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4.21 Summary of Impacts, Mitigation Measures, and Monitoring Commitments

This section summarizes the social and environmental consequences that would result from each of the system alternatives, which include System Alternatives 1, 2, 3, the Preferred Alternative and the No Action Alternative, based on the detailed discussion presented in earlier sections of this chapter. Measures to mitigate these consequences and possible environmental monitoring are also summarized.

This section focuses on impacts to and mitigation measures for the social and environmental resources discussed in **Chapter 4 Affected Environment, Environmental Consequences, and Mitigation Measures**. Transportation improvements and impacts are presented in **Chapter 3 Transportation Analysis**.

4.21.1 Summary of Direct and Indirect Impacts

Table 4.21-1 summarizes the direct and indirect impacts for the system alternatives under consideration and the No Action Alternative.

Table 4.21-1 Summary of Direct and Indirect Impacts

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 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 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 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 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

Table 4.21-1 Summary of Direct and Indirect Impacts (Continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
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.
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.

Table 4.21-1 Summary of Direct and Indirect Impacts (Continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
Aesthetics and Urban Design (continued)				
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.
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 East - Barnum Park North - Frog Hollow Park - Valverde Park - Habitat Park - Vanderbilt Park - Vanderbilt Park East

Table 4.21-1 Summary of Direct and Indirect Impacts (Continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
Noise and Vibration (continued)				
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.
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.

Table 4.21-1 Summary of Direct and Indirect Impacts (Continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
Floodplains				
<p>Continued flooding of I-25 under Alameda Avenue.</p>	<p>Upstream floodplain elevation reduced by raising the US 6 bridge over the river.</p> <p>Temporary impacts during replacement of Santa Fe Drive, Alameda Avenue, and US 6 bridges and construction of Bayaud Avenue bicycle/pedestrian bridge.</p> <p>Encroachment into floodplain from southbound I-25 off-ramp to Alameda Avenue and I-25 off-ramp to Santa Fe Drive.</p>	<p>Upstream floodplain elevation reduced by raising the US 6 bridge over the river.</p> <p>Temporary impacts during replacement of Santa Fe Drive, Alameda Avenue, and US 6 bridges and construction of Bayaud Avenue bicycle/pedestrian bridge.</p> <p>Encroachment into floodplain from southbound I-25 off-ramp to Alameda Avenue and I-25 off-ramp to Santa Fe Drive.</p> <p>Grade Separation of Alameda Avenue and Santa Fe Drive/ Kalamath Street would channelize stormwater flow along Alameda.</p>	<p>Upstream floodplain elevation reduced by raising the US 6 bridge over the river.</p> <p>Temporary impacts during replacement of Santa Fe Drive, Alameda Avenue, and US 6 bridges and construction of Bayaud Avenue bicycle/pedestrian bridge.</p> <p>Encroachment into floodplain from southbound I-25 off-ramp to Alameda Avenue and I-25 off-ramp to Santa Fe Drive.</p>	<p>Upstream floodplain elevation reduced by raising the US 6 bridge over the river.</p> <p>Temporary impacts during replacement of Santa Fe Drive, Alameda Avenue, and US 6 bridges and construction of Bayaud Avenue bicycle/pedestrian bridge.</p> <p>Encroachment into floodplain from southbound I-25 off-ramp to Alameda Avenue and I-25 off-ramp to Santa Fe Drive.</p>
Wetlands, Waters of the U.S. and Open Water				
<p>No impacts to existing wetlands.</p>	<p>0.274 acre of jurisdictional and non-jurisdictional wetlands impacted.</p> <p>0.495 acre of open water impacted.</p>	<p>0.281 acre of jurisdictional and non-jurisdictional wetlands impacted.</p> <p>0.495 acre of open water impacted.</p>	<p>0.240 acre of jurisdictional and non-jurisdictional wetlands impacted.</p> <p>0.495 acre of open water impacted.</p>	<p>0.274 acre of jurisdictional and non-jurisdictional wetlands impacted</p> <p>0.495 acre of open water impacted.</p>

Table 4.21-1 Summary of Direct and Indirect Impacts (Continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
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 would encounter contaminated groundwater and soil. Excavation 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.

Table 4.21-1 Summary of Direct and Indirect 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.

Table 4.21-1 Summary of Direct and Indirect Impacts (Continued)

No Action Alternative	System Alternative 1	System Alternative 2	System Alternative 3	Preferred Alternative
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
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.

4.21.2 Summary of Mitigation Measures and Monitoring

Table 4.21-2 summarizes the mitigation measures and monitoring for the Valley Highway EIS System Alternatives 1, 2, 3, and the Preferred Alternative under consideration.

Table 4.21-2 Summary of Mitigation Measures and Monitoring

Socio-Economics and Community	<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
Right-of-Way and Displacements	<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
Parks and Recreation	<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 (System Alternative 2 and Preferred Alternative)
Aesthetics and Urban Design	<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
Air Quality	<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
Noise and Vibration	<ul style="list-style-type: none"> • Provide noise barrier along I-25 in the vicinity of 800 block of S. Lincoln St. (System Alternatives 1, 3, and the Preferred Alternative), 2900 block of W. Short Place (System Alternative 1) and a portion of the South Platte River Trail (System Alternatives 1, 2, 3, and the Preferred Alternative) • Evaluate 3300 block of W. 5th Avenue for possible noise barrier (System Alternatives 1, 2, 3; and the Preferred Alternative dependent on acquisition or easement for strip of land needed for barrier) • No vibration mitigation measures are necessary • During preparation of final design, consider elements to reduce “nuisance noise” experienced near the highway
Historic and Archaeological Preservation	<ul style="list-style-type: none"> • Determine mitigation of adverse effects to any National Register of Historic Places -eligible or -listed resources through consultation with CDOT cultural resource staff, the State Historic Preservation Office, and if necessary, the Advisory Council on Historic Preservation. Mitigation measures may include preparation of graphic and narrative documentation to Historic American Buildings Survey / Historic American Engineering Record standards or by the development of public interpretation • Mitigation not required for System Alternative 1 or the Preferred Alternative
Paleontology	<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
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

Table 4.21-2 Summary of Mitigation Measures and Monitoring (Continued)

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 • Perform a remedial investigation/feasibility study in the area of the tunnel (System Alternative 2) • Prepare a materials handling plan and a health and safety plan, which includes asbestos-containing material, as required by Section 250.03 of the <i>CDOT Standard Specifications for Road and Bridge Construction</i> • 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
Soils and Geology	<ul style="list-style-type: none"> • Consider potential for expansive soils and unsuitable fill during final design
Energy	<ul style="list-style-type: none"> • Consider energy conservation measures during final design

Table 4.21-2 Summary of Mitigation Measures and Monitoring (Continued)

<p>Construction</p>	<p>Identify appropriate construction mitigation during final design and construction planning, with consideration of the following possible mitigation measures identified by the Citizens Working Group:</p> <ul style="list-style-type: none"> • Use construction BMPs • Erect temporary noise walls / screens; make available vouchers for hotels • 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 or signs
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