
EXECUTIVE SUMMARY

INTRODUCTION

The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), is proposing improvements to the following transportation facilities in south-central Denver, Colorado:

- Interstate 25 (I-25; the Valley Highway) from Logan Street on the south to US 6 (6th Avenue) on the north
- US 6 from I-25 on the east to Federal Boulevard on the west
- Adjacent portions of Santa Fe Drive and Kalamath Street, including the crossing between these streets and the Consolidated Main Line railroad corridor

These improvements are needed to:

- Provide lane continuity and balance on I-25 from Logan to US 6, linking with sections of I-25 to the north and south
- Optimize highway system operations while recognizing the constraints on highway expansion identified through the regional transportation planning process
- Improve connectivity between transportation modes
- Improve pedestrian and bicycle mobility across the project corridor
- Increase safety along and across the corridor for motorists, pedestrians, and bicyclists
- Correct roadway deficiencies along I-25 and US 6 to meet current design standards to provide a safer, more efficient, and more reliable transportation system
- Increase safety and reduce congestion and delays related to the at-grade crossing of Santa Fe Drive / Kalamath Street and the Consolidated Main Line railroad

Chapter 1 Purpose and Need presents detailed information on project needs and objectives.

The National Environmental Policy Act (NEPA) of 1969 requires an environmental impact statement (EIS) be prepared to address potential significant impacts that a federal action may have on the environment. A Draft EIS was issued by FHWA, as the lead federal agency, and CDOT in April 2005. The Draft EIS documented the impacts of the alternatives under consideration. A public hearing was held in June 2005 and comments were received from the public and other agencies.

Building on the Draft EIS, this Final EIS responds to public and agency comments, and presents the Preferred Alternative. The Preferred Alternative, which has been identified by CDOT and FHWA, balances transportation improvements to meet the project purpose and need with the environmental and social considerations.

This Final EIS is being made available for public, agency, and other interested parties review and comment. During the comment period, a public hearing will be held. Comments may be submitted at the public hearing or at any time during the comment period. Following the Final EIS comment period, FHWA and CDOT will review public and agency comments and prepare a Record of Decision (ROD).

SYSTEM ALTERNATIVES CONSIDERED IN THE DRAFT EIS

The Draft EIS described the process that was used to develop, evaluate, and eliminate or advance potential alternatives to meet the purpose and need for the project. A No Action Alternative and the following three System Alternatives were considered in detail in the Draft EIS:

- **No Action Alternative** – includes only those projects that have committed funds for improvements. This includes completion of the T-REX project and the Broadway Viaduct Replacement Project, which are currently underway. These improvements would be made whether or not any other improvements are made to the Valley Highway corridor. The No Action Alternative is basically a decision not to select a build alternative. The No Action Alternative has been fully evaluated in the EIS and serves as a “baseline” against which other alternatives are compared.
- **System Alternative 1 – Maximize Use of Existing Right of Way** – a combination of roadway improvements that provide the narrowest roadway width or/and had the least footprint, or were closest to the current configurations.
- **System Alternative 2 – Maximize Operation Performance / Safety** - a combination of roadway improvements that provide the most direct travel route, best avoid friction between traffic streams, or reduce traffic signals.
- **System Alternative 3 – Maximize Facilitation of Local Objectives** – a combination of roadway improvements that attempt to enhance the local street systems operations as well as to best meet local land use and community value goals. System Alternative 3 does not necessarily represent the City and County of Denver’s preferred alternative, but rather includes a number of improvements suggested by the City and County of Denver to be evaluated through the EIS process.

These alternatives were fully evaluated in the Draft EIS with regard to transportation benefits and environmental considerations. The detailed evaluation of these alternatives has been carried through in this Final EIS, and is presented in **Chapter 2 Alternatives**, **Chapter 3 Transportation Analysis**, and **Chapter 4 Environmental Consequences and Mitigation Measures**.

IDENTIFICATION OF THE PREFERRED ALTERNATIVE

CDOT and FHWA have identified a Preferred Alternative for the Valley Highway Project that combines elements of the three system alternates that were analyzed in the Draft EIS. The Preferred Alternative does not represent a new alternative, but rather a refinement based in the analysis contained in the Draft EIS and comments received from the public and agencies.

The Preferred Alternative includes the following major elements:

- **I-25 Mainline:** Widening of I-25 to provide a consistent section with four through lanes plus auxiliary lanes in each direction through the project area (these improvements were common to System Alternatives 1,2, and 3 in the Draft EIS)
- **I-25/Broadway:** Tight diamond interchange (these improvements were included in System Alternative 3 in the Draft EIS)
- **I-25/Sante Fe Drive:** Single point urban interchange with a flyover ramp for northbound Santa Fe Drive to northbound I-25 (these improvements were common to System Alternatives 1,2, and 3 in the Draft EIS)

- **I-25/Alameda/Santa Fe/Kalamath:** Offset partial urban interchange at I-25 and Alameda Avenue; Santa Fe Drive and Kalamath Street grade separated under the railroad close to their current alignments (these improvements were included in System Alternative 1 in the Draft EIS)
- **US 6:** Ramp improvements at the I-25/US 6 interchange; Closure of the Bryant Street interchange; Diamond interchange at US 6/ Federal Boulevard with slip ramps to Bryant Street and a braided ramp from Federal Boulevard to eastbound US 6; reconstruction of US 6 with collector-distributor roads/auxiliary lanes through the project area (these improvements were included in System Alternative 2 in the Draft EIS)

