

# ES EXECUTIVE SUMMARY

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In November 2004, Regional Transportation District (RTD) voters approved the FasTracks initiative to expand and improve public transit service within the Denver Metropolitan Area (Metro Region). The comprehensive FasTracks Plan, which formed the basis of the FasTracks initiative, includes construction and operation of new fixed-guideway transit lines and improved bus service and park-n-Rides throughout the Metro Region.

The Southwest Corridor Extension light rail transit project is proposed as part of the FasTracks Plan (see Figure ES-1), and is the subject of this Environmental Evaluation. The project is expected to be locally-funded through the voter approved initiative. As a result, it is not subject to requirements of the National Environmental Policy Act, which applies to federal actions. This Environmental Evaluation has been prepared in accordance with RTD guidelines, including the RTD FasTracks Environmental Methodology Manual, and provides a comparable level of analysis to environmental documentation prepared for the other FasTracks corridors. The Environmental Evaluation will be available for public review and comment before a final version is submitted to the RTD Board of Directors for approval.

## **Project Location**

The proposed action would extend light rail service in the Southwest Corridor along the C (Union Station to Mineral) and D (30th and Downing to Mineral) lines by 2.5 miles and include two new stations (See Figure ES-2):

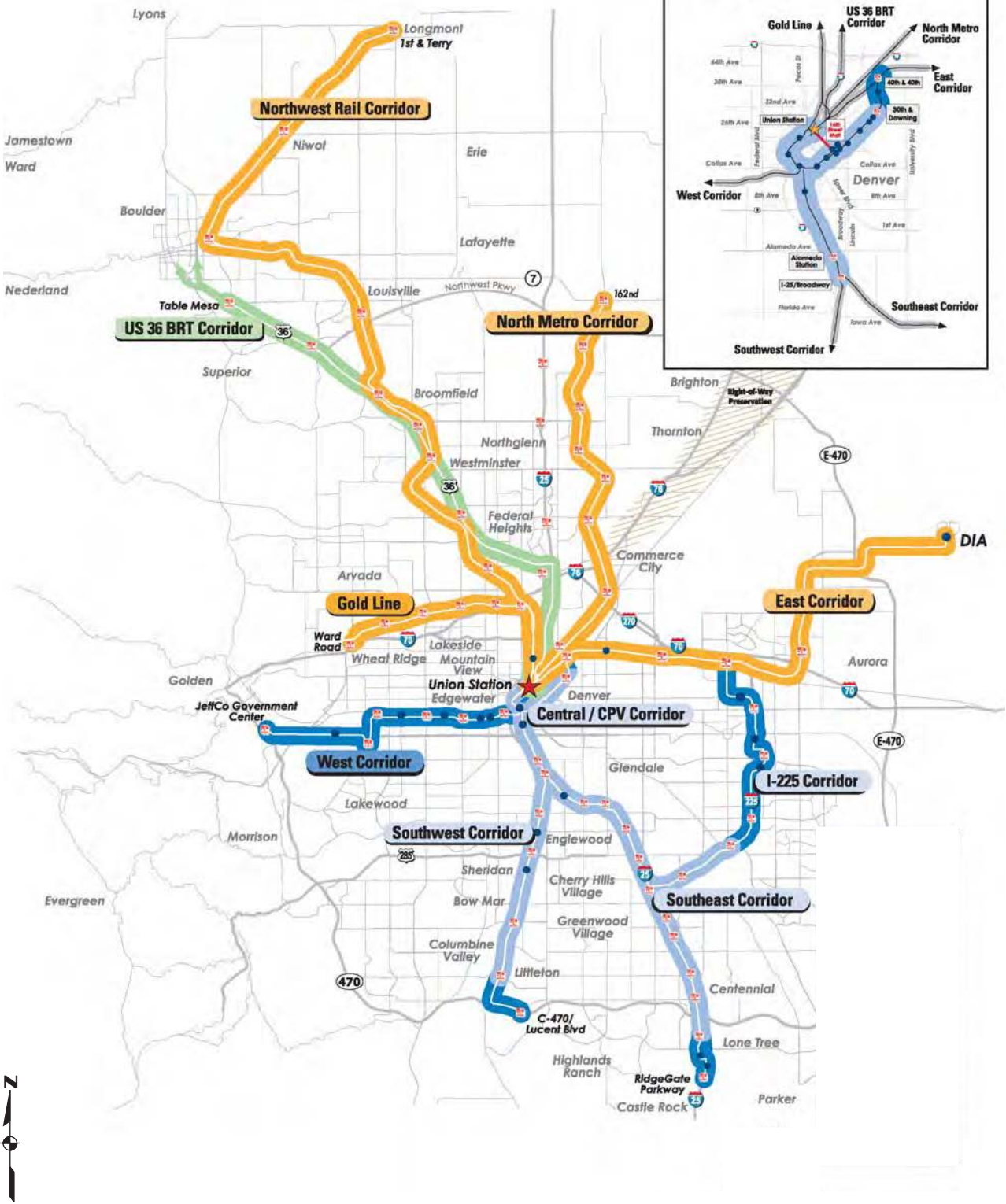
- Lucent Station and park-n-Ride; and
- Intermediate Station and park-n-Ride (not in FasTracks program).

