



Impact	Mitigation Measure	Status/Resolution
Transportation Impacts and Mitigation		
Delay at the Federal Boulevard and 80th Avenue and 74th Avenue intersections	West 80th Avenue at Federal Boulevard: • A southbound lane from West 80th Avenue to the westbound US 36 on-ramp will be added. West 74th Avenue at Federal Boulevard: • The eastbound approach to left-turn, left-/through-, and right-turn lanes will be re-striped. • Signal phasing will be adjusted.	Not within limits of Phase 1 project
Delay at the Wadsworth Parkway and Midway Boulevard intersection	Wadsworth Parkway at Midway Boulevard: • The westbound approach to two left-turn lanes, two through-lanes, and a separate right-turn lane will be re-striped. • Signal phasing will be adjusted.	Not within limits of Phase 1 project
Delay at Dillon Road and McCaslin Boulevard	• Dillon Road east of McCaslin Boulevard will be widened to add one westbound lane. This lane will not extend through the McCaslin Boulevard intersection.	Not within limits of Phase 1 project
Closure of local access to West 88th Place	• Directional signage and traveler information will be provided to guide users to Yates Street and West 88th Avenue by alternate routes.	Not within limits of Phase 1 project
Transit Priority	• Analysis of, and if appropriate, implementation of signal priority at key intersections. The intent is to move buses quickly through intersections. The analysis that will be done will include current and projected delay at key intersections, capital and operating costs, and effects to other signals in the vicinity.	Some improvements at ramps and ramp intersections are being done as a part of RTD bus queue jump project. RTD is in the process of completing a transit signal priority study along the corridor (anticipated completion date of Spring 2012).
Land Use		
Compatibility and acquisitions	• Continued coordination with local jurisdictions will occur to ensure compatibility with land use plans and to address any incompatibilities. • Property acquisitions will be reimbursed at fair market value, and if possible and desired, comparable land will be provided to compensate for open space acquisition.	Phase 1 ROW definition has been coordinated with local entities. Land swaps are being pursued in some cases to compensate for open space acquisition
Economic Considerations		
Loss of customers to businesses in activity centers due to access restrictions during construction	• The contractor will be required to maintain access to businesses during construction. • The local jurisdiction or project sponsor will provide additional signage to enable customers to access businesses during construction.	Applicable requirements included in D/B RFP in Book 2, Sec 4.1, 4.6.1, and 16.1.1.6 and Standard CDOT Specs. Minimal business impacts in Phase 1.
Loss of property tax	• Design will be refined at preliminary and final engineering to reduce ROW requirements. • The contractor will consider a variety of ways of structuring ROW/acquisition needs, including securing easements and license agreements.	Preliminary design in RFP minimized ROW and used easements where possible.
Modifications to access	• A cooperative process will be employed during design to avoid or minimize access changes. • Directional signage and traveler information, where access is substantially changed, will be provided.	Applicable requirements included in D/B RFP Book 2, 13.2.8 or Standard CDOT Specs. Minimal access impacts in Phase 1.
Modifications to parking	• A cooperative process will be employed during design to avoid or minimize disruption or displacement of business parking.	Preliminary design in RFP minimized impacts to business parking.



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Right-of-way and Relocations		
Acquisition of private and public property, and in some circumstances, displacement of occupants	Acquisition — For any person(s) whose real property interests may be impacted by this project, the acquisition of those property interests will comply fully with the Uniform Act. The Uniform Act ...	ROW Acquisition is complying with UA
	Relocation — In certain situations, it may also be necessary to acquire structures/improvements that are located within a proposed acquisition parcel. In those instances where the structures/improvements are occupied, it becomes necessary to “relocate” those individuals from the subject property (residential or business) to a replacement site. The Uniform Act provides... Benefits under the Uniform Act, to which each eligible owner or tenant may be entitled, will be determined on an individual basis and explained to them in detail by an assigned ROW specialist.	ROW Acquisition and relocations are complying with UA
NOAA Geodetic Control Monuments	• CDOT will provide the required 90-day notice for Geodetic Control Monuments impacted by this project.	CDOT will provide notice if needed once Contractor design and impacts are known.
Social Impacts and Community Facilities		
Reduced mobility in neighborhoods around transit stations	• A CMP will be developed during final engineering, in conjunction with local jurisdictions, school districts, emergency services, and affected parties.	Transit station work not within scope of Phase 1 project
Environmental Justice		
Residential and commercial private property acquisitions	• Refer to Section 4.4, Right-of-Way and Relocations, of the <i>US 36 Corridor FEIS</i> . • All acquisitions and relocations will fully comply with the Uniform Act (42 USC 4601 et seq. and 49 CFR 24 et seq.) and other statutes. • Relocation benefits will be provided to all eligible persons regardless of race, color, religion, sex, or national origin. Benefits which eligible owners or tenants may be entitled to will be determined on an individual basis and explained in detail by an assigned ROW specialist. • Design in engineering phases will be refined to reduce ROW requirements. • A variety of ways to structure ROW acquisition needs will be considered, including easements and license agreements. • All residential units that are being displaced will be considered for an RTD program to provide ECO passes for a year.	ROW Acquisition and relocations are complying with UA. Preliminary design in RFP minimized ROW and used easements where possible.
Loss of parkland and open space	• CDOT and RTD will coordinate with local jurisdictions to evaluate appropriate replacements or other acceptable mitigation measures. • Compensation for parkland acquisition will be negotiated with the public land’s representatives. At a minimum, compensation shall include comparable replacement of parkland and facilities within approximately 2 miles of the affected parkland or adequate compensation, based on fair market appraisals. • All acquisition mitigation measures must conform to the Uniform Act.	Phase 1 ROW definition has been coordinated with local entities. Land swaps are being pursued in some cases to compensate for open space acquisition.
Visual impacts related to larger interchanges, wider pavements, sound walls, and retaining walls	• Design meetings will be held with the community during final design to determine the most context-sensitive solutions.	D/B RFP Book 2, 15.2.2.5 requires contractor to develop aesthetic treatment plan consistent with other corridor elements and CDOT Urban Design Manual.



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Noise	<ul style="list-style-type: none"> Existing and new mitigation sound walls will be reconstructed early in the construction schedule, where possible, to mitigate for construction noise. Local noise ordinances will be followed or a noise variance will be obtained. 	D/B RFP Book 2, 5.1.2.3 states preference to install permanent noise barriers at the beginning phases of construction to minimize construction noise.
General construction impacts to the community	<ul style="list-style-type: none"> Refer to the construction mitigation outlined in Section 4.22, Construction-Related Impacts, of the <i>US 36 Corridor FEIS</i>. During the construction contracting process, goals will be established for the use of small and disadvantaged businesses. Access to local businesses will be maintained during construction, and signs will be used to enable customers to access businesses during construction. CDOT and RTD will coordinate to minimize impacts to local and regional bus routes. 	DBE Goals included in RFP ITP. CDOT and RTD have coordinated on RFP and with proposers to minimize impacts to local and regional bus routes
Financial equity of managed lanes on low-income populations	<ul style="list-style-type: none"> Tolling costs will be set to give consideration to not exclude low-income drivers from participating. Transponders are free, but an account must be set up with a reserve balance to pay for each use. In addition, technology changes, such as License Plate Tolling being implemented on E-470, would provide options for low-income drivers that would not require setting up an account. Details of the tolling program are included in Chapter 5, Financial Analysis, of the <i>US 36 Corridor FEIS</i>. During design and after implementation of the project, CDOT and RTD will conduct meetings with low-income and minority communities to assess the operations and equity of the tolling program and managed lanes. 	License plate tolling will be possible, but tolls are lower for those with a free transponder. Will include tolling program information and discussions as a part of public meetings conducted by Phase 1 Contractor and CDOT.
Historic and Archaeological Preservation		
Removal or impact to a resource causing an adverse effect	<ul style="list-style-type: none"> Avoidance and minimization will be addressed first. A Programmatic Agreement with all parties has been established for mitigation. Office of Archaeology and Historic Preservation Level I Documentation will be prepared. Relocation of structure, if possible, will take place. 	Impacts to historic resources minimized with Phase 1 project, documented in 2011 re-evaluation
Impact to a portion of a parcel	<ul style="list-style-type: none"> Avoidance and minimization will be addressed first. A Programmatic Agreement with all parties has been established for mitigation. 	Impacts to historic resources minimized with Phase 1 project, documented in 2011 re-evaluation.
Impact to a linear feature	<ul style="list-style-type: none"> Avoidance and minimization will be addressed first. Data recovery and excavation will be provided. Office of Archaeology and Historic Preservation Re-Evaluation Form #1405 will be prepared to record changes to the resource. Construction monitoring will be provided, as necessary, in areas with archaeological resources. 	Impacts to historic resources minimized with Phase 1 project, documented in 2011 re-evaluation
Impact to archaeological resource	<ul style="list-style-type: none"> Avoidance and minimization will be addressed first. Data recovery and excavation will be provided. Construction monitoring will be provided, as necessary, in areas with archaeological resources. 	Construction monitoring will be performed by CDOT.
Direct effects to some or all sites: dust and debris	<ul style="list-style-type: none"> Precautionary measures, such as temporary shields to reduce the impact of dust, will be implemented. Contractor training to prevent flying debris effects will take place. 	D/B RFP Book 2, 5.1.3 requires contractor to comply with historic impact requirements of the ROD.



