This Environmental Assessment (EA) was prepared by the Federal Highway Administration (FHWA) in conjunction with the Colorado Department of Transportation (CDOT) in compliance with the National Environmental Policy Act (NEPA) of 1969. NEPA requires that actions requiring federal funding or approval be evaluated based on a “systematic, interdisciplinary approach to insure the integrated use of the natural and social sciences.” This document evaluates transportation solutions and their associated environmental effects in addressing congestion, delay and reliability problems on the C-470 Corridor from Kipling Parkway to I-25. The project area is shown in Figure ES-1.

This summary highlights the following topics:

- Purpose and Need
- Alternatives Considered
- Environmental Consequences
- Mitigation Measures
- Preferred Alternative Identification
- Public and Agency Involvement

Publication of this EA coincides with a public comment period. Following the public comment period, the FHWA and CDOT will prepare a final decision document. The decision document will respond to comments on the EA, update impact analyses as necessary, and identify required mitigation.

**ES.1 PURPOSE AND NEED**

The FHWA and CDOT have identified a need for improvements to C-470 from Kipling Parkway to I-25. The purpose of this project is to provide congestion relief, decrease travel delay, and improve corridor reliability. The FHWA and CDOT seek to select an implementable transportation alternative that provides reliable and consistent travel times and commuting travel choices to accommodate an expected increase in the intensity and duration of congestion forecasted for the design year, 2025.

The need for this project is based on congestion, delay, and reliability. Additional considerations included implementation and safety. Specific need-based statements for the C-470 Corridor from Kipling Parkway to I-25 are highlighted here.

**ES.1.1 Congestion**

- Existing peak hour volumes on C-470 between Kipling Parkway and I-25 range from 5,800 to 9,000 total vehicles in both directions
- By 2025, peak hour volumes on C-470 will increase 30 to 40 percent
By 2025, C-470 will be approximately 30 percent over capacity relative to CDOT’s acceptable level of service (LOS), which is 8,000 total vehicles per hour in both directions

Existing peak hour operations on C-470 range from LOS C to LOS F

By 2025, nearly every link on C-470 will operate at LOS F during the peak hour

**ES.1.2 Delay**

Existing peak hour delay on C-470 between Kipling Parkway and I-25 is approximately 11-18 minutes per vehicle

By 2025, the peak hour delay per vehicle between Kipling Parkway and I-25 is estimated to be 20-22 minutes, resulting in over 2,900 vehicle-hours of delay in the peak hour

**ES.1.3 Reliability**

As traffic volumes increase, C-470 will be more prone to congestion and accidents, and thus reliability will continue to worsen

**ES.1.4 Safety**

While the corridor as a whole can be characterized as a relatively safe highway, the Santa Fe Drive interchange area stands out with regard to recurring accidents that have been attributed to specific geometric attributes of the highway and interchange

**ES.1.5 Implementation**

Traditional transportation funding is in short supply for capacity expansion projects like C-470

This study explores non-traditional funding methods to implement transportation solutions

**ES.2 ALTERNATIVES CONSIDERED**

Numerous alternatives were developed and evaluated during the screening process. These alternatives were carried through a three-step screening process. They were analyzed based on evaluation criteria that were consistent with the project purpose and need, and other considerations such as the ability to implement improvements in a short time frame, minimizing harm to the environment, ease of movement, and safety. Initially, families of alternatives were assessed for their ability to meet the purpose and need, which included No-Action, general purpose lanes, tolled express lanes, transit, and mobility enhancements. Of these families, only the general purpose lanes and tolled express lanes families were identified as having the potential to meet the purpose and need as stand alone alternatives, and thus were carried forward as action alternatives. The transit and mobility enhancement families were not carried forward as a whole, but certain elements of them were later repackaged with the action alternatives. At the end of the screening process, three alternatives were carried forward for detailed environmental analysis:

- No-Action Alternative
- Eight-Lane General Purpose Lanes with Auxiliary Lanes Alternative (GPL Alternative)
- Four Tolled Express Lanes with Existing General Purpose Lanes Alternative (EL Alternative)

Detail on the alternatives considered and the screening process can be found in Chapter 2.