Following identification of the major elements of the Preferred Alternative, CDOT and FHWA reviewed the elements in light of comments that had been received on the Draft EIS to establish whether any refinements should be made to the elements to address specific concerns. This resulted in a number of refinements being made to the Preferred Alternative, as follows:

Location	Refinement to Preferred Alternative	Reason for Refinement
I-25/Broadway	Retain signal and full movement operation at Broadway and Kentucky Avenue (instead of right-in right-out access)	Improved access to RTD station and park-n-Ride; avoids introduction of buses onto Exposition between Broadway and Lincoln St.
I-25/Alameda	Add auxiliary lane on westbound Alameda Avenue from Kalamath Street to northbound I-25 ramp	Improved operations
I-25/Alameda	Add auxiliary right turn lane on northbound Lipan Street at Alameda Avenue	Improved operations
Santa Fe/ Kalamath/ CML	Alignment refinements to Santa Fe Drive at CML and refinement of the bicycle/pedestrian bridge connection	To enhance constructability and local business access
US 6/Federal	Reposition braided ramp entrance to south side of combined ramp	Improved operations realized through easier weaving; ease of signing; and improved driver expectancy
US 6/Federal	Reconfiguration/reconstruction of Barnum East Park with the acquisition of additional property	To maintain and enhance park function to minimize harm to the park

These refinements have been included in the Preferred Alternative as presented and analyzed in this Final EIS. The Preferred Alternative is described in detail in **Chapter 2 Alternatives**.

The Preferred Alternative balances transportation improvements with social and environmental considerations. CDOT and FHWA have concluded that the Preferred Alternative:

- meets the project purpose and need
- is feasible to build
- does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements
- meets the long-term vision
- meets the needs or objectives of social, economic and environmental concerns
- is the Environmentally Preferable Alternative in accordance with CEQ
- is the Least Environmentally Damaging Practicable Alternative in accordance with Clean Water Act Guidelines [404(b)(1)]
- best avoids and/or minimize harm to Section 4(f) properties
- has general public acceptance

The **relative operational performance** of the system alternatives, including the Preferred Alternative, has been evaluated in detail and can be summarized as follows:

Legend	US 6 / Federal / I-25 Area	Broadway Interchange Area	Alameda Interchange Area	Santa Fe Interchange Area	Overall Freeway Operations	Signalized Intersection Hours of Congestion	Overall Surface Street Operations	Overall Operations
○ = Best ◐ = Moderate ● = Worst								
No Action	●	●	●	◐	◐	●	●	●
System Alternative 1	○	◐	◐	○	○	◐	◐	◐
System Alternative 2	○	○	○	○	○	○	○	○
System Alternative 3	◐	○	○	○	○	◐	○	○
Preferred Alternative	○	○	◐	○	○	◐	○	○

The **relative safety performance** of the system alternatives, including the Preferred Alternative, can be summarized as follows:

Legend	US 6 Freeway and Interchanges	I-25 Mainline Freeway	Broadway Interchange Area	Santa Fe Interchange Area	Alameda Interchange Area	Overall Safety
○ = Best ◐ = Moderate ● = Worst						
No Action	●	●	●	●	●	●
System Alternative 1	◐	○	○	○	○	◐
System Alternative 2	○	○	○	○	○	○
System Alternative 3	○	○	○	○	○	○
Preferred Alternative	○	○	○	○	○	○

Chapter 3 Transportation Analysis provides detail regarding operations and safety.

ENVIRONMENTAL IMPACTS

The environmental impacts of the system alternatives, including the Preferred Alternative are summarized over the next seven pages.

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
Socio-Economics and Community				
No land use impacts.	Displacement of businesses mostly in Areas of Change ¹ as established by the City and County of Denver in <i>Blueprint Denver</i> . No displacement of residences.	Displacement of businesses mostly in Areas of Change ¹ as established by the City and County of Denver in <i>Blueprint Denver</i> . Displacement of residences.	Displacement of businesses mostly in Areas of Change ¹ as established by the City and County of Denver in <i>Blueprint Denver</i> . Displacement of residences.	Displacement of businesses mostly in Areas of Change ¹ as established by the City and County of Denver in <i>Blueprint Denver</i> . Displacement of residences.
No pedestrian and bicycle improvements.	Pedestrian and bicycle improvements.	Pedestrian and bicycle improvements.	Pedestrian and bicycle improvements.	Pedestrian and bicycle improvements.
Continued safety problems and deteriorating facilities.	Improved safety; replacement/ improvement of deteriorating facilities.	Improved safety; replacement/ improvement of deteriorating facilities.	Improved safety; replacement/ improvement of deteriorating facilities.	Improved safety; replacement/ improvement of deteriorating facilities.
Increased cut-through traffic due to congestion on highways.	Reduced cut-through traffic due to reduction in congestion.	Reduced cut-through traffic due to reduction in congestion.	Reduced cut-through traffic due to reduction in congestion.	Reduced cut-through traffic due to reduction in congestion.
Right-of-Way and Displacements				
No right-of-way impacts. No business or residential displacement impacts.	Requires acquisition of 18 acres of right-of-way. No displacement of residences. Full purchase of 32 properties. Partial purchase of 38 properties Access modification to 16 properties. Displacement of 25 businesses	Requires acquisition of 29 acres of right-of-way. Displacement of 9 residences. Full purchase of 60 properties. Partial purchase of 28 properties. Access modification to 13 properties. Displacement of 51 businesses.	Requires acquisition of 21 acres of right-of-way. Displacement of 3 residences. Full purchase of 39 properties. Partial purchase of 36 properties. Access modification to 14 properties. Displacement of 38 businesses.	Requires acquisition of 21 acres of right-of-way Displacement of 3 residences Full purchase of 36 properties Partial purchase of 33 properties Access modification to 17 properties Displacement of 30 businesses.
No relocation of Consolidated Mainline Railroad.	Relocation of Consolidated Main Line railroad.	Relocation of Consolidated Main Line railroad.	Relocation of Consolidated Main Line railroad.	Relocation of Consolidated Main Line railroad.