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Indirect effects to some or all sites: visual, auditory, and decreased access	<ul style="list-style-type: none"> Planned construction staging will be provided to avoid these effects, wherever possible. Signage and well-marked alternate routes for access will be provided. 	D/B RFP Book 2, 5.1.3 requires contractor to comply with historic impact requirements of the ROD.
Indirect impact to remaining sites: visual and noise	<ul style="list-style-type: none"> Case-by-case consultation will be performed. Sound walls or visual barriers will be constructed. 	D/B RFP Book 2, 5.1.3 requires contractor to comply with historic impact requirements of the ROD.
Paleontology		
Disturbance of paleontological resources during construction	<ul style="list-style-type: none"> Construction monitoring by a qualified paleontologist may be necessary for excavation into potentially fossiliferous Laramie, Arapahoe, and Denver Formation outcrops. A final profile check by a specialist will be conducted in final design to determine if and when a paleontological monitor may be required. 	CDOT will determine need during D/B final design and implement required monitoring
Parks and Open Space		
Trail crossings	<ul style="list-style-type: none"> Adequate trail detours (if the trail requires closure) and advanced notice and signing prior to beginning construction will be provided. 	Applicable requirements included in D/B RFP Book 2, 5.1.5. Minimal trail impacts in Phase 1.
Trail relocations	<ul style="list-style-type: none"> Trails will be returned to their existing or comparable state following construction. 	Applicable requirements included in D/B RFP Book 2, 5.1.5.
Temporary occupancy of parkland during construction	<p>In coordination with local jurisdictions, plans will be prepared and implemented defining the BMPs for the following:</p> <ul style="list-style-type: none"> Public safety and security for the project site will be planned. This plan will include all appropriate access, signing, and public information BMPs. A traffic, pedestrian, and bicycle access management plan will be provided for the project area during construction. 	Minimal occupancy of parkland anticipated for construction of Phase 1 project. Contractor will obtain permits from local agencies and get approvals for any work on open space lands. D/B RFP Book 2, 5.1.5 requires plan to be provided.
Loss of vegetation	<ul style="list-style-type: none"> Parklands will be revegetated to mimic existing conditions prior to construction. Disturbed areas in open space will be seeded with native grasses and forbs. Native shrubs will be added to the mix as appropriate. Trees will be replaced at a 1:1 ratio in locations where soils support the highest probability for re-establishment of vegetation. New trees will be planted near areas that naturally receive adequate water, such as near drainage areas or wetlands. Sapling trees may require initial watering for establishment. 	Applicable requirements included in D/B RFP Book 2, 5.1.6, Sec 17, and Standard CDOT Specs.
Spread of noxious weeds	<ul style="list-style-type: none"> Weed control will use the principles of integrated pest management to treat target weed species efficiently and effectively by using a combination of two or more management techniques (biological, chemical, mechanical, and/or cultural) where possible. Weed control methods will be selected based on the management goal for the species, the nature of the existing environment, and conditions of the project construction, including seasonal timing and the length of construction. The presence of important wildlife habitat or T&E species will be considered when choosing control methods. 	D/B RFP Book 2, 5.6 requires preparation of noxious weed management plan



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Erosion control	<ul style="list-style-type: none"> The following activities will take place: provision of BMPs, in accordance with the CDOT Drainage Design Manual will be used during construction to control erosion in accordance with the CDPS/MS4 permit requirements; protect cultural/paleontological resources; minimize visual degradation; and assure prompt revegetation for protection of surrounding habitats and vegetation. 	Applicable requirements included in D/B RFP Book 2, 5.2.1, 5.3.4, 12.1.2.1 and Standard CDOT Specs.
Future planned park, trail, and open space projects	<ul style="list-style-type: none"> During final design, coordination will occur with public land's representatives to reasonably address future park, trail, and open space projects included in adopted plans. 	Bikeway workshops held with stakeholders prior to preparation of RFP to coordinate trail plans and connections, coordination will continue during final design.
Parkland acquisition	<ul style="list-style-type: none"> Compensation for parkland acquisition will be negotiated with the public land's representatives. At minimum, compensation will include comparable replacement of parkland and facilities within approximately 2 miles of the affected parkland or adequate compensation, based on fair market appraisals. All acquisition mitigation measures must conform to the Uniform Act. 	Phase 1 ROW definition has been coordinated with local entities. Land swaps are being pursued in some cases to compensate for open space acquisition
Open space acquisition	<ul style="list-style-type: none"> Open space acquisition will be reimbursed at fair market value to the owner of the public lands. All acquisition mitigation measures must conform to the Uniform Act. 	Phase 1 ROW definition has been coordinated with local entities. Land swaps are being pursued in some cases to compensate for open space acquisition
Impacts to wildlife habitat	<ul style="list-style-type: none"> See Section 4.14, Biological Resources: Wildlife, Vegetation, and Threatened and Endangered Species, of the <i>US 36 Corridor FEIS</i>. 	See status/resolution under Wildlife area below.
Trail crossings	<ul style="list-style-type: none"> Pedestrian underpasses more than 20 feet in length will be lighted to standards for safety and security. 	Applicable requirements included in D/B RFP Book 2, 5.1.5 and 14.1.4.1
Trail relocations	<ul style="list-style-type: none"> Trailhead and trail connections to residential and commercial developments will be preserved as much as possible. Alternate trail routes accomplishing a similar connection will be provided when possible, where trails must be adjusted. Trails that must be relocated to a public street due to property acquisition will be enhanced with signs and additional plantings, where possible, commensurate with the impact. Vegetation selection will be determined by the owner of the public land's Parks and Recreation Department. 	Bikeway workshops held with stakeholders prior to preparation of RFP to coordinate trail plans and connections, coordination will continue during final design.
Visual impacts to parkland and open spaces	<ul style="list-style-type: none"> Disturbed parkland and open space areas due to construction will be returned to their previous condition. Options include seeding with native grasses and forbs. Native shrubs will be added to the mix, as appropriate. Trees will be replaced at a 1:1 ratio in locations where soils support the highest probability for re-establishment of vegetation, such as near riparian resources. Opportunities for minimizing visual impacts during final design will be investigated. 	Applicable requirements included in D/B RFP Book 2, 5.1.6, Sec 17, and Standard CDOT Specs.