While the implementation of a specific route structure for commuter bus service would not be provided as a part of this project, RTD has indicated that commuter service would be desirable to provide increased mobility along the C-470 Corridor if the highway was less congested.
Specific mobility enhancement strategies that are included in both of the action alternatives include:

- Providing signage on C-470 and at RTD park-n-ride lots to market the Denver Regional Council of Governments’ (DRCOG) ridesharing program
- Developing an incident management plan for the C-470 Corridor to provide traffic operators with the information to make decisions that will allow quick and efficient response to accidents, hazardous spills, and other emergencies
- Providing advanced traveler information systems including variable message signs as well as other technology to communicate travel related information directly to commuters
- Installing a remote weather system within the C-470 Corridor to provide updated road and weather conditions to maintenance crews, resulting in more responsive maintenance activities that can help enhance safety and mobility

ES.3 ENVIRONMENTAL CONSEQUENCES

The No-Action, GPL and EL Alternatives are evaluated in this EA for their ability to meet the project purpose and need, their effect on the environment, and the mitigation measures necessary to address those effects. Alternatives are compared to each other based on mitigated packages. Therefore, mitigation commitments are part of each alternative.

The direct, indirect, and cumulative environmental effects resulting from each of the alternatives were evaluated in Chapter 3 of this EA. The environmental effects of the alternatives’ elements are summarized in Sections ES.3.1 through ES.3.3.

ES.3.1 No-Action Alternative

- Transportation and traffic – The peak hour travel time between Kipling Parkway and I-25 is estimated to be ten minutes longer in each direction by the year 2025, resulting in over 2,900 vehicle-hours of delay in the peak hour. Congested conditions on C-470 would also contribute to higher congestion levels on surrounding arterial streets. Accidents would generally be expected to increase as congestion increases
- Noise – 21 locations would have noise levels higher than CDOT’s noise abatement criteria (NAC)
- Water quality – Stormwater runoff would continue to discharge directly into receiving waters without being treated

ES.3.2 General Purpose Lanes Alternative

- Environmental Justice – The Wolhurst Community in the northwest quadrant of the Santa Fe Drive interchange would experience an increase in noise levels, a changed visual landscape, right-of-way (ROW) encroachment, and improved capacity at intersections adjacent to the community
- Transportation and traffic – The added capacity on C-470 and resulting traffic redistribution would increase congestion at several arterial intersections. Traffic operations, travel times, and safety would improve on C-470, as compared to the No-Action Alternative
- Noise – 43 locations would have noise levels higher than CDOT’s NAC
- Water quality – Construction improvements would include water quality ponds to meet permitting requirements, thus offering the opportunity to improve the quality of water entering receiving streams
- Hazardous materials – Four hazardous materials sites could be affected during construction

- Visual and aesthetic character – The visual character of the project area would change from adding structural elements related to the additional lanes and flyover at Santa Fe Drive. New retaining walls along the highway would be visible from neighboring communities and Chatfield State Park

- Utilities – Various utility lines would require relocation

- C-470 trail – 7.5 miles of the C-470 trail would be shifted and reconstructed

- Construction – Temporary construction activity would result in traffic disruption and detours that would increase congestion on surrounding arterial streets and intersections. Best management practices (BMP) would be used to minimize storm runoff from the temporary soil disturbance. Short-term noise may be generated by construction equipment

- Wildlife – Minor habitat loss for deer and elk; 12.5 acres of black-tailed prairie dog habitat would be lost; an additional barrier to wildlife movement from a concrete barrier separating the eastbound and westbound lanes; temporary disturbance to raptor movement, foraging, and perching behavior during construction; other bird nests may be disturbed during construction; temporary effects on aquatic species include downstream turbidity. Long-term effects on aquatic resources are likely to be positive due to BMPs to improve the quality of stormwater runoff

- Threatened and Endangered Species - Loss of black-tailed prairie dog colonies would result in a minor reduction to bald eagle prey and habitat loss for the burrowing owl. These effects are considered minor to these species, given the amount of other prey sources and habitat available in the surrounding area

- Wetlands – 1.66 acres of wetlands and waters of the U.S. would be permanently impacted. Of these, 0.47 acre are jurisdictional, 1.19 acres are non-jurisdictional

- Vegetation – 3.80 acres of riparian habitat would be disturbed or eliminated

**ES.3.3 Express Lanes Alternative**

- Environmental Justice – The Wolhurst Community in the northwest quadrant of the Santa Fe Drive interchange would experience an increase in noise levels, a changed visual landscape, ROW encroachment, and improved capacity at intersections adjacent to the community

- Transportation and Traffic – The added capacity on C-470 and resulting traffic redistribution would increase congestion at several arterial intersections. Traffic operations, travel times, and safety would improve on C-470, as compared to the No-Action Alternative. While the traffic patterns would be different than the GPL Alternative, the effects are comparable in magnitude

- Noise – 42 locations would have noise levels higher than CDOT’s noise abatement criteria

- Water quality – Construction improvements would include water quality ponds to meet permitting requirements, thus offering the opportunity to improve the quality of water entering receiving streams

- Hazardous materials - Four hazardous materials sites could be affected during construction
Visual and aesthetic character - The visual character of the project area would change from adding structural elements related to the additional lanes and flyover at Santa Fe Drive. New retaining walls along the highway would be visible from neighboring communities and Chatfield State Park.