## **Public Participation**

RTD worked cooperatively with the City of Littleton, Highlands Ranch Metro District, Douglas County, CDOT, and residents, businesses and property owners throughout the Environmental Evaluation and Basic Engineering process. A project website, telephone hotline, and other contact information allowed the public and other stakeholders to issue comments or concerns at their convenience. The project team also held two public meetings to date.

## **Document Organization**

This Executive Summary mirrors the format of the Environmental Evaluation, providing an overview of project purpose and need, alternatives considered, anticipated environmental impacts and proposed mitigation, transportation systems analysis, and the public involvement program.



Not to Scale

- Commuter Rail
- Bus Rapid Transit
- Light Rail
- Park-n-Ride
- Existing Light Rail
- Station without parking

Final alignment and technology to be determined during the environmental process study

**Figure ES-1  
FasTracks Rapid  
Transit Network**







Source: Southwest Corridor Extension Project Team, 2009

- |          |                           |                                |                 |
|----------|---------------------------|--------------------------------|-----------------|
| Stations | Southwest Light Rail Line | Southwest Light Rail Extension | County Boundary |
| Existing | Proposed                  | Future                         | City Boundary   |
|          | Freight Railroad          |                                |                 |

Figure ES-2  
Southwest Corridor  
Extension





## ES.1 Purpose and Need

The purpose of this project is to extend transit service in the Southwest Corridor to Highlands Ranch, a 22,000-acre master planned community located in unincorporated Douglas County. At full build-out around 2015, more than 100,000 people will reside in Highlands Ranch.

The Southwest Corridor currently includes 8.7 miles of light rail transit and five stations along a line running parallel to U.S. 85 (Santa Fe Drive) from the terminus of the Central Corridor at I-25 and Broadway to Mineral Avenue in Littleton. Demand has been high since service was initiated in 2000, with ridership more than doubling original projections. Further, parking demand at the existing end-of-line Mineral Station regularly outstrips supply.

An extension of light rail in the Southwest Corridor is needed to address development and growth in Douglas County and Highlands Ranch, improve local and regional travel options, address high travel demand, provide a reliable alternative to the automobile, and meet the 2004 voter mandate to implement FasTracks. Specific needs include the following:

- Development and growth in Douglas County and Highlands Ranch;
- Local and regional travel options;
- High travel demand;
- Regional connectivity;
- Reliable alternative to the automobile; and
- Voter mandate of the FasTracks Plan.

## ES.2 Alternatives Considered

RTD prepared the *Southwest Extension Transit Corridor Planning and Conceptual Engineering Study* (Southwest Extension Study) in December 2002 to investigate alternatives to extend light rail service into northern Douglas County and Highlands Ranch. This initial study resulted in the identification of five screening-level alternatives along the US-85 corridor between Mineral Avenue Station and Highlands Ranch south of C-470. Following screening for feasibility and meeting project goals and objectives, the team, working with local officials and stakeholders, selected the preferred alternative, the current Build Alternative.

### ES.2.1 No Action Alternative

The No Action Alternative assumes the proposed project would not take place. Effects or conditions resulting from the No Action Alternative provide a baseline from which to compare effects of the Build Alternative in the Environmental Evaluation. The No Action Alternative includes existing and financially committed projects within the project study area. These projects include: continued bus operations, construction and operation of the entire FasTracks System (with exception of the Southwest Corridor Extension), transportation projects identified in the Denver Regional Council of Governments' *2035 Metro Vision Regional Transportation Plan*, and major and planned approved developments.