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Public Safety and Security		
Crime at transit stations	<ul style="list-style-type: none"> • RTD will hire additional transit security personnel to inspect transit station areas as needed. 	<p>D/B RFP Book 2 Sec 19 includes installation of fiber optic infrastructure to enable future installation of security cameras and emergency phones at all transit stations to be monitored at the RTD security control center. Any existing cameras and emergency phones currently installed will be connected to RTD security via the new fiber for live monitoring.</p>
Fire at transit stations	<ul style="list-style-type: none"> • RTD will coordinate with local fire departments to address the special needs of transit fires as needed. 	<p>RTD station improvements will comply with local and state regulations and ordinances. Installation of the fiber infrastructure and future security improvements will allow RTD security to monitor stations and notify local fire departments of incidents.</p>
Crime at the Westminster Center and 116th Avenue transit stations	<ul style="list-style-type: none"> • RTD will monitor these transit stations and implement more aggressive security measures as needed. • CCTV/video surveillance will be incorporated into the plans at all transit stations if conduit and fiber is available. Surveillance will include both personal and video surveillance. Video surveillance systems will be capable of transmitting real-time video to RTD via a fiber optic transmission backbone or other suitable transmission network. Personal surveillance will include uniformed officers who sporadically inspect transit stations. CPTED strategies have been incorporated in the corridor. The purpose of CPTED is to minimize potential threats and vulnerabilities to the transit system, facilities, and patrons, and maximize safety and security through engineering and design. CPTED strategies that will be included are: • Maximizing the visibility of people, parking areas, patron flow areas, and building/structure areas. • Providing adequate lighting to minimize shadows. • Maintaining maintenance programs that provide for the repair of broken windows, the pick up of litter, and the management streetscapes and public spaces. 	<p>D/B RFP Book 2 Sec 19 includes installation of fiber optic infrastructure to enable future installation of security cameras and emergency phones at all transit stations. D/B RFP requires any station improvements to utilize the CPTED approach.</p>



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Safety issues at transit platforms	<ul style="list-style-type: none"> For Phase 1 platform to be moved or reconstructed, design elements and electronic technology may be used to ensure the transit platform area is safe and free of hazards. A representative measure may include passive warning devices that alert persons of risks and hazards. 	D/B RFP Book 2 Sec 19 includes installation of fiber optic infrastructure to enable future installation of security cameras and emergency phones and requires any station improvements utilize the CPTED approach. In addition, electronic programmable information display system (PIDS) screens will be provided at each station to notify persons of potential hazards.
Decrease in emergency response times due to roadway closures and detours	<ul style="list-style-type: none"> RTD will coordinate with emergency response groups regarding local closures, changes in circulation, and detour routes, both during and after construction for those projects that are led by RTD. See Section 4.22, Construction-Related Impacts, of the <i>US 36 Corridor FEIS</i>, for more information. 	RTD standard contract specifications include provision for Contractors to develop an emergency response plan in coordination with local emergency response groups. This language will be included in the RTD queue jumps contract.
Visual and Aesthetic Resources		
Construction staging materials	<ul style="list-style-type: none"> Staging areas along US 36 will be fenced and/or screened. 	Applicable requirements included in D/B RFP and Standard CDOT Specs.
Construction staging areas	<ul style="list-style-type: none"> Staging areas will be rehabilitated to enhance the surrounding setting; vegetation will be replaced with native grass, forbs, shrubs, or trees, as appropriate. Staging area rehabilitation will reflect the original setting. For example, if native grass field areas are disturbed for staging, they will be replaced with similar native vegetation. 	Applicable requirements included in D/B RFP Book 2, 5.1.7 and Standard CDOT Specs.
Construction lighting and illumination	<ul style="list-style-type: none"> Lighting will be limited to that required for safety and security. Lighting will be shielded and directed at working areas to minimize glare and ambient light conditions in nearby areas, including adjacent travel lanes. 	Applicable requirements included in D/B RFP Book 2, 5.1.7 and Standard CDOT Specs.
Removal of residences and business	<ul style="list-style-type: none"> Structure removal and area improvements will be expedited to reduce the impact on remaining neighbors. The contractor will be required to adhere to the agreed-upon schedule. 	Phase 1 structure removals are all in one location at Airport Creek, no neighbors will remain in immediate vicinity.
Freeway and transit station visual nuisance to adjacent property owners	<ul style="list-style-type: none"> In coordination with local government entities, visual buffers (such as stamped patterns in sound walls, Boston ivy, trees, or other landscaping) will be provided, whenever possible. Coordination will determine which entity will maintain the improvements. 	Westminster preference is to match sound wall style at Federal. Applicable requirements included in D/B RFP Book 2, 15.2.2.5
Retaining walls	<ul style="list-style-type: none"> Retaining walls will reflect natural appearance in textures and colors and be graffiti-resistant. Walls will be tiered, where feasible. 	Applicable requirements included in D/B RFP Book 2, 15.2.2.5, 15.2.5, 15.2.6



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Sound walls	<ul style="list-style-type: none"> • Aesthetics of sound walls will be coordinated with local jurisdictions and will be graffiti-resistant. 	<p>Westminster preference is to match sound wall style at Federal.</p> <p>Applicable requirements included in D/B RFP Book 2, 15.2.2.5, 15.2.6</p>
Landscaping removal	<ul style="list-style-type: none"> • All landscaping, such as trees, shrubs, lawn, and perennials, and in some cases, native grasses, will be replaced where removed or where the property owner/public entity selects. • Where tree diameters are greater than 10 inches measured breast height off the ground, the replacement ratio will be two trees, unless tree ordinances direct otherwise. Typical replacement materials will include 4- to 6-foot evergreens, 1.5- to 2-inch deciduous trees, or 5-gallon shrubs. CDOT Region 6 tree replacement policy will be followed in Region 6. 	<p>Applicable requirements included in D/B RFP Book 2 Sec 17, in accordance with CDOT policy.</p>
Replacing or adding a new bridge structure	<ul style="list-style-type: none"> • Corridor design guidelines will be applied using materials and colors similar to existing structures in the area. It is recommended that the design elements from existing bridge designs located at Interlocken Loop and other similar examples be used. When possible, widenings will match existing aesthetic materials and design elements. 	<p>Aesthetic enhancements at bridges being developed and paid for by jurisdictions.</p> <p>Applicable requirements for matching aesthetics of existing enhanced structures included in D/B RFP Book 2, 1.2.2, 15.2.2.5.</p>
Transit stations	<ul style="list-style-type: none"> • Although BRT station designs will be reviewed and approved by the local jurisdictions, it is recommended these sites be integrated into the landscape. Parking at transit stations will adhere to local parking ordinances regarding shading, landscaping, lighting, and visibility. Entries to parking and transit stations will be designed using local materials and colors. 	<p>BRT stations are not a part of the Phase 1 project, but this requirement is included in RFP Book 2, 5.1.7 if needed.</p>
Lighting	<ul style="list-style-type: none"> • Lights will be directional and shielded, and timers and sensors will be used to minimize the time that lights are on in areas where lighting is not normally needed for safety, security, or operation. Lights at the transit stations will be directional and shielded to reduce off-site light scatter and glare. 	<p>Applicable requirements for Lighting included in D/B RFP Book 2, 5.1.7. BRT stations are not a part of the Phase 1 project.</p>