Environmental Impacts (continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
Parks and Recreation				
Continued poor east-west connection to South Platte Trail at Alameda Avenue.	Improved east-west connection to South Platte Trail at Bayaud Avenue.	Improved east-west connection to South Platte Trail at Bayaud Avenue.	Improved east-west connection to South Platte Trail at Bayaud Avenue.	Improved east-west connection to South Platte Trail at Bayaud Avenue.
No impacts to existing parks.	Requires use of small parts of Barnum (0.01 acre), Barnum North (0.02 acre), and Barnum East (0.16 acre) parks.	Requires use of small parts of Barnum (0.01 acre) and Barnum North (0.05 acre) parks, and a substantial portion of Barnum East (1.54 acres) park.	Requires use of small parts of Barnum (0.02 acre), Barnum North (0.40 acre), and Barnum East (0.14 acre) parks.	Requires use of small parts of Barnum (0.01 acre) and Barnum North (0.05 acre) parks, and a substantial portion of Barnum East (1.54 acre) park.
Aesthetics and Urban Design				
No change in current poor aesthetics and deteriorating visual condition of aging structures.	Improvements to highway landscapes, retaining walls, high-mast lighting, signage, slope and ditch paving, and concrete barriers.	Improvements to highway landscapes, retaining walls, high-mast lighting, signage, slope and ditch paving, and concrete barriers.	Improvements to highway landscapes, retaining walls, high-mast lighting, signage, slope and ditch paving, and concrete barriers.	Improvements to highway landscapes, retaining walls, high-mast lighting, signage, slope and ditch paving, and concrete barriers
Completion of T-REX project and I-25 / Broadway viaduct will improve aesthetics at southern limit of project.	Positive visual effect from movement of northbound I-25 on-ramp from Broadway away from residential area.	Positive visual effect from movement of northbound I-25 on-ramp from Broadway away from residential area. Grade separation of southbound Broadway to southbound I-25 would have a negative visual effect if a flyover structure were used.	Positive visual effect from movement of northbound I-25 on-ramp from Broadway away from residential area.	Positive visual effect from movement of northbound I-25 on-ramp from Broadway away from residential area.
No change at I-25 and Santa Fe Drive.	Increased visibility of northbound I-25 on-ramp from northbound Santa Fe Drive.	Increased visibility of northbound I-25 on-ramp from northbound Santa Fe Drive.	Increased visibility of northbound I-25 on-ramp from northbound Santa Fe Drive.	Increased visibility of northbound I-25 on-ramp from northbound Santa Fe Drive.
No change at Santa Fe Drive/Kalamath Street and the Consolidated Main Line.	Canyon-like effect of grade separation of Santa Fe Drive / Kalamath Street below the Consolidated Main Line.	Canyon-like effect of grade separation of Santa Fe Drive / Kalamath Street below the Consolidated Main Line. Visibility of elevated grade separation structure carrying Santa Fe / Kalamath Street over Alameda Avenue.	Canyon-like effect of grade separation of Santa Fe Drive / Kalamath Street below the Consolidated Main Line. Canyon-like effect of grade separation of Santa Fe Drive / Kalamath Street below Alameda Avenue.	Canyon-like effect of grade separation of Santa Fe Drive / Kalamath Street below the Consolidated Main Line.

Environmental Impacts (continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
Air Quality				
Poorer air quality due to increased traffic congestion.	Improved air quality due to improved traffic flow. Temporary increase in air emissions during construction.	Improved air quality due to improved traffic flow. Temporary increase in air emissions during construction.	Improved air quality due to improved traffic flow. Temporary increase in air emissions during construction.	Improved air quality due to improved traffic flow. Temporary increase in air emissions during construction.
Noise and Vibration				
Approximately 66 residences would exceed noise abatement criteria.	Approximately 66 residences would exceed noise abatement criteria.	Approximately 52 residences would exceed noise abatement criteria.	Approximately 58 residences would exceed noise abatement criteria.	Approximately 55 residences would exceed noise abatement criteria
Noise abatement criteria exceeded in portions of the following parks: - Barnum Park - Barnum Park East - Barnum Park North - Frog Hollow Park - Valverde Park - Habitat Park - Vanderbilt Park - Vanderbilt Park East	Noise abatement criteria exceeded in portions of the following parks: - Barnum Park - Barnum Park East - Barnum Park North - Frog Hollow Park - Valverde Park - Habitat Park - Vanderbilt Park - Vanderbilt Park East	Noise abatement criteria exceeded in portions of the following parks: - Barnum Park - Barnum Park East - Barnum Park North - Frog Hollow Park - Valverde Park - Habitat Park - Vanderbilt Park - Vanderbilt Park East	Noise abatement criteria exceeded in portions of the following parks: - Barnum Park - Barnum Park East - Barnum Park North - Frog Hollow Park - Valverde Park - Habitat Park - Vanderbilt Park - Vanderbilt Park East	Noise abatement criteria exceeded in portions of the following parks: - Barnum Park - Barnum Park North - Frog Hollow Park - Valverde Park - Habitat Park - Vanderbilt Park - Vanderbilt Park East
Noise abatement criteria would be exceeded along portions of the South Platte River Trail.	Noise abatement criteria would be exceeded along portions of the South Platte River Trail.	Noise abatement criteria would be exceeded along portions of the South Platte River Trail.	Noise abatement criteria would be exceeded along portions of the South Platte River Trail.	Noise abatement criteria would be exceeded along portions of the South Platte River Trail.
56 commercial properties would exceed the noise abatement criteria.	54 commercial properties would exceed the noise abatement criteria.	37 commercial properties would exceed the noise abatement criteria.	38 commercial properties would exceed the noise abatement criteria.	42 commercial properties would exceed the noise abatement criteria.
No vibration impacts.	No vibration impacts.	No vibration impacts.	No vibration impacts.	No vibration impacts
Historic and Archaeological Preservation				
No impacts.	No impacts.	Requires replacement of three historic bridges and one historic grade separation structure.	Requires replacement of three historic bridges and one historic grade separation structure.	No impacts.