## ES.2.2 Build Alternative

The Build Alternative extends the Southwest Corridor Light Rail line from Mineral Station to Lucent Station in Highlands Ranch. The end-of-line station at Lucent will include a park-n-Ride facility and feeder bus service offering area residents and businesses improved access to the region's rapid transit system and a viable alternative to the single-occupant vehicle.

The light rail alignment maintains a double-tracked configuration along the 2.5-mile extension to Lucent Station. The alignment runs south from the current Mineral Station terminus along the west side of the Union Pacific Railroad (UPRR) and Burlington Northern Santa Fe Railroad (BNSF) lines.<sup>1</sup> The alignment then crosses over County Line Road, the two freight rail lines, C-470, and the CDOT flyover as it assumes an east-west orientation south of C-470. The light rail alignment then proceeds east, parallel to the highway, in an RTD easement and in CDOT right-of-way. The alignment terminates in the southwest quadrant of the Lucent Boulevard and C-470 interchange (Figure ES-2). The allotment storage track currently south of Mineral Station will be duplicated east of the new end-of-line station, allowing three trains (4-car consists) to be stored at any given time.

There are four grade-separated crossings: three roads and one railroad. The alignment is elevated on a flyover across County Line Road, the freight rail lines, and C-470. At Erickson Boulevard, the alignment is elevated on a bridge. The High Line Canal trail and waterway will be enclosed in box culverts to provide safe and functional separations from the rail track.

The Build Alternative includes two new stations along the Southwest Corridor Extension:

- Lucent Station, new end-of-line station with a kiss-n-Ride drop-off area, accommodations for local bus service, and a new 1,000 space park-n-Ride facility; and
- Intermediate Station (not part of FasTracks program), new station with a kiss-n-Ride drop-off area, accommodations for local bus service, and a new 400 space park-n-Ride facility.

The proposed station locations and configurations reflect the type of development anticipated for the stations and travel markets served: The Lucent Station and park-n-Ride is shown on Figure ES-3 and the Intermediate Station and park-n-Ride is shown on Figure ES-4.

The Build Alternative would expand the operating hours of the Southwest Corridor Line. The existing maintenance facility for the Southwest Corridor Line has available capacity to handle the additional light rail vehicles required for the extended line.

## ES.3 Affected Environment, Impacts and Mitigation

Detailed studies were conducted to evaluate environmental impacts of the No Action Alternative and Build Alternative for the following resources:

- Land use, zoning, and farmland resources;
- Social impacts and community facilities, including environmental justice;