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Air Quality		
Criteria Pollutants	<ul style="list-style-type: none"> • APEN and an air permit is required for projects over 25 acres and that last more than 6 months in length. APEN will cover APCD-required mitigation measures for active construction. • CDOT will include language in the construction specifications requiring all construction equipment to be equipped to burn ultra-low sulfur diesel fuel. • Water or wetting agents will be used to manage dust. • Wind barriers and wind screens will be used to minimize the spread of dust in areas where large amounts of materials are stored. • A wheel wash station and/or large-diameter cobble apron at egress/ingress areas will be used to minimize dirt being tracked onto public streets. • Street sweepers to control dirt tracked onto streets will be used. • All dump trucks leaving the site will be covered. • Temporary excavated materials will be watered or covered. • A binding agent for long-term excavated materials will be used. • For winter time construction, engine pre-heater devices will be installed to eliminate unnecessary idling. • Tampering with equipment to increase horsepower or to defeat emissions control device effectiveness will be prohibited. • Construction vehicle engines will be required to be properly tuned and maintained. • Construction vehicles and equipment with the minimum practical engine size for the intended jobs will be used. • Active grading and parking areas will be watered as required. • BMPs will be used for stockpiles. • All trucks hauling dirt, sand, or other loose material will be covered or maintain freeboard in accordance with local jurisdiction requirements. CDOT promotes all of the above air quality reduction measures and will apply these mitigations as appropriate. 	<p>APEN Permit required by D/B RFP Book 2, 5.1.1.</p> <p>Other applicable requirements included in D/B RFP Book 2, Sec 5.</p>
Visibility/Opacity	<ul style="list-style-type: none"> • Refer to the CMP in Section 4.22, Construction-Related Impacts, of the <i>US 36 Corridor FEIS</i>. 	Requirement included in D/B RFP Book 2, Sec 5.0
Ozone	<ul style="list-style-type: none"> • Commitment to any appropriate Regional Air Quality Council adopted mitigation measures for ozone. 	This mitigation is no longer applicable because of the delay in receiving a revised ozone standard.
MSATs	<ul style="list-style-type: none"> • Truck routes will be restricted to minimize impacts to sensitive receptor populations. • Pavement durability will be improved to reduce the frequency of repaving. • Ultra-low sulfur diesel will be used in non-road equipment. 	Concrete pavement is specified for US 36. Requirement for ultra-low sulfur diesel included in D/B RFP Book 2, Sec 5.1.1



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Noise		
Noise impacts to local communities during construction	<p>The following noise control measures will be implemented during construction: • Permanent sound walls will be constructed at the beginning of the project, when feasible. • The contractor will be required to prepare a noise control plan that outlines allowable daytime and nighttime uses, projected noise levels, and locations and types of noise abatement measures that may be required to meet specified noise limits. • The contractor will comply with all applicable local sound control and noise ordinances and regulations, including the use of variances, when appropriate. • The following is a list of construction noise mitigation measures that will be employed where the noise control plan specifies (note that these measures will be implemented only where feasible and needed): – Use low-noise equipment with mufflers, intake silencers, engine enclosures, and acoustically-attenuating shields or shrouds. – Use hydraulically- or electrically-powered equipment. – Stage construction timing or sequencing to avoid sensitive times of the day. Combine noisy operations so they occur in the same time period. The total noise level produced will not be substantially greater than the level produced if the operations were performed separately. – Locate stationary noise sources as far from sensitive receptors as possible. – Use natural and artificial barriers, such as ground elevation and existing buildings, to shield construction noise. Staging areas should be kept as far from sensitive noise receptors as possible. – Limit pile driving and blasting to daytime working hours near land uses with sensitive receptors. – Use sonic or vibratory pile drivers instead of impact pile drivers. – Avoid placing haul routes through residential areas. • Use quieter demolition methods where possible, such as sawing bridge decks into sections that can be loaded onto trucks, resulting in lower cumulative noise levels than impact demolition by pavement breakers.</p>	<p>Applicable requirements for construction noise included in D/B RFP Book 2, Sec 5.1.2.3.</p>
When noise levels exceed NAC due to traffic and buses	<p>• Sound walls are the only feasible noise mitigation measure, and will be provided in the following locations (subject to refinement as part of final design): – Locations where existing sound walls will need to be removed to accommodate the proposed improvements. – Madison Hill homes. – Tuscany Trails. – Rock Creek Apartments.</p>	<p>Performed updated noise analysis at revised areas. Included applicable requirements in D/B RFP Book 2, Sec 5.1.2</p>



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Biological Resources: Wildlife, Vegetation, and Threatened and Endangered Species		
Loss of vegetation, including sensitive habitats	<ul style="list-style-type: none"> • During final design, the grading plan will be developed to minimize the removal of riparian vegetation, where possible. • During construction, vehicle operation will be limited to the designated construction area, and the limits of the construction area will be fenced to exclude and protect sensitive habitats, including prairie dog towns, riparian areas, wetlands, and upland trees and shrubs. • Silt fencing, erosion logs, temporary berms, and other BMPs may be used to prevent degradation of habitats adjacent to the construction area by transport of eroded sediment. • Graded areas within the ROW will be seeded with an appropriate mixture of native grasses and forbs; shrubs will be planted, where appropriate. • Restoration of disturbed riparian habitat will include planting of native trees and shrubs, as well as seeding and regrading native grasses, forbs, and shrubs will also be seeded in riparian areas. • SB 40 requires replacement of riparian trees at a 1:1 ratio, and shrubs on a square-foot basis. • To compensate for the effects of riparian habitat loss, CDOT will follow its SB 40 Programmatic Agreement with the CDOW or comply with the non-programmatic SB 40 clearance process, which ever is appropriate. • All landscaping, such as trees, shrubs, lawn, perennials, and in some cases, native grasses, will be replaced in the vicinity where it was removed (as appropriate) or compensated for in the ROW process. • CDOT Region 6 tree replacement policy will be followed in Region 6. • See also landscaping removal mitigation in Section 4.11, Visual and Aesthetic Resources, of the <i>US 36 Corridor FEIS</i>. • Impacts to sensitive areas will be avoided or minimized during final design, including the South Boulder Creek Natural Area, and the Colorado Tallgrass Prairie PCA. 	Applicable requirements included in D/B RFP Book 2, 5.1.6 , Sec 17, and Standard CDOT Specs.
Loss of prairie dog colonies	<p>CDOT has a state-wide policy on black-tailed prairie dog mitigation that will be implemented for prairie dogs located within the US 36 corridor. This policy identifies a four-step process to be used when black-tailed prairie dogs may be affected by a project:</p> <ul style="list-style-type: none"> • Avoidance of impacts. • Minimization of impacts. • Relocation. • If relocation is impossible or impractical, impacted black-tailed prairie dogs will be humanely removed from burrows that will be directly affected by the project, and donated for feeding of captive black-footed ferrets or raptors. The remaining individuals to be affected will be humanely euthanized. <p>Additionally, each of the county or city municipalities within the study area has policies for the management of prairie dogs on their property. These policies are generally similar to CDOT's policy in the steps required, and include avoidance, relocation, live-trapping, or lethal control.</p>	Applicable requirements for prairie dog impacts included in D/B RFP Book 2, 5.3.1.