Environmental Impacts (continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
Paleontology				
No impacts to paleontology.	Denver Formation fossils may be encountered; monitoring required.	Denver Formation fossils may be encountered; monitoring required.	Denver Formation fossils may be encountered; monitoring required.	Denver Formation fossils may be encountered; monitoring required.
Water Resources				
No short-term sediment impacts.	Short-term increase in sediment from construction.	Short-term increase in sediment from construction.	Short-term increase in sediment from construction.	Short-term increase in sediment from construction.
No change in area drainage.	Increase in impervious drainage area.	Increase in impervious drainage area.	Increase in impervious drainage area.	Increase in impervious drainage area.
Continued discharge of stormwater directly to the South Platte River without benefit of water quality ponds or best management practices.	Consolidate stormwater runoff with fewer outfalls to the South Platte River. Improved quality of stormwater discharge due to construction of water quality ponds and best management practices.	Consolidate stormwater runoff with fewer outfalls to the South Platte River. Improved quality of stormwater discharge due to construction of water quality ponds and best management practices.	Consolidate stormwater runoff with fewer outfalls to the South Platte River. Improved quality of stormwater discharge due to construction of water quality ponds and best management practices.	Consolidate stormwater runoff with fewer outfalls to the South Platte River. Improved quality of stormwater discharge due to construction of water quality ponds and best management practices.
Floodplains				
Continued flooding of I-25 under Alameda Avenue.	Upstream floodplain elevation reduced by raising the US 6 bridge over the river. Temporary impacts during replacement of Santa Fe Drive, Alameda Avenue, and US 6 bridges and construction of Bayaud Avenue bicycle/pedestrian bridge. Encroachment into floodplain from southbound I-25 off-ramp to Alameda Avenue and I-25 off-ramp to Santa Fe Drive.	Upstream floodplain elevation reduced by raising the US 6 bridge over the river. Temporary impacts during replacement of Santa Fe Drive, Alameda Avenue, and US 6 bridges and construction of Bayaud Avenue bicycle/pedestrian bridge. Encroachment into floodplain from southbound I-25 off-ramp to Alameda Avenue and I-25 off-ramp to Santa Fe Drive. Grade Separation of Alameda Avenue and Santa Fe Drive/ Kalamath Street would channelize stormwater flow along Alameda.	Upstream floodplain elevation reduced by raising the US 6 bridge over the river. Temporary impacts during replacement of Santa Fe Drive, Alameda Avenue, and US 6 bridges and construction of Bayaud Avenue bicycle/pedestrian bridge. Encroachment into floodplain from southbound I-25 off-ramp to Alameda Avenue and I-25 off-ramp to Santa Fe Drive.	Upstream floodplain elevation reduced by raising the US 6 bridge over the river. Temporary impacts during replacement of Santa Fe Drive, Alameda Avenue, and US 6 bridges and construction of Bayaud Avenue bicycle/pedestrian bridge. Encroachment into floodplain from southbound I-25 off-ramp to Alameda Avenue and I-25 off-ramp to Santa Fe Drive.