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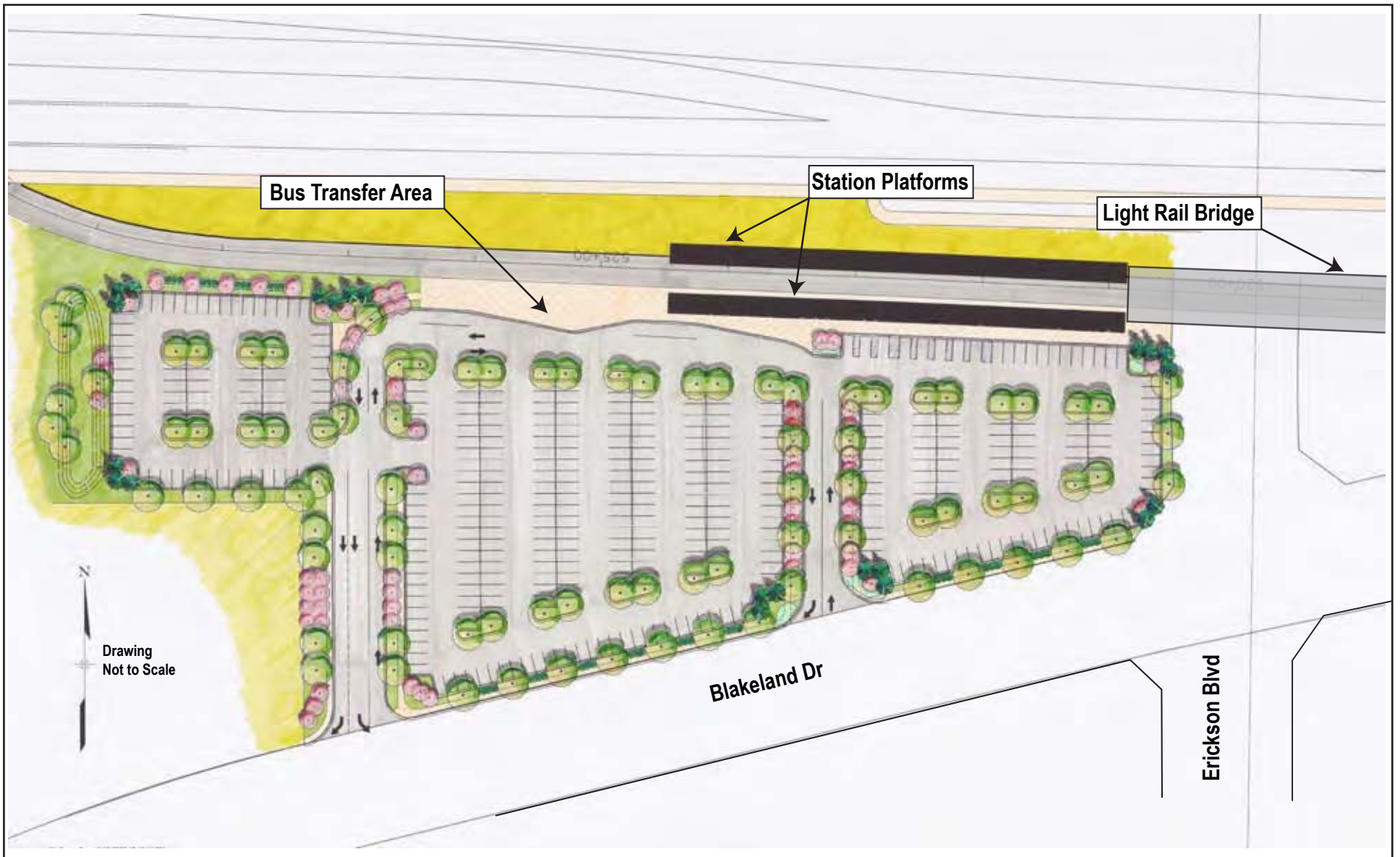
<sup>1</sup>Note that approximately 3,900 linear feet of existing Union Pacific Railroad track would be relocated to the east within the existing railroad corridor. This would include replacement of a historic (1943) trestle across Lower Dad Clark Gulch.



Figure ES-3  
Lucent Station Layout







**Figure ES-4**  
**Intermediate Station Layout**



- Economic development;
- Land acquisition and relocations;
- Cultural, including historic, archaeological and paleontological resources;
- Visual and aesthetic resources;
- Parklands and recreational resources;
- Air quality and energy;
- Noise and vibration;
- Biological resources, including vegetation, wildlife and sensitive species;
- Natural resources, including minerals (geology and soils), water resources and water quality, floodplains, drainage/hydrology, wetlands, and waters of the U.S.;
- Hazardous materials;
- Public safety and security; and
- Utilities.

Each resource was analyzed for the following elements:

**Affected Environment:** Summarizes the resource condition that exists for the project study area today (at the time the analysis was conducted) and describes the study area boundaries. Study area definitions vary according to the issues under evaluation.

**Environmental Consequences:** Describes potential direct, indirect, construction-related, and cumulative impacts for the No Action Alternative and the Build Alternative for each resource.

**Mitigation:** Describes proposed mitigation to be implemented to avoid, minimize, or compensate for impacts identified under environmental consequences.

No significant impacts are anticipated. Minor impacts are associated with the Southwest Corridor Extension project and most mitigation measures proposed are standard best management practices. This is largely due to the integration of light rail planning within the existing railroad corridor along US-85 and along the edges of CDOT's C-470 right-of-way. Due to these locations, a large part of the corridor has experienced ground disturbance associated with other railroad and on-going development activities. Table ES-1 summarizes potential impacts of the Build Alternative and proposed mitigation for all resources.