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<p>Disturbance to nesting raptors that could result in nest failure</p>	<ul style="list-style-type: none"> • Trees in the construction footprint will be cleared prior to December 1 or after August 31 to prevent raptors (and other birds) from nesting (including courtship) on site and to avoid the take of or disturbance to active nests during the breeding and courtship season. If construction is planned to begin after December 1 or prior to August 31, nest surveys will be conducted by a qualified biologist prior to construction to determine the absence or presence of nesting migratory birds. The USFWS Colorado Field Office will be contacted for further guidance if the field surveys identify the existence of active bird nests that cannot be avoided by construction activities. • Raptor nest surveys will be conducted annually during an appropriate season (generally May 1 through June 1) to determine the presence of active raptor nests. If an active nest is located, monitoring or seasonal buffers may be established and coordinated with CDOW to prevent disturbance to nesting birds during construction. • Protective buffer zones may be established around active nests during construction to avoid disturbance while nesting, if deemed necessary. • Individual trees important for raptor perching that are to be removed in the ROW will be replaced at a 1:1 ratio, or as specified by state and federal wildlife agencies to ensure raptor perch trees are replaced for future use. New trees may be planted near areas that naturally receive adequate water, such as near drainage areas or wetlands, or as determined by CDOT to ensure survival (if irrigation is available, that would be sufficient as well). • Sapling trees planted as mitigation may require initial watering for establishment. • Artificial perches may be erected where important large perch trees are removed to provide perches until newly planted trees have matured. 	<p>Applicable requirements for raptors and migratory birds included in D/B RFP Book 2, 5.3.3, 5.5.</p>
<p>Potential loss of eggs or young of nesting migratory birds</p>	<ul style="list-style-type: none"> • Destruction or disturbance of nests that results in loss of eggs or young is a violation of the MBTA. To comply with the MBTA (USFWS 2004), land-clearing activities will be timed to avoid the breeding season (primarily April 1 through August 31, but differs according to species) to avoid impacts to active bird nests, as described for raptors (see the first bullet above). In addition, some reconstruction of bridge structures may destroy or disturb swallows nesting on the underside of the bridge. Bridge reconstruction and demolition may be scheduled to avoid impacts to these birds, or actions to discourage nesting activities will be taken prior to the nesting season and will be continued through demolition. Birds that establish a nest in an active construction zone do so at their own risk and are not subject to this protection – a final determination of this status would be made by the CDOT wildlife biologist. 	<p>Applicable requirements for raptors and migratory birds included in D/B RFP Book 2, 5.3.3, 5.5.</p>
<p>Disruption/blockage of existing wildlife corridors and habitat fragmentation</p>	<p>Specific Recommendations —</p> <ul style="list-style-type: none"> • Big Dry Creek: the City of Westminster/UDFCD agreement that does not allow modification of the hydraulic capacity of the existing structures should be revisited to allow either a separate dry crossing for wildlife (preferred), or modification of the existing stream culvert to facilitate wildlife movement. • Rock Creek: replace triple box culvert with a bridge in the Preferred Alternative. The bridge will have an opening large enough to facilitate wildlife movement. • Davidson, Goodhue, and Marshallville ditches: the culvert openings may be enlarged to compensate for increased length, and should be modified to facilitate wildlife crossing, or a separate dry crossing provided. 	<ul style="list-style-type: none"> • Big Dry Creek: Agreement remains in effect. Box culverts will be replaced in-kind to maintain hydraulic capacity. Small mammal ledges required by D/B RFP Book 2, 5.3.2. • Rock Creek: Existing is 2-cell box culvert. ROD shows lengthening. D/B RFP Book 2, 5.3.2 requires



Impact	Mitigation Measure	Status/Resolution
	<ul style="list-style-type: none"> • Box culverts will be installed where feasible for small- to medium-sized animal crossings between the unnamed ditch on Davidson Mesa and Davidson Ditch; between South Boulder Creek and Upper Dry Creek Ditch; and west of 88th Street. • Oversized culverts and/or modified culverts or dry culverts will be installed, where feasible, to facilitate wildlife crossing at Allen Ditch, Niver Canal, Farmers Highline Canal, Equity Ditch, Community Ditch, the unnamed tributary of Rock Creek, and the unnamed ditch on Davidson Mesa. <p>General Guidelines for Wildlife Crossings —</p> <ul style="list-style-type: none"> • Promote the improvement of wildlife corridors and connectivity to the extent practicable. <ul style="list-style-type: none"> • Where feasible, box culverts will be replaced with bottomless box culverts or bridges with natural substrate to promote animal usage. Where new culverts will be installed, bottomless box culverts or bridges will be used. Culverts will be installed in proximity to tree/shrub cover if possible, and will protect existing trees and shrubs near culverts and bridges from unnecessary encroachment and loss of habitat. Detailed final design will address protection from stormwater scour and sedimentation within proposed bottomless box culverts. • Bridge structures should span the largest amount of riparian habitat possible under a constructed bridge to limit the amount of disturbance to vegetation and to allow for dry passage along the water’s edge. Riparian areas with dense vegetation are favored by many species for travel corridors. • Where feasible, large animal underpasses could be utilized to promote connectivity and movement. In general, riparian areas within the corridor would provide the most practical locations for large animal underpasses. Minimum dimensions for a large animal underpass should be 8-feet tall by 24-feet wide, with an openness ratio calculated in meters of 0.9 to 2.0 (height x width/length [meters]). As the width of the roadway increases, the height and width of the underpass structure should be increased proportionately. This openness will prevent a tunneling effect that would discourage animal use. Bridges and culverts will meet an openness ratio greater than 0.9 where it makes engineering sense. • Where feasible, if a stream or ditch conveys water, animals will be provided a shelf or a raised dry ledge on the side of the channel above ordinary high water to use as a dry walkway under the structure under normal flows. Shelves will be at least 1 foot higher than the normal water level and at least 1.3-feet wide to be effective (Forman et al. 2002). 	<p>accommodation of large mammal crossing with culvert size larger than existing and small mammal accommodation. Bridge not shown in EIS</p> <ul style="list-style-type: none"> • Davidson, Goodhue, and Marshallville ditches: Not in scope of Phase 1 project • Box culverts: Most not in scope of Phase 1 project. West of 88th, structure is an overhead pipe that will be replaced. • Oversized culverts: Allen: no vertical clearance to enlarge; urban area. Niver: being abandoned. Farmers: replace in-kind. Equity: Abandoned. Community ditch: Extend or replace in-kind. Trib to Rock Creek: not in scope of Phase 1 project. <p>General:</p> <p>D/B RFP Book 2, 5.3.2 requires accommodation of wildlife crossings per notes above and in accordance with the latest guidance in FHWA’s <i>Wildlife Crossing Structure Handbook: Design and Evaluation in North America</i> (2011).</p>



Impact	Mitigation Measure	Status/Resolution
<p>Disruption/blockage of existing wildlife corridors and habitat fragmentation (continued)</p>	<p>• Where feasible, vegetative debris, such as old stumps, logs, and small brush will be placed along one edge of the bottom of an underpass (approximately 1-foot wide) as cover for small mammals and amphibians when crossing. Vegetative debris will be anchored in place. • Crossing structures (i.e., culverts) should have natural bottom substrates, such as coarse sand, to facilitate wildlife use. Materials such as riprap and concrete should be avoided at culvert entrances and floors, if feasible. Recommendations for Small Animal Crossings — • Small animals will use small-diameter culverts (less than 3 feet in diameter) more than large culverts. Reptiles prefer circular pipes, while amphibians, rabbits, and domestic animals prefer rectangular vessels. Therefore, a variety of types of small animal crossings would be most effective. • Small animal culvert size would be less than 5 feet in diameter or height. • Where feasible, vegetative debris, such as old stumps, logs, and small brush will be placed along one edge of the bottom of an underpass (approximately 1-foot wide) as cover for small mammals and amphibians when crossing. Vegetative debris will be anchored in place.</p>	<p>D/B RFP Book 2, 5.3.2 requires accommodation of wildlife crossings per notes above and in accordance with the latest guidance in FHWA's <i>Wildlife Crossing Structure Handbook: Design and Evaluation in North America</i> (2011).</p>
<p>Spread of noxious weeds</p>	<p>An integrated Noxious Weed Management Plan may be developed during final design and in consultation with appropriate land management agencies where designated sensitive habitats occur and project work will extend over several years, or be handled in the plans and specifications as directed by CDOT biologists in consultation with these agencies. This plan will be implemented during construction and may include identification of noxious weeds in the area, weed management goals and objectives, and preventive and control methods. Upon completion of project construction, the area would fall under the control of a local or CDOT maintenance plan. Preventive measures may include, but are not limited to, the following: • Contractor vehicles may be inspected before they are used for construction to ensure that they are free of soil and debris capable of transporting noxious weed seeds or roots. Heavy construction equipment may be cleaned. • Noxious weeds observed in and near the construction area at the start of construction will be treated with herbicides or physically removed to prevent seeds blowing into disturbed areas during construction. • Periodic surveys should occur during the construction period to identify and treat noxious weeds that have developed, depending on how long the project is under construction. • Potential areas of topsoil salvage will be assessed for presence and abundance of noxious weeds prior to salvage. Topsoil from heavily infested areas will either be treated by spraying, taking it off site, or burying it during construction. • Disturbed areas will be reclaimed in phases throughout the project construction and seeded using a permanent native seed mixture. If areas are completed and permanent seeding cannot occur due to the time of year, mulch and mulch tackifier will be used for temporary erosion control until seeding can occur. • Fertilizer will not be used in seeded areas because it can enhance the growth of noxious weeds at the expense of desired vegetation.</p>	<p>Applicable requirements for noxious weeds included in D/B RFP Book 2, 5.6, 17.1.1 and 17.1.3.</p>