Environmental Impacts (continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
Wetlands, Waters of the U.S. and Open Water				
No impacts to existing wetlands.	0.274 acre of jurisdictional and non-jurisdictional wetlands impacted. 0.495 acre of open water impacted.	0.281 acre of jurisdictional and non-jurisdictional wetlands impacted. 0.495 acre of open water impacted.	0.240 acre of jurisdictional and non-jurisdictional wetlands impacted. 0.495 acre of open water impacted.	0.274 acre of jurisdictional and non-jurisdictional wetlands impacted 0.495 acre of open water impacted.
Vegetation and Wildlife				
No impacts to vegetation.	Removal of vegetation during construction. Potential introduction of noxious weeds into areas disturbed by construction.	Removal of vegetation during construction. Potential introduction of noxious weeds into areas disturbed by construction.	Removal of vegetation during construction. Potential introduction of noxious weeds into areas disturbed by construction.	Removal of vegetation during construction. Potential introduction of noxious weeds into areas disturbed by construction.
Continued restriction of wildlife movement along the South Platte River due to low bridges.	Short-term disturbance of wildlife and aquatic habitat during construction. Improvements to US 6 and Santa Fe Drive bridges would move traffic away from wildlife habitat along the South Platte. Improvement of wildlife travel corridor by increased horizontal and vertical clearance of bridges.	Short-term disturbance of wildlife and aquatic habitat during construction. Improvements to US 6 and Santa Fe Drive bridges would move traffic away from wildlife habitat along the South Platte. Improvement of wildlife travel corridor by increased horizontal and vertical clearance of bridges.	Short-term disturbance of wildlife and aquatic habitat during construction. Improvements to US 6 and Santa Fe Drive bridges would move traffic away from wildlife habitat along the South Platte. Improvement of wildlife travel corridor by increased horizontal and vertical clearance of bridges.	Short-term disturbance of wildlife and aquatic habitat during construction. Improvements to US 6 and Santa Fe Drive bridges would move traffic away from wildlife habitat along the South Platte. Improvement of wildlife travel corridor by increased horizontal and vertical clearance of bridges.
Hazardous Waste				
No hazardous waste impacts.	14 properties identified with potential or recognized environmental conditions to be acquired for right-of-way.	19 properties identified with potential or recognized environmental conditions to be acquired for right-of-way.	13 properties identified with potential or recognized environmental conditions to be acquired for right-of-way.	13 properties identified with potential or recognized environmental conditions to be acquired for right-of-way.
	Excavations in the vicinity of Broadway / I-25 interchange would encounter contaminated groundwater and soil.	Excavations in the vicinity of Broadway / I-25 interchange and for southbound Broadway to southbound I-25 tunnel would encounter contaminated soil and groundwater, and could conflict with on-going remediation by others.	Excavations in the vicinity of Broadway / I-25 interchange would encounter contaminated groundwater and soil.	Excavations in the vicinity of Broadway / I-25 interchange would encounter contaminated groundwater and soil.

Environmental Impacts (continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
Hazardous Waste (continued)				
	Excavations in the vicinity of the Santa Fe Drive / I-25 interchange may encounter contaminated groundwater, soil, and fill material.	Excavations in the vicinity of the Santa Fe Drive / I-25 interchange may encounter contaminated groundwater, soil, and fill material.	Excavations in the vicinity of the Santa Fe Drive / I-25 interchange may encounter contaminated groundwater, soil, and fill material.	Excavations in the vicinity of the Santa Fe Drive / I-25 interchange may encounter contaminated groundwater, soil, and fill material.
	Excavations in the vicinity of the Alameda Avenue / I-25 interchange may encounter contaminated groundwater, soil, and fill material.	Excavations in the vicinity of the Alameda Avenue / I-25 interchange may encounter contaminated groundwater, soil, and fill material.	Excavations in the vicinity of the Alameda Avenue / I-25 interchange may encounter contaminated groundwater, soil, and fill material.	Excavations in the vicinity of the Alameda Avenue / I-25 interchange may encounter contaminated groundwater, soil, and fill material.
	Relocation of Consolidated Main Line along I-25 parallel to existing track may encounter contaminated groundwater, soil, and fill material.	Relocation of Consolidated Main Line along I-25 parallel to existing track may encounter contaminated groundwater, soil, and fill material.	Relocation of Consolidated Main Line along I-25 parallel to existing track may encounter contaminated groundwater, soil, and fill material.	Relocation of Consolidated Main Line along I-25 parallel to existing track may encounter contaminated groundwater, soil, and fill material.
	Excavations in the vicinity of the I-25 / US 6 interchange may encounter contaminated groundwater, soil, fill material, and methane. Excavations along US 6 may encounter contaminated soil and groundwater.	Excavations in the vicinity of the I-25 / US 6 interchange may encounter contaminated groundwater, soil, fill material, and methane. Excavations along US 6 may encounter contaminated soil and groundwater.	Excavations in the vicinity of the I-25 / US 6 interchange may encounter contaminated groundwater, soil, fill material, and methane. Excavations along US 6 may encounter contaminated soil and groundwater.	Excavations in the vicinity of the I-25 / US 6 interchange may encounter contaminated groundwater, soil, fill material, and methane. Excavations along US 6 may encounter contaminated soil and groundwater.
	Santa Fe Drive, Alameda Avenue, and US 6 bridges may be coated with lead-based paint.	Santa Fe Drive, Alameda Avenue, US 6, and railroad bridges may be coated with lead-based paint.	Santa Fe Drive, Alameda Avenue, US 6, and railroad bridges may be coated with lead-based paint.	Santa Fe Drive, Alameda Avenue, US 6, and railroad bridges may be coated with lead-based paint.
Soils and Geology				
No impacts to soils.	Expansive soils and unsuitable fill material may be encountered.	Expansive soils and unsuitable fill material may be encountered.	Expansive soils and unsuitable fill material may be encountered.	Expansive soils and unsuitable fill material may be encountered.

Environmental Impacts (continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
Energy				
Increase in fuel use due to inefficient fuel use from increased traffic congestion.	Increase in energy use due to construction. Decrease in fuel use due to decreased traffic congestion.	Increase in energy use due to construction. Decrease in fuel use due to decreased traffic congestion.	Increase in energy use due to construction. Decrease in fuel use due to decreased traffic congestion.	Increase in energy use due to construction. Decrease in fuel use due to decreased traffic congestion.
Construction				
No short-term construction-related impacts.	Short-term fugitive dust emissions during construction. Short-term construction noise. Short-term increase in sediment from construction. Short-term traffic delays. Short-term visual impacts. Short-term utility impacts.	Short-term fugitive dust emissions during construction. Short-term construction noise. Short-term increase in sediment from construction. Short-term traffic delays. Short-term visual impacts. Short-term utility impacts.	Short-term fugitive dust emissions during construction. Short-term construction noise. Short-term increase in sediment from construction. Short-term traffic delays. Short-term visual impacts. Short-term utility impacts.	Short-term fugitive dust emissions during construction. Short-term construction noise. Short-term increase in sediment from construction. Short-term traffic delays. Short-term visual impacts. Short-term utility impacts.