Property acquisition needs will be met through agreements with UPRR, BNSF, CDOT, Douglas County, Highlands Ranch Metro District, Denver Water, and Shea Homes. No residences or businesses will be acquired. CDOT coordination will require additional environmental approvals where their right-of-way is involved. This Environmental Evaluation will serve as the basis for that submittal and updates will be included as applicable.



**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<b>LAND USE, ZONING, AND FARMLANDS</b>	
<b>Direct Impacts</b> <ul style="list-style-type: none"> <li>▪ Compatible with local land use plans and long-term, transit-oriented planned development.</li> <li>▪ No farmlands in study area</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Indirect Impacts</b> <ul style="list-style-type: none"> <li>▪ Positive impacts are associated with planned growth and transit development.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Construction Impacts</b> <ul style="list-style-type: none"> <li>▪ No Impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Cumulative Impacts</b> <ul style="list-style-type: none"> <li>▪ Positive impacts are associated with planned growth and transit development.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>SOCIAL IMPACTS AND COMMUNITY FACILITIES</b>	
<b>Population and Employment</b>	
<b>Direct, Indirect, Construction, and Cumulative Impacts</b> <ul style="list-style-type: none"> <li>▪ Transit-oriented development approved by DRCOG and Douglas County.</li> <li>▪ Supports the increased populations and employment within planned development by increasing accessibility to jobs, community facilities, and other services.</li> <li>▪ Increased employment from the construction and operation of the Southwest Corridor Light Rail Extension project.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Neighborhoods and Community Facilities</b>	
<b>Direct, Indirect, and Cumulative Impacts</b> <ul style="list-style-type: none"> <li>▪ Benefits of increased accessibility from stations to neighborhoods and community facilities.</li> <li>▪ No residential or community facilities displacements.</li> <li>▪ Proximity impacts to proposed Fly'n B Park and open space areas south of C-470, between Santa Fe Drive and High Line Canal.</li> <li>▪ Potential to shift housing densities to locations around transit stations.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use of landscaping to minimize impacts of new light rail facilities.</li> <li>▪ See Visual and Aesthetic Resources.</li> </ul>

**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Minor construction-related noise and disruption to local access and utilities could occur for areas adjacent to the proposed stations and park-n-Rides.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Create traffic maintenance plans and work closely with the local community to ensure that alternative access and circulation are provided.</li> <li>▪ Work closely with local community and the media regarding temporary closures and inconveniences.</li> </ul>
<b>Environmental Justice</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No disproportionate impacts to minority populations.</li> <li>▪ The Wolhurst community and Wind Crest retirement community will experience a benefit from increased access to rail transit and the entire RTD network.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Indirect Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Improve the mobility of seniors, other transit-dependent populations, and minority and low-income populations who would greatly benefit from an expanded transit system.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Increased noise, traffic congestion, and other inconveniences for the residents and businesses adjacent to the project, but construction-related impacts to neighborhoods would be minor.</li> </ul>	<ul style="list-style-type: none"> <li>▪ See Visual and Aesthetic Resources</li> <li>▪ See Air Quality</li> <li>▪ See Noise and Vibration</li> </ul>
<p><b>Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ The CDOT flyover and future construction of additional tracks by the UPRR contribute to cumulative impacts to the Wolhurst community.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>ECONOMIC DEVELOPMENT</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Minor acquisitions of undeveloped commercial property will not result in loss or displaced business revenue, jobs, or property tax revenues.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Indirect Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Positive impacts from increases in property values, creation of jobs, and increases in populations.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Minor construction-related noise and disruption to local access and utilities could occur for areas adjacent to the proposed stations and park-n-Rides.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Traffic maintenance plans would be created and RTD would work closely with the local businesses to ensure that alternative access and circulation are provided. RTD will work closely with businesses and the media regarding temporary closures and inconveniences.</li> </ul>