Impact	Mitigation Measure	Status/Resolution
Spread of noxious weeds (continued)	<ul style="list-style-type: none"> • Only certified weed-free mulch and bales will be used on the project (Title 35, Article 27.5, Forage Crop Certification 35-27.5-101). • Weed control may use the principles of integrated pest management to treat target weed species efficiently and effectively by using a combination of two or more management techniques (biological, chemical, mechanical, and/or cultural). Weed control methods may be selected based on the management goal for the species, the nature of the existing environment, and methods recommended by Colorado State University, county weed boards, and other weed experts, but will keep in mind the applicability of these methods during construction. The presence of important wildlife habitat or T&E species will be considered when choosing control methods. 	Applicable requirements for noxious weeds included in D/B RFP Book 2, 5.6, 17.1.1 and 17.1.3.
Potential loss of fisheries and aquatic habitat	<ul style="list-style-type: none"> • BMPs will be used to control erosion and sedimentation during construction and to protect water quality in streams. BMPs may include berms, brush barriers, check dams, erosion control blankets, filter strips, sandbag barriers, sediment basins, sheet mulching, silt fences, straw-bale barriers, surface roughening, and/or diversion channels. A spill prevention and emergency response plan will be prepared and used during construction for storage, handling, and use of chemicals, fuels, and similar products. • Under Colorado SB 40, any project affecting SB 40 jurisdictional streams, their banks, or tributaries is required to consult with CDOW. Following final design, an application for SB 40 Wildlife Certification may be required if the project does not fall within CDOT's Programmatic Agreement with CDOW, including detailed plans and specifications. CDOW will review the plans to ensure that they are technically adequate to protect and preserve fish and wildlife resources, and provide recommendations or alternative plans if the project would adversely affect a stream. • Streams requiring channelization, realignment, or diversion will be restored equal to or better than pre-construction conditions, and restoration will be addressed in the Section 404 Permit. Stream restoration should create a meandering channel with varying side slopes rather than a straight, trapezoidal channel, and should include pools and other habitat features. To control erosion, bioengineering or the use of plants to control erosion may be used instead of riprap or other unnatural bank stabilization techniques. Banks will be planted with native plant species. • Also refer to Section 4.20, Water Resources: Water Quality and Floodplains, and Section 4.22, Construction-Related Impacts, of the <i>US 36 Corridor FEIS</i>. 	Applicable requirements for fisheries and aquatic resources included in D/B RFP Book 2, 5.3.4.



Impact	Mitigation Measure	Status/Resolution
<p>Loss of listed FT and FE species or their habitat</p>	<p>FHWA and FTA have initiated consultation with the USFWS. A PBA was released with the <i>US 36 Corridor FEIS</i> for public comment. The USFWS has granted a Section 106 Programmatic Agreement for this project (see Appendix E, Section 106 Programmatic Agreement) that must be followed. Conservation measures for impacts to federally-listed species were developed as part of the PBA. During final design, detailed mitigation measures related to T&E species will be developed in consultation with the USFWS for the impacts associated with each construction stage. The following mitigation measures are proposed: Preble's meadow jumping mouse — • Direct impacts (death) will be avoided or minimized by use of silt fencing or similar visible barriers, restrictions in the area of disturbance, and construction limited to the non-active season (November 1 through April 30) in occupied habitat. • Occupied habitat removed for project construction will be replaced through creation or enhancement of suitable habitat. Mitigation areas should link fragmented habitat patches by restoring areas of non-habitat between zones of occupied habitat. Mitigation for the Preble's meadow jumping mouse could be coordinated with wetlands and riparian mitigation, where possible. A complete list of conservation measures will be developed through formal consultation with the USFWS. • Small mammal ledges should be used in culverts to enhance mouse mobility. Ute ladies'-tresses orchid — • Surveys will be conducted to identify and map Ute ladies'-tresses orchid habitat within and adjacent to the construction footprint in the area from Davidson Ditch to the west edge of Van Vleet Open Space. Surveys should be conducted for 3 years, when feasible, because the number of flowering plants varies widely from year to year, and would be done prior to final design. Surveys will be done during the flowering season by qualified botanists. • Impacts will be avoided or minimized, where possible, by relocation of project components, such as detention ponds, by use of roadside ditches instead of ponds for water quality control, and/or by narrowing of the construction footprint. • Project components within Ute ladies'-tresses orchid habitat will be designed to not adversely effect the hydrology of adjacent Ute ladies'-tresses orchid habitat. Monitoring wells may be needed to assess pre-construction water levels and to monitor changes during and after construction. • In Colorado, the primary mitigation for unavoidable impacts to plants and habitat will be protection or enhancement of other existing populations. The conservation requirements will be commensurate with the level of impact, and will be determined in consultation with the USFWS. • Ute ladies'-tresses orchids that cannot be avoided will be transplanted to a mitigation site or to a botanical garden. Removal and transplant of Ute ladies'-tresses orchids or the topsoil of their habitat will be conducted by botanists after tubers have formed in the fall. Detention ponds may be designed to provide suitable habitat for Ute ladies'-tresses orchids and may serve as transplant sites. Selection of a mitigation site will be coordinated with the mitigation for the Preble's meadow jumping mouse and wetlands, and will consider habitat suitability, benefits to the species, and provisions for long-term management and protection.</p>	<p>No impacts to federally listed species are anticipated during the Phase 1 Project.</p>



Impact	Mitigation Measure	Status/Resolution
Loss of listed FT and FE species or their habitat (continued)	<p>Colorado Butterfly Plant — • Surveys will be conducted within and adjacent to the construction footprint at Dry Creek and Walnut Creek. If Colorado butterfly plants are found, CDOT will consult with the USFWS regarding appropriate conservation measures.</p>	Applicable requirements included in D/B RFP Book 2, 5.3.5.1.
Potential loss of state-listed threatened or endangered species and other sensitive species	<p>Burrowing Owl — • Surveys will be conducted between March 15 and October 31 of the construction year to determine the presence of burrowing owls and the locations of occupied nests. • If nests are identified, construction will be avoided within 50 yards (150 feet) of an active nest site from March 15 to October 31, or as determined necessary by a CDOT wildlife biologist. • If a nest becomes occupied after the start of active construction, a seasonal buffer zone will be required to prevent violation of the MBTA. Other Sensitive Animal Species — • Mitigation for nesting ospreys will be the same as for raptors (see above). • Pre-construction nest surveys will be conducted for barn owls in dirt cutbanks in suitable riparian habitat (such as Walnut Creek) prior to construction if land clearing occurs between April 1 and September 30. • Land-clearing activities will be avoided in known bobolink nesting habitat in the Boulder Segment during their nesting season (May 15 through July 30) unless the habitat has been surveyed by a qualified biologist and no nests were found to be present. • To mitigate for impacts to common garter snakes in areas where BMPs will control erosion, coconut-straw erosion blankets with a biodegradable thread will be used rather than TRMs, which can harm snakes. The framework will be manufactured with openings of sufficient size and “give” to allow for safe passage of snakes through the blanket. Use of a netless excelsior blanket (Curlex NetFree brand) combined with a heavy woven coir mat has been found successful (install the coir mat on top of the netless excelsior and anchor down). Other Sensitive Plant Species — • Prior to construction, presence/absence surveys will be conducted for all areas that would be affected by project activities within designated sensitive habitats, including the South Boulder Creek Natural Area, Colorado Tallgrass Prairie Natural Area, and Colorado Tallgrass Prairie PCA. The survey(s) will be conducted by qualified botanists during an appropriate season for best observation and identification of the sensitive species. If found, mitigation for impacts to these sensitive habitats (which includes mesic and xeric tallgrass communities) will be developed based on the relative numbers of plants that would be affected, the potential for avoidance or minimization of impacts, and the potential for transplanting of individuals and seedbeds to suitable habitat on adjoining property. Mitigation measures will be developed in consultation with the land management agencies where the impacts will occur.</p>	<p>Applicable requirements for burrowing and barn owls included in D/B RFP Book 2, 5.3.5.2 and 3.</p> <p>Phase 1 project does not include Boulder Segment work.</p>
Mineral Resources, Geology, and Soils		
Expansive soils	<ul style="list-style-type: none"> • Engineering measures, such as installation of deep foundation systems, raft foundations, and floating floor slabs will be considered during final design. 	D/B RFP Book 2 Sections 10, 11, and 15 require Contractor to design for soil conditions.
Unstable slopes	<ul style="list-style-type: none"> • Engineering measures, such as cantilevered retaining walls, soil nail walls, ground anchors, and MSE walls will be considered during final design. 	D/B RFP Book 2 Sections 10, 11, and 15 require Contractor to design for soil conditions.