Note: ¹ Areas of Change have been identified by the City and County of Denver as areas in which land use change is either underway or desirable. These are primarily older industrial districts, major arterial corridors, and areas adjacent to existing or planned transit facilities.

Detail regarding environmental resources and consequences is provided in **Chapter 4** *Environmental Consequences and Mitigation Measures*.



MITIGATION MEASURES

Mitigation measures have been identified to address adverse environmental impacts of the Preferred Alternative and can be summarized as follows:

<i>Socio-Economics and Community</i>
<ul style="list-style-type: none"> • Continue information and discussions with local community during planning and implementation to minimize disruptions • Continue consideration of environmental justice through final design and implementation
<i>Right-of-Way and Displacements</i>
<ul style="list-style-type: none"> • Conform to the requirements set forth in the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970 (Public Law 91-646) and the Uniform Relocation Act Amendments of 1987 (Public Law 100-17), each of which contains specific requirements that govern the manner in which a government entity acquires property for public use • Prepare a relocation analysis and provide relocation advisory service
<i>Parks and Recreation</i>
<ul style="list-style-type: none"> • Prepare final design to acquire the least possible amount of park land while meeting operational and safety requirements • Redesign/reconstruct Barnum East Park to provide equivalent or upgraded facilities
<i>Aesthetics and Urban Design</i>
<ul style="list-style-type: none"> • Use conceptual “kit of parts” in design of aesthetic elements and treatments • Continue coordination with other agencies through final design and implementation
<i>Air Quality</i>
<ul style="list-style-type: none"> • Maintain construction equipment in good working order • Implement a dust control plan • Ensure no excessive idling of inactive or unnecessary equipment or vehicles • Use higher-grade fuel in construction equipment • Locate stationary equipment as far from sensitive receivers as possible
<i>Noise and Vibration</i>
<ul style="list-style-type: none"> • Provide noise barrier along I-25 in the vicinity of 800 block of S. Lincoln St. and a portion of the South Platte River Trail • No vibration mitigation measures are necessary • During preparation of final design, consider elements to reduce “nuisance noise” experienced near the highway
<i>Historic and Archaeological Preservation</i>
<ul style="list-style-type: none"> • Mitigation not required for the Preferred Alternative
<i>Paleontology</i>
<ul style="list-style-type: none"> • Monitor, as feasible, areas where Denver Formation rocks may be disturbed. Have the CDOT paleontologist examine project design plans as each is finalized to determine the extent of impact to the Denver Formation, and the scope, if any, of monitoring work required

MITIGATION MEASURES (continued)

Water Quality and Water Resources
<ul style="list-style-type: none"> • Use construction BMPs to reduce temporary impacts • On-site project area runoff will be controlled through water quality ponds or other BMPs to settle and improve water quality runoff releasing to the South Platte River • Reduction of the overall number of outfalls into the South Platte River and installation of energy dissipaters, such as riprap, at outfalls to reduce erosion potential • Use of pump stations to remove runoff at underpasses on grades separations and water quality ponds to settle sediment and improve water quality releasing into the South Platte River • Application of the BMPs would be further defined during the final engineering phase of this project. Substantial conditions and designs would be developed during final design, as appropriate, and in accordance with CDOT's environmental mission statement and environmental policy
Floodplains
<ul style="list-style-type: none"> • Construct bridges on piers or outside of floodplain to minimize impacts • Restore bridge construction areas • Install storm sewer improvements to reduce flooding on I-25 under Alameda Avenue • Provide additional volume in areas of floodplain encroachment for overall "no rise" in floodplain
Wetlands, Waters of the U.S., and Open Water
<ul style="list-style-type: none"> • Mitigate jurisdictional and non-jurisdictional wetlands on a 1:1 basis • Minimize culvert lengths and use construction BMPs to reduce impacts • Use construction BMPs to reduce temporary impacts • Use water quality BMPs to minimize indirect impacts from non-point source pollution
Vegetation and Wildlife
<ul style="list-style-type: none"> • Revegetate construction areas using CDOT-approved native seed mix • If construction occurs outside of appropriate seeding windows, slopes will be temporarily protected from erosion using mulch and mulch tackifier • Replace trees greater than 2 inches in diameter on a 1:1 basis • Existing shrubs removed during construction will be replaced with native species to their pre-construction aerial coverage • Impacted landscape areas (irrigated or otherwise) shall be enhanced and incorporated into final design to ensure the existing landscape does not become fragmented • Clean construction vehicles before entering construction site to control noxious weed introduction • Prepare and implement an Integrated Weed Management Plan to target noxious weed populations • Conduct habitat disturbing activities, such as tree removal, grading, scraping, grubbing, etc., during the non-breeding season unless the area has been verified by a qualified biologist that no active nests are present
Hazardous Waste
<ul style="list-style-type: none"> • Conduct individual, site-specific initial site assessments of properties before acquiring right-of-way • Conduct a preliminary site investigation before final design to identify soil and groundwater contamination that may affect feasibility evaluation and final design • Prepare a materials handling plan and a health and safety plan, which includes asbestos-containing material, as required by Section 250.03 of the CDOT Standard Specifications for Road and Bridge Construction • Conduct an asbestos and miscellaneous material survey prior to demolition of any structures • Coordinate with OPS and CDPHE, as necessary, for properties being acquired • Perform a heavy metals based paint survey of bridges in the project area

MITIGATION MEASURES (continued)

Soils and Geology

- Consider potential for expansive soils and unsuitable fill during final design

Energy

- Where appropriate, CDOT will incorporate energy-saving features into the project design in accordance with CDOT's environmental mission statement and environmental policy.