**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<ul style="list-style-type: none"> <li>▪ Construction activities would provide a temporary economic stimulus to the area, employing up to 345 full-time construction staff.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Positive impacts are associated with planned growth and transit development.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>LAND ACQUISITION AND RELOCATIONS</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ All right-of-way needs for the project will be met through agreements with the UPRR and BNSF railroads, CDOT, Douglas County, Highlands Ranch Metro District, , and Shea Homes. No residential parcels will be acquired. Minor undeveloped commercial property may be needed, but no relocations will occur.</li> <li>▪ Access to the Lucent Station and park-n-Ride will be met through cross-access easements between RTD and the Englewood McLellan Reservoir Foundation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Indirect and Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No Impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Temporary construction easements may be needed to gain access to the dedicated right-of-way. Any adjacent property used during construction activities will be returned to its original condition after construction.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Any adjacent property used during construction activities will be returned to its original condition once construction is completed.</li> <li>▪ Special use permits to access CDOT right-of-way will be obtained.</li> </ul>
<b>CULTURAL RESOURCES</b>	
<b>Historic Resources</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Removal of Denver &amp; Rio Grande Railroad bridge (5AH.255.2)</li> <li>▪ Realignment of approximately 3,900 feet Denver &amp; Rio Grande Railroad (5AH.255.2); currently owned by Union Pacific Railroad (UPRR).</li> <li>▪ Construction of a concrete box culvert extension in High Line Canal (5DA.600) from C-470 to Plaza Drive would not alter those characteristics that render this resource eligible for the National Register of Historic Resources (NRHP) because it does not result in a loss of historic integrity.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Official consultation with the SHPO and Native American Consultation will be undertaken to support the Section 404 permitting process related to Lower Dad Clark Gulch (wetlands and water of the U.S.).</li> <li>▪ Determination of effect and mitigation, if warranted, will be determined through formal Section 106 consultation.</li> </ul>



**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<p><b>Indirect Impacts</b></p> <ul style="list-style-type: none"> <li>▪ The Southwest Corridor Light Rail Extension project is located in an existing rail corridor more than 800 feet away from known historic properties (City Ditch &amp; Flume -5AH.254.7 and the Littleton Large Animal Clinic - 5AH.732); therefore, no indirect impacts have been identified.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Temporary construction impacts to the Denver &amp; Rio Grande Railroad (5AH.255.2); Atchison, Topeka &amp; Santa Fe Railroad (5AH.256.2); and the High Line Canal (5DA.600) would not alter those characteristics that render each property eligible for the NRHP.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ The potential future additions of new UPRR and Burlington Northern and Santa Fe Railroad (BNSF) tracks to the existing historic railroad corridor represents a cumulative impact when combined with the Southwest Corridor Light Rail Extension project. However, the addition of new tracks would not affect those characteristics that render this historic railroad corridor eligible for the NRHP because existing tracks remain intact.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Archaeological Resources</b>	
<p><b>Direct, Indirect, and Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No Impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Potential impacts to archaeological resources due to unexpected finds.</li> </ul>	<ul style="list-style-type: none"> <li>▪ If archaeological remains are encountered during construction, consultation with the SHPO will occur and work will stop. A professional archaeologist will evaluate the site.</li> </ul>
<b>Paleontological Resources</b>	
<p><b>Direct, Indirect, and Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No Impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Potential impacts to paleontological resources due to unexpected finds.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Paleontological resource impacts will be avoided or minimized by implementing standard mitigation measures, which follow the guidelines of the Society of Vertebrate Paleontology and meet the standards of federal agencies and the state of Colorado.</li> </ul>

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<b>VISUAL AND AESTHETIC RESOURCES</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No change in overall visual quality of corridor.</li> <li>▪ For portions of corridor along South Santa Fe Drive, new transit elements provide continuation of elements already in corridor.</li> <li>▪ For portions of corridor south of C-470, flyover and new transit elements provide slight increase in urbanization of view.</li> <li>▪ Minor impacts to viewers from additional new visual elements.</li> <li>▪ Lighting and the potential for light glare.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Follow the local government requirements for design of the station area improvements.</li> <li>▪ Design catenary system, including poles and other vertical elements, to be sympathetic to the design of new development proposed along the corridor.</li> <li>▪ Landscaping at park-n-Rides and new stations.</li> <li>▪ Pursue utilization of lighting standards that would shield light to prevent light trespass.</li> </ul>
<p><b>Indirect and Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No Impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Visual presence of construction equipment, temporary roadside barriers, and construction signage.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>PARKLAND AND RECREATIONAL RESOURCES</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Extension of the High Line Canal Trail underpass culvert at Plaza Drive by approximately 55 feet.</li> <li>▪ Improvements to the C-470 Trail between Erickson Boulevard and the High Line Canal as deemed necessary to accommodate Denver Water maintenance vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Upgraded paving and signage to ensure safe use of the trail by pedestrians and Denver Water maintenance forces.</li> </ul>
<p><b>Indirect Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Minor proximity impacts to C-470 and High Line Canal Trails, and proposed Fly'n B Park south of Plaza Drive.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Temporary detours for C-470 and High Line Canal Trails, and temporary effects to the planned open space areas near the Intermediate Station if the open space is implemented in advance of the project.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Detours/signage to be coordinated with local jurisdictions and CDOT to assure maintenance of trail traffic, since both trails are used as bicycle commuter routes.</li> <li>▪ Protective fencing and revegetation of planned open space areas if needed.</li> </ul>
<p><b>Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No Impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>