Impact	Mitigation Measure	Status/Resolution
Expansive subgrade soils	<ul style="list-style-type: none"> Engineering measures, such as soil stabilization with lime treatment, removal and recompaction, or removal and replacement with imported fill material will all be considered during final design. 	D/B RFP Book 2 Sections 10, 11, and 15 require Contractor to design for soil conditions.
Collapsible subgrade soils	<ul style="list-style-type: none"> Engineering measures, such as stabilization by flooding, deep dynamic compaction, over-excavation, and pre-loading prior to construction will be considered during final design. 	D/B RFP Book 2 Sections 10, 11, and 15 require Contractor to design for soil conditions.
Steeply dipping bedrock	<ul style="list-style-type: none"> Engineering measures, such as stabilization by over-excavation and replacement with imported fill materials will be considered during final design. 	D/B RFP Book 2 Sections 10, 11, and 15 require Contractor to design for soil conditions.
Soil erosion	<ul style="list-style-type: none"> Refer to Section 4.20, Water Resources: Water Quality and Floodplains, and the CMP discussion in Section 4.22, Construction-Related Impacts, of the <i>US 36 Corridor FEIS</i>. 	D/B RFP Book 2 Sections 10, 11, and 15 require Contractor to design for soil conditions.
Farmlands		
Impacts to irrigation pipes and ditches	<ul style="list-style-type: none"> All irrigation pipes and ditches will be replaced in-kind. • Irrigation will not be interrupted during construction. 	Applicable requirements for replacing irrigation features included in D/B RFP Book 2 Sections 7 and 12.
New ROW required	<ul style="list-style-type: none"> Mitigation will be provided to agricultural properties, consistent with the ROW policies described in Section 4.4, Right-of-Way and Relocations, of the <i>US 36 Corridor FEIS</i>. 	ROW Acquisition is complying with UA and EIS mitigations.
Access to property	<ul style="list-style-type: none"> Existing, legal access to farm properties will remain available during and after construction. Typically, access rights are demonstrated by easements, license agreements, other legal permits, etc. 	Existing, legal access to farm properties is being maintained by Phase 1 project acquisitions.
Hazardous Materials		
Existing hazardous material sites adjacent to or within the corridor and acquisition of additional ROW or new property	<ul style="list-style-type: none"> An individual site-specific Phase I ESA will be conducted on properties before acquiring any ROW. • Site-specific Phase II ESAs will be conducted with subsurface investigation (soil and groundwater) for sites that may affect final design. • A Materials Handling Plan will be prepared to address contaminated soil and groundwater, and a Health and Safety Plan will be developed as required by Section 250.03 of the <i>CDOT Standard Specifications for Road and Bridge Construction (CDOT 2005)</i>. • Engineering controls will be determined to minimize the quantity of contaminated materials. • Responsible parties will be identified for design, build, and operation of remediation systems. • Cost recovery of hazardous material sites where removal actions and long-term maintenance is required will be determined. • A heavy-metal-based paint survey will be prepared for bridges in the project area that will be affected by construction. • An asbestos survey will be prepared in the event of building and/or bridge acquisition or demolition, or if asbestos is known to be present. • Soil Characterization and Management Plans will be prepared according to CDPHE HMWMD if construction debris is encountered during construction activities and is suspected to contain asbestos. 	<p>Phase 1 ESAs have been conducted. 2011 Modified Phase I ESA Addendum performed for Re-Eval and D/B RFP.</p> <p>CDOT will perform paint and asbestos surveys.</p>



Impact	Mitigation Measure	Status/Resolution
Utilities		
Adjustment or relocation of irrigation ditches	<ul style="list-style-type: none"> • Construction will be scheduled during periods of non-use (November through March), wherever possible. • Design will be modified to avoid/minimize conflict, wherever possible. 	Preliminary design minimized impacts where possible. Applicable requirements included in D/B RFP Book 2 Sections 7 and 12.
Relocation of electric transmission towers	<ul style="list-style-type: none"> • Construction will be scheduled during periods of low demand (October through April), wherever possible. • Design will be modified to avoid/minimize conflict, wherever possible. 	Preliminary design minimized impacts where possible. Applicable requirements included in D/B RFP Book 2 Section 7.
Adjustment or relocation of high-pressure gas lines	<ul style="list-style-type: none"> • Construction will be scheduled during periods of low demand (May through September), wherever possible. • Design will be modified to avoid/minimize conflict, wherever possible. 	Preliminary design minimized impacts where possible. Applicable requirements included in D/B RFP Book 2 Section 7.
Adjustment or relocation of buried fiber optic	<ul style="list-style-type: none"> • Early coordination with utility owners will take place, wherever possible. • Design will be modified to avoid/minimize conflict, wherever possible. 	Preliminary design minimized impacts where possible. Applicable requirements included in D/B RFP Book 2 Section 7.
Adjustment or relocation of water lines and sanitary sewers	<ul style="list-style-type: none"> • Design will be modified to avoid conflict, wherever possible. • Disruption of service for low-use period will be scheduled. • Disruption of service will be minimized with wet tie-in, wherever possible. 	Preliminary design minimized impacts where possible. Applicable requirements included in D/B RFP Book 2 Section 7.
Relocation of storm sewers	<ul style="list-style-type: none"> • Design will be modified to avoid conflict, wherever possible. 	Preliminary design minimized impacts where possible. Applicable requirements included in D/B RFP Book 2 Sections 7 and 12.
New roadway or reduced cover on buried utilities	<ul style="list-style-type: none"> • Encasement or protective covers over utilities will be added as appropriate. 	Applicable requirements included in D/B RFP Book 2 Section 7.
Energy		
Increases in bus VMT	<ul style="list-style-type: none"> • RTD's policy on sustainability will be implemented. 	RTD is developing a fleet management plan for US36 (anticipated completion in Spring 2012) that will advise future vehicle procurement as the fleet is supplemented/replaced. Fleet replacement is not included in the D/B RFP.