Utilities – Various utility lines would require relocation.

C-470 trail – 8.1 miles of the C-470 trail would be shifted and reconstructed.

Construction – Temporary construction activity would result in traffic disruption and detours that would increase congestion on surrounding arterial streets and intersections. BMPs would be used to minimize storm runoff from the temporary soil disturbance. Short-term noise may be generated by construction equipment.

Wildlife – Minor habitat loss for deer and elk; additional barriers to wildlife movement from concrete barriers separating the tolled express lanes; 14.3 acres of black-tailed prairie dog habitat would be lost; temporary disturbance to raptor movement, foraging, and perching behavior during construction; other bird nests may be disturbed during construction; temporary effects on aquatic species include downstream turbidity. Long-term effects on aquatic resources are likely to be positive due to BMPs to improve the quality of stormwater runoff.

Threatened and Endangered Species - Loss of black-tailed prairie dog colonies would result in a minor reduction to bald eagle prey and habitat loss for the burrowing owl. These effects are considered minor to these species, given the amount of other prey sources and habitat available in the surrounding area.

Wetlands – A total of 1.84 acres of wetlands and waters of the U.S. would be permanently impacted. Of these, 0.50 acre are jurisdictional, 1.34 acres are non-jurisdictional.

Vegetation – 4.10 acres of riparian habitat would be disturbed or eliminated.

ES.4 MITIGATION MEASURES
Mitigation measures for project-related direct and indirect effects are also discussed in detail in Chapter 3. Because the effects resulting from the GPL and EL Alternatives are so similar, mitigation of these effects would be similar for both alternatives. The mitigation measures are:

Environmental Justice – The noise wall on the south side of the Wolhurst Community would be reconstructed. Additional noise mitigation would be provided by either a retaining wall associated with the flyover structure or a separate noise wall on the east side of Wolhurst, north of County Line Road. Landscaping elements and aesthetic enhancements would be incorporated into the alternatives to mitigate visual impacts.

Right-of-way – Retaining walls and other design strategies would be used extensively throughout the project to avoid and minimize impacts to the ROW. All acquisitions would be performed in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act, as amended.

Transportation and traffic – Capacity improvements to arterial intersections would be made in coordination with local jurisdictions.

Highway noise – Noise barriers (walls or earthen berms) are recommended for eleven locations along C-470 to reduce the effects from highway noise.
- Water quality – BMPs would be implemented and water quality ponds would be constructed to detain stormwater runoff from the highway and filter out sediment.

- Hydrology and hydraulics – One undersized culvert would be replaced with a culvert designed to pass a 100-yr storm event.

- Floodplains – Retaining walls and other design strategies would be used extensively throughout the project to avoid and minimize impacts to floodplains.

- Paleontological resources – A qualified paleontologist would be on-site during construction excavation to monitor for buried paleontological resources, where known deposits have been mapped.

- Geology and soils – Several design strategies would be employed during final design to ensure that the roadway foundation and subgrade elements are stable enough to avoid any potential adverse effects of poor geologic conditions.

- Hazardous materials – Soil and groundwater testing and hazardous materials surveys would be performed prior to construction activities to identify any potential hazards and to quickly and appropriately respond should any be encountered.

- Visual and aesthetic character – Architectural treatments would be employed to maintain consistency throughout the corridor. CDOT has been working with project stakeholders and will continue to do so to ensure that they have adequate input in the selection of specific architectural elements.

- Utilities – Utility conflicts would be identified during final design and relocations would be performed in accordance with standard CDOT policy.

- C-470 trail – The GPL Alternative would require reconstruction of 7.5 miles of trail, while the EL Alternative would require 8.1 miles of reconstruction. Both alternatives would allow the trail to remain open during construction, with minor detours to ensure bicycle and pedestrian safety.

- Construction – A construction phasing and traffic control plan would be developed during final design and any increase in traffic on local streets would be mitigated with minor operational improvements. Minor capacity improvements such as restriping turn bays or acceleration/deceleration lanes would be made at several arterial intersections to reduce congestion during construction. Water quality BMPs would be implemented to prevent erosion, sediment, and nutrient loading in the watershed. Construction noise would be monitored, and where necessary, temporary noise barriers would be installed.