Construction

Identify appropriate construction mitigation during final design and construction planning, with consideration of the following possible mitigation measures identified by the Citizens Working Group:

- Use construction BMPs
- Erect temporary noise walls / screens; make vouchers for hotels available to disturbed residents
- Schedule construction during less noise-sensitive times; create noise hotline
- Send information to affected public before implementing construction activities
- Use noise blankets on equipment and quiet-use generators
- Combine noisy operations and schedule to occur during the same time period
- Use alternative construction methods, such as sonic or vibratory pile driving, in sensitive areas whenever possible
- Use enhanced signing; develop alternate access enhancements
- Use advertising / implement public relations activities
- Do not close multiple interchanges concurrently
- Limit detours to major arterial streets – ensure no local street detours
- Schedule construction during periods of least traffic
- Provide geometric enhancements including wider lanes and better visibility
- Limit construction vehicles to major arterials
- Enforce speed restrictions; provide adequate space for enforcement on I-25
- Implement use of Courtesy Patrol
- Phase construction to limit traffic in neighborhoods
- Coordinate work activities to avoid coinciding with local sporting / entertainment events
- Advance traffic diversion (470 Beltway, Colfax as alternate to 6th Avenue)
- Use intelligent transportation systems / variable message signs to advise and redirect traffic
- Work with RTD to offer enhanced operations during peak construction
- Develop traffic management plans; maintain access to local businesses and residents
- Coordinate with emergency service providers to minimize delay and ensure access to properties
- Use wetting / chemical inhibitors for dust
- Implement procedures to ensure prompt and safe disposal of waste products
- Develop stormwater management plan
- Cover trucks hauling soil and other materials
- Stabilize and cover stockpile areas
- Minimize off-site tracking of mud and debris by washing construction equipment in contained areas and by temporary access stabilization
- Avoid impacts to wetlands or other areas of important habitat value in addition to those impacted by the project itself
- Control and prevent concrete washout and construction wastewater by including proper specifications in project designs, adhering to those specifications, and reviewing design specifications to ensure adequacy in preventing water pollution by concrete washout
- Store equipment and materials in designated areas only
- Remove any unused detour pavement markings or signs

BMP – best management practices

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Detail regarding mitigation measures is provided in **Chapter 4 Environmental Consequences and Mitigation Measures**.

PHASED PROJECT IMPLEMENTATION

Total funding for the proposed action has not been identified at this time. Budget placeholders are included in the 2030 Regional Transportation Plan. These budgets fall short of the estimated costs for the system alternatives as reflected in this document. As a result, CDOT and FHWA are planning for phased implementation of the Preferred Alternative. Phased implementation was discussed with the public and agencies during preparation of the Draft EIS and at the Draft EIS public hearing.

With the ROD to be issued after this Final EIS has been made available and public comment received, FHWA and CDOT plan to select an initial phase (Phase 1) for implementation. The identification of a Preferred Alternative for the entire project in this Final EIS is consistent with the FHWA's objective of analyzing and selecting transportation solutions on a broad enough scale to provide meaningful analysis and avoid segmentation. The selection of an initial phase for implementation is consistent with FHWA requirements to have funding for projects identified before final decisions are made (this is known as "fiscal constraint" for transportation projects). It is the intent of CDOT and FHWA to work toward implementation of the Preferred Alternative in its entirety through this phased approach, as additional funds become available.

In cases where a project is implemented in more than one phase, care must be taken to ensure that the transportation system operates acceptably at the conclusion of each phase. This is referred to as "independent utility" – the ability of each phase to operate on its own. Additionally, it must be demonstrated that air quality conformity will not be jeopardized. In addition, any mitigation measures needed in response to project impacts must be implemented with the phase in which the impacts occur, rather than deferred to a later phase.

Phased implementation is typically detailed during final design. However, the requirements of fiscal constraint must be satisfied for FHWA to approve a ROD. Because the fiscally-constrained Regional Transportation Plan (RTP) does not contain the entire Preferred Alternative for the Valley Highway project, CDOT and FHWA believe that it is appropriate to identify project phasing within the NEPA process. This will allow consideration of phasing at an earlier time than for many projects, with the goal of better understanding of the impacts of phasing as well as increased opportunity for public involvement.

The fiscally-constrained element of the 2030 RTP establishes reasonably expected funding for the project corridor through the year 2030 as follows:

- I-25: Broadway to Alameda - \$84.0 million
- US 6: Bryant – \$15.0 million
- US 6: Federal - \$8.1 million

This indicates that \$107.1 million (in 2005 dollars) can reasonably be expected for the project corridor through the year 2030, including \$84 million for I-25 and \$23.1 million for US 6. This compares with estimated costs for the entire Preferred Alternative of \$294 million.