Impact	Mitigation Measure	Status/Resolution
Use of energy resources during construction	<ul style="list-style-type: none"> • CDOT and RTD sustainable practices will be incorporated into the project planning, construction, and maintenance to minimize impacts. 	D/B ITP encourages sustainable practices. Sustainability is an element of a project goal.
Water Resources: Water Quality and Floodplains		
Destruction of riparian vegetation	<ul style="list-style-type: none"> • Temporary BMPs for construction, including re-establishment of native vegetation, will be installed and implemented. 	Applicable requirements included in D/B RFP Book 2 Sections 5, 12, 17.
Untreated stormwater runoff entering surface waterway during construction	<ul style="list-style-type: none"> • NPDES guidelines for stormwater quality, including obtaining a CDPS stormwater construction permit, will be followed. • All work performed on the project within CDOT ROW will conform to Section 107.25 (Water Quality), and Section 208 (Erosion Control) of the CDOT <i>Standard Specifications for Road and Bridge Construction</i> (CDOT 2005). • A Stormwater Management Plan will be developed that will detail the BMPs to be used for construction. Practices from the <i>Erosion Control and Stormwater Guide (ECSQG)</i> (CDOT 2002 or most current volume) will be followed. • Park-n-Ride areas for transit stations will follow local water quality ordinances of the local jurisdiction where the transit stations are located. Local requirements will require the permanent BMPs to treat runoff from developed areas. • Adequate storm drainage systems for the existing and proposed improvements near the interchanges will be developed to prevent high levels of sediment and pollutants from being carried into the wetlands, natural drainageways, and irrigation ditches. Non-structural BMPs, such as pesticide and fertilizer application guidelines and anti-icing and de-icing guidelines, will be employed to improve water quality in conjunction with BMP implementation. Other non-structural BMPs, such as water quality signage adjacent to the receiving streams and irrigation ditches, are examples of other tools that will be considered for implementation. A construction dewatering discharge permit may be required for groundwater dewatering activities. • A Section 404 Permit will be obtained for in-stream work performed to retrofit any bridge and channel improvements, and 401 certification will be required to ensure that water quality standards will not be violated. 	<p>Applicable requirements included in D/B RFP Book 2 Section 5 and 12.</p> <p>404 Permit obtained, D/B contractor is required to comply with requirements.</p>
Control of storm runoff from new and existing impervious surfaces within CDOT ROW	<ul style="list-style-type: none"> • Permanent BMPs will be constructed in compliance with the <i>Urban Drainage Criteria Manual</i> (UDFCD 2004) and the CDOT New Development and Redevelopment Program, where practical, for use during the construction phase to improve the water quality control at the site. • In the tributary to Big Dry Creek, operational BMPs such as alternative de-icing measures that minimize the use of salts or operational guidelines that more closely manage the application of salts, will be considered. • Permanent BMPs will be designed and constructed in compliance with the CDOT New Development and Redevelopment Program for all highway improvements. – All highway runoff will be collected and treated to the level required by the CDOT New Development and Redevelopment Program. The US 36 corridor improvements fall into Tier 1 BMP requirements under this program. BMPs within the project corridor will need to provide 100% of the required water quality capture volume, or the project needs to provide BMPs designed to remove at least 80% of the average annual total suspended solids loading from the average storm event. 	Applicable requirements for compliance with current CDOT policies for stormwater runoff included in D/B RFP Book 2 Section 5 and 12.



Impact	Mitigation Measure	Status/Resolution
Control of industrial wastes	<ul style="list-style-type: none"> All proposed new connections to CDOT's storm sewer system will be inspected and verified during the construction phase to ensure the connections are constructed as designed and improper connections are avoided. 	Applicable requirements for inspections included in D/B RFP Book 2 Section 3.
Floodplain encroachment	<ul style="list-style-type: none"> If a CLOMR is required for Big Dry Creek, a LOMR will be prepared by the project sponsors at the completion of project construction. 	Applicable requirements for LOMRs included in D/B RFP Book 2 Section 12.2.6.
Wetlands and Other Waters		
Loss of wetlands due to the placement of dredged or fill material	<ul style="list-style-type: none"> Wetland mitigation to include banking, establishment, restoration, enhancement, and/or preservation. Banking, establishment, and restoration is typically at a 1:1 ratio. 	Mitigation included in 404 Permit
Sedimentation and erosion of wetlands and other water features	<ul style="list-style-type: none"> BMPs will be implemented during all phases of construction to reduce impacts from sedimentation and erosion, including the use of berms, brush barriers, check dams, erosion control blankets, filter strips, sandbag barriers, sediment basins, silt fences, straw-bale barriers, surface roughening, and/or diversion channels. When practicable, construction in waterways will be performed during low-flow or dry periods. Flowing water will be diverted around active construction areas. No fill material will be stored in wetlands or other water features. No unpermitted discharges will be allowed. 	Applicable requirements wetland protection included in D/B RFP Book 2 Section 5 and 12.
Construction-related Impacts		
Direct construction impacts on all resources	<p>A CMP will be developed during final design as the key mitigation measure for offsetting the construction impacts. The plan will be developed in cooperation with the affected communities, CDOT, and RTD. The CMP will include the following key elements:</p> <p>Communications Plan — to address:</p> <ul style="list-style-type: none"> Construction safety issues. Road closures. Operating protocols. Disruption of utility service. Signage plan to inform the public of lane changes, temporary interchange closures, etc. <p>Community Impact Plan — to address:</p> <ul style="list-style-type: none"> Reduction of construction dust, noise, visual degradation, and traffic impacts. Maintenance of access to local businesses during construction. Reduction of the duration of construction in residential areas. <p>Visual Protection — to address:</p> <ul style="list-style-type: none"> Screening construction staging and storage areas. Replacement of ground cover over exposed areas in a timely manner. Removal of unused detour pavements or signage. 	D/B RFP Book 2 Section 5.0 requires Contractor to submit an Environmental Compliance Work Plan addressing these and other elements.



Impact	Mitigation Measure	Status/Resolution
<p>Direct construction impacts on all resources (continued)</p>	<p>Air Quality Protection — to address: • Control of dust through watering or dust palliatives. • Revegetation of exposed soils where appropriate. • Stabilization of stockpiles. • Control of off-site tracking of mud and debris. • Usage of ultra-low sulfur diesel and bio fuels in equipment, where appropriate, to reduce emissions. CDOT endorses the above air quality mitigations and will apply these air quality reduction strategies where appropriate</p> <p>Noise Control — to address: • Construction of sound walls prior to construction. • Use of noise-reducing equipment, where it is appropriate and where it can be applied. • Minimization of the duration of construction in residential areas to the extent possible. • Minimization of night construction in residential areas to the extent possible, and adherence to all local noise variance terms if night work is required. • Re-routing construction traffic away from residential areas, where possible. • Usage of alternative construction methods, such as sonic or vibratory pile driving. • Performance of high-noise activities during daytime hours when possible (e.g., pile driving).</p> <p>Biological Resource Protection — BMPs and other practices will be reviewed and adopted to address: • Reduction of loss of vegetation in sensitive habitats. • Reduction of loss of prairie dog colonies. • Minimization of disturbances to nesting raptors and songbirds. • Reduction of disruption of wildlife corridors. • Reduction of the amount of road kill. • Minimization and avoidance of habitat fragmentation. • Reduction of the loss of fisheries and aquatic habitat. • Reduction of the loss of T&E habitat and species. • Reduction of the spread of noxious weeds.</p> <p>Hazardous Waste Control — to address: • Identification of hazardous wastes prior to construction through conducting Phase II ESAs. • Preparation of a Hazardous Materials Management Plan prior to construction. • Compliance with Occupational, Safety, and Health Administration requirements, including preparation of Health and Safety Plans prior to construction (if not included above).</p>	<p>D/B RFP Book 2 Section 5.0 requires Contractor to submit an Environmental Compliance Work Plan addressing these and other elements.</p>
<p>Direct construction impacts on all resources (continued)</p>	<p>Utilities Relocation — to address: • Notification of citizens of possible utility outages. • Scheduling of construction to reduce outages. • Coordination with local utilities.</p> <p>Water Quality and Wetlands Protection — to address: • Implementation of BMPs for erosion control. • Treatment of contaminated dewatering effluents. • Fulfilling MS4 requirements. • Minimization of impacts to wetlands and riparian areas. • Identification of locations for replacement wetlands. • Usage of wetland replacement to help mitigate wildlife habitat fragmentation.</p> <p>Traffic Control — to address: • Minimization of impacts to emergency services. • Reduction of congestion through development of traffic management plans. • Coordination of bridge demolition and detour routes to avoid overloading local streets with detour traffic. • Limiting ramp closures to low-volume ramps. • Limiting high-volume ramp closures to nights and weekends. • Maintenance of access to local businesses and residences. The detailed elements of the CMP will be developed as a part of the final engineering design for Phase 1 of the Preferred Alternative.</p>	<p>D/B RFP Book 2 Section 5.0 requires Contractor to submit an Environmental Compliance Work Plan addressing these and other elements.</p>