- Wildlife – CDOT would improve the existing wildlife crossing at the South Platte River by expanding the bridge both in width and height, adding a natural substrate to better accommodate wildlife passage, and re-vegetating near the bridge with native shrubs. CDOT would limit construction activity within 1/3-mile of known active raptor nests between February 15 and July 15. If this is not possible, replacement nests may be constructed in areas with adequate prey base to mitigate for the lost ability for the raptors to produce young. Effects to black-tailed prairie dogs would be further avoided and minimized in the design process. If only partial colonies would be affected, a visual barrier would be placed between affected burrows and undisturbed portions of the colony. Burrow openings in
the project area would be collapsed prior to construction to encourage abandonment of affected burrows. CDOT would notify the Food and Drug Administration prior to transporting any dead or living prairie dogs for the purpose of relocation.

- Threatened and Endangered Species - Prior to construction, the project area would be re-surveyed to confirm the existence of state and federally listed species and work with the U.S. Fish and Wildlife Service (USFWS) and the Colorado Division of Wildlife (CDOW) as appropriate. CDOT would plant vegetation as suitable cover for alternative prey habitat. CDOT would also install perch poles for hunting roosts and nesting platforms to encourage nesting attempts within the three-mile foraging area of the existing bald eagle nest. Some prairie dogs would also be relocated within the three-mile foraging area. If burrowing owls are found during the survey, prairie dog evacuation and initial disturbance of prairie dog colonies where owls are present would be planned between October 31 and March 1, prior to construction, when burrowing owls would not be present in the project area.

- Wetlands - All permanently affected wetlands (jurisdictional and non-jurisdictional) would be replaced on a 1:1 basis.

- Vegetation - Areas temporarily disturbed during construction would be seeded immediately after construction with a native seed mix. Trees adjacent to the project area that would not be removed would be protected to avoid damage. The Noxious Weed Management Plan developed for the Corridor would also be implemented.

ES.5 PREFERRED ALTERNATIVE IDENTIFICATION

Following the environmental analysis of the three alternatives carried forward, the FHWA and CDOT identified a Preferred Alternative. This was based on the ability to fund and implement one of the alternatives, as evaluated during the Financial Analysis and Implementation Committee (FAIC) process. The FAIC was a collaborative process with cities, counties, and other agencies within the project area to investigate potential funding strategies for the two action alternatives and provide input to the FHWA and CDOT on the identification of the preferred approach for improving C-470. This group investigated potential funding mechanisms and assessed the extent to which these mechanisms were practical. Based on the funding information analyzed, it was concluded that the EL Alternative is financially self-supporting, and therefore is eligible for amendment into the Denver Regional Council of Government’s (DRCOG) fiscally-constrained Regional Transportation Plan (RTP). The FAIC also investigated potential GPL Alternative funding, and concluded that at the present time, it does not have a viable funding source and therefore cannot be implemented. While both action alternatives meet this project’s purpose and need and have comparable environmental effects, only the EL Alternative has the demonstrated financial ability to be implemented at this time. As a result, the FHWA and CDOT have identified the EL Alternative as the Preferred Alternative. The FHWA and CDOT will consider public comments on this EA and revisit financial feasibility of both action alternatives before making a final decision.

ES.6 PUBLIC AND AGENCY INVOLVEMENT

The outreach program for the C-470 Corridor EA was designed to ensure public input and participation in the planning and environmental process. Public involvement was part of an overall communications program that involved community relations, media relations, and agency coordination.
A contact database was developed consisting of nearly 22,000 businesses and households within a mile of C-470. It consisted of property owners, elected officials, media, homeowners associations (HOAs), civic groups, business owners, and members of the general public who requested to be included on the mailing list.

Nearly 1,200 persons attended forty-four small group meetings with business, civic, and HOA groups. A total of 743 people attended the 17 open house meetings and presentations held at the end of each phase of the screening process. Four newsletters were distributed at key project milestones. The project Web site (www.c470.info) provides access to project information, an overview of the EA process, the project schedule, frequently asked questions and answers, meeting announcements, exhibits from open house meetings, and related resources. To date, the site has had over 100,000 visitors.

In order to provide ample public involvement opportunities for minority and low-income populations and encourage participation, special outreach efforts were employed to engage these groups. One such group was the Wolhurst Community in the northwest quadrant of the Santa Fe Drive interchange. Three separate meetings were held with the Wolhurst Community through which consensus was reached on the Santa Fe Drive interchange configuration that would result in the least adverse effects to the community. A separate meeting was held with community residents to discuss options for aesthetic improvements to the entrance of the community.

Agency coordination consisted of three tiers of involvement. The Project Management Team, composed of the FHWA, CDOT, and consultants, conducted the study and made recommendations to the other groups. The Technical Working Group, composed of technical staff from local governments and agencies, reviewed study progress to ensure compliance with their local transportation plans. Finally, executives and elected officials from local governments within the project area and agencies composed the Executive Working Group, which offered executive-level acceptance of study recommendations. The outreach program also involved federal and state resource agencies in the study regarding evaluation of potential effects to resources under their jurisdiction.