps.

Air Quality Permit for Construction Activities. An Air Quality Permit to gauge air-quality impacts during construction is required to control fugitive dust and emissions. If a build alternative is selected, the contractor must obtain an Air Quality Permit

from the Utah Department of Air Quality prior to the start of construction.

Cultural Requirement. In accordance with Section 106 of the National Historic Preservation Act, if any build alternative is selected, a Memorandum of Agreement (MOA) will be required between the FHWA, UDOT, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation (should they desire to be included). The purpose of the MOA will be to resolve effects to archaeological resources.

Interchange Justification Report Approval. Section 111 of Title 23, United States Code, requires that proposed new or revised interstate access must be approved by the FHWA before such access modifications can be made.

Federal Land Transfer (Easement). Preliminary designs for build alternatives do not cross the BLM-administered Federal property in the Project Area and no impacts are anticipated. However, should the final design of a selected alternative cross the property, a Federal land transfer request, pursuant to 23 USC § 317, would be initiated by the FHWA on behalf of Provo City.

Conformity with the BLM Resource Management Plan (RMP). All of the build alternatives have been determined to be in conformance with the terms and conditions of the Pony Express Resource Management Plan approved January 12, 1990 as required by 43 Code of Federal Regulations (CFR) § 1610.5. The relevant discussion is found on page 56 of the RMP under Transportation and Utility Corridors decision 1 (BLM 1990).

AREAS OF CONTROVERSY AND UNRESOLVED ISSUES

The need for public and agency input in the determination of Proposed Project needs, alternatives, and potential impacts was an important factor in the decision to prepare an EIS. Coordination with the public and municipal, State, and Federal agencies continued throughout the process and is documented in Chapters 5 and 6 of the FEIS. Coordinative efforts helped the EIS team identify and anticipate controversial issues. Public input on the purpose and need for the Proposed Project and the range of alternatives to be evaluated was considered, which helped the EIS team determine public opinion in regards to issues and possible solutions.

Comments from the Corps and the U.S. Environmental Protection Agency following release of the DEIS suggested that a Center Street Alternative may need to be evaluated under Section 404(b)(1) of the CWA (See Chapter 6). While the joint lead agencies maintain that Center Street alternatives do not meet the project purpose and need, Center Street was evaluated to the same level of detail as alternatives advanced for detailed analysis in this FEIS. The analysis of Center Street is included in Appendix D of the FEIS.

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