CDOT and FHWA have identified six project phases for implementation of the entire Preferred Alternative, as follows:

Project Phases and Priorities

Phase	Phase Package Description Elements Included	Sequencing Restrictions	Probable Cost	Comments
1 Most critical on I-25	I-25 / Santa Fe Interchange with Lane Continuity through Alameda <ul style="list-style-type: none"> Reconstruction of I-25/ Santa Fe Interchange Construction of flyover ramp from NB Santa Fe to NB I-25 Replacement of Alameda bridge over I-25 Reconstruction of I-25 under Alameda with associated sump and drainage improvements 	None	\$81M <u>\$ 3M ROW</u> \$84M	<p>NB and SB structures at Santa Fe both rated as structurally deficient with sufficiency rating of 20.2 and 22.8, respectively. A sufficiency rating of 50 or greater is considered acceptable.</p> <p>Continuous auxiliary lanes on I-25 (US 85 lane balance) will not be fully addressed until Mainline Widening is completed.</p>
1 Most critical on US6	US 6 / Federal Bridge and Ramps, excluding Braided Ramp and West Side US 6 / Federal Ramps <ul style="list-style-type: none"> Closure of Bryant Street Interchange to US 6 Replacement of Federal Blvd. bridge over US 6 Reconfiguration/reconstruction of ramps Reconfiguration of Barnum East Park 	None	\$20M <u>\$ 3M ROW</u> \$23M	
2	I-25/ Alameda Interchange and Alameda Bridge over South Platte <ul style="list-style-type: none"> Alameda widening from Lipan St. to Santa Fe Drive Replacement of Alameda bridge over the S. Platte River Construction of Lipan St. and closure of Platte River Drive north of Alameda Widening of Lipan south of Alameda Replacement of Alameda ramps to I-25 	Must follow or be concurrent with I-25 / Santa Fe Interchange	\$18M <u>\$ 5M ROW</u> \$23M	
3	I-25 Mainline Widening From Alameda to US 6 <ul style="list-style-type: none"> Relocation of CML railroad to allow widening of I-25 Reconstruction of I-25 north of Alameda to full section with shoulders 	Must follow or be concurrent with I-25/ Alameda Interchange	\$28M <u>\$ 8M ROW</u> \$36M	Railroad relocation sequencing and logistics requires further detailed evaluation.
4	Santa Fe/ Kalamath CML Grade Separation <ul style="list-style-type: none"> Construction of road underpasses taking Santa Fe and Kalamath under the CML Construction of pedestrian/ bicycle bridge over Santa Fe, Kalamath, CML, I-25 and South Platte River along Bayaud alignment 	Must follow I-25/ Alameda Interchange . Must follow or be concurrent with I-25 Mainline widening from Alameda to US 6	\$22M \$7M Ped.Br. <u>\$ 7M ROW</u> \$36M	
5	US 6 from Federal to I-25 with Braided Ramp <ul style="list-style-type: none"> Reconstruction of US 6 from Federal to I-25 Replacement of US 6 bridge over S. Platte River Construction of braided ramp from Federal Blvd. to EB US6 Construction of EB US 6 to Federal off ramp Construction of Federal to WB US 6 on ramp 	Must follow US 6 / Federal Bridge and Ramps excl. Braided Ramp	\$75M <u>\$ 2M ROW</u> \$77M	
6	I-25/ Broadway Interchange <ul style="list-style-type: none"> Reconfiguration/reconstruction of I-25/Broadway interchange 	None	\$13M <u>\$ 2M ROW</u> \$15M	



Phase 1 was selected to provide improvements aimed at addressing the most critical needs in the I-25 and US 6 corridors. Specifically:

- On I-25, Phase 1 provides for the replacement of structurally-deficient structures at I-25 and Santa Fe Drive
- Also on I-25, Phase 1 provides lane continuity with four through lanes on I-25 to match the sections to the north and south
- On US 6, Phase 1 provides for closure of the Bryant Street interchange with standardization of the Federal interchange. These actions will enhance safety through this high accident area.

It must be noted that these are current priorities. Priorities may change, especially with regard to how phases may fit with future funding amounts. In addition, actions to improve safety (for example, replacement of guard rails, barriers, or repairs on bridges) could occur separately from this effort and will be funded at that time by safety funds and/or other funding sources.

Following their issuance of this Final EIS, CDOT and FHWA will:

- Publish notice of availability of the Final EIS in the Federal Register
- Provide copies of the Final EIS for public review at convenient locations
- Hold a public hearing
- Receive public comments at the public hearing and through written submissions
- Review public comments, prepare responses, and refine the Preferred Alternative and/or project phases in response to comments, as appropriate
- Execute a ROD selecting a fiscally-constrained Phase 1 for implementation

Following execution of a ROD, CDOT and FHWA will proceed with final design and implementation of Phase 1.

Subsequent project phases will be implemented as additional funding become available, and as CDOT and FHWA work toward implementation of the entire Preferred Alternative. For each subsequent phase, a ROD will be issued detailing the phase to be implemented. CDOT and FHWA will review the information provided in this Final EIS and the initial ROD in preparing each subsequent ROD.

Additional detail is provided in **Chapter 7 Phased Project Implementation**.

AREAS OF CONTROVERSY

Construction impacts and traffic noise were two topics of concern to a number of members of the public. This was discussed in the Draft EIS. Mitigation measures have been identified, and future coordination will be needed during design and implementation to address these concerns.

UNRESOLVED ISSUES

CDOT and FHWA are not aware of any major issues that are unresolved at this time.

OTHER FEDERAL ACTIONS REQUIRED

An individual Clean Water Act Section 404 permit may also be required from the U.S. Army Corps of Engineers, depending on the total area of wetlands and other waters of the U.S. that would be impacted by the Preferred Alternative. A Clean Water Act Section 401 water quality certification will also be required if an individual Section 404 permit is required.