**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<b>AIR QUALITY AND ENERGY</b>	
<b>Air Quality</b>	
<b>Direct Impacts</b> <ul style="list-style-type: none"> <li>▪ No carbon monoxide hot spot violations.</li> <li>▪ Less energy consumption.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed; however, general air quality mitigation strategies for FasTracks program will be implemented.</li> </ul>
<b>Indirect Impacts</b> <ul style="list-style-type: none"> <li>▪ No impacts, benefits to area</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Construction Impacts</b> <ul style="list-style-type: none"> <li>▪ Fugitive road dust and engine exhaust emissions.</li> <li>▪ Energy consumption by construction equipment and vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Prepare a Dust Control Plan.</li> <li>▪ Obtain Air Pollution Emission Notice (APEN) permit for construction activities.</li> <li>▪ Wet exposed soils and soil piles for dust suppression.</li> <li>▪ Cover trucks hauling soil and other fine materials.</li> <li>▪ Stabilize and cover stockpile areas.</li> <li>▪ Cover or wet temporary excavated materials.</li> <li>▪ Re-vegetate exposed areas.</li> <li>▪ Minimize off-site tracking of mud and debris by washing construction equipment and temporary stabilization.</li> <li>▪ Limit vehicle speed of construction-related equipment when off road.</li> <li>▪ Prohibit unnecessary idling of construction equipment</li> <li>▪ Use low-sulfur fuel.</li> <li>▪ Locate diesel engines and motors as far away as possible from residential areas.</li> <li>▪ Locate staging areas as far away as possible from residential areas.</li> <li>▪ Require heavy construction equipment to use the cleanest available engines or to be retrofitted with diesel particulate control technology.</li> <li>▪ Use alternatives for diesel engines and/or diesel fuels (such as: biodiesel, liquefied natural gas, compressed natural gas, fuel cells, or electric engines).</li> <li>▪ Install engine pre-heater devices to eliminate unnecessary idling during winter-time construction.</li> <li>▪ Prohibit tampering with equipment to increase horsepower or to defeat emission-control devices effectiveness.</li> <li>▪ Require construction vehicle engines to be properly tuned and maintained.</li> <li>▪ Use construction vehicles and equipment with the minimum practical engine size for the intended job.</li> <li>▪ Use a wheel wash station and/or large-diameter cobble apron at egress/ingress areas to minimize dirt being tracked onto public streets.</li> <li>▪ Use vacuum powered street sweepers to control dirt tracked onto streets.</li> </ul>



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Summary of Potential Impacts	Proposed Mitigation
<b>Cumulative Impacts</b> <ul style="list-style-type: none"> <li>▪ Contribution to improvements in regional air quality.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Energy</b>	
<b>Direct Impacts</b> <ul style="list-style-type: none"> <li>▪ The FasTracks program will result in a 0.005 percent increase in energy consumed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No impacts were identified in the energy analysis that would require mitigation; however, RTD has supplemental policies regarding implementation of capital improvement projects that reduce energy consumption and overall VMT. These include:               <ul style="list-style-type: none"> <li>- Creating multiple access points for parking lots, where possible.</li> <li>- Carefully designing kiss-n-Ride drop offs to maximize efficiency and minimize number of vehicles idling.</li> <li>- Positioning stations to be more easily accessible by pedestrians and bicyclists.</li> <li>- park-n-Ride improvements.</li> </ul> </li> </ul>
<b>Indirect and Cumulative Impacts</b> <ul style="list-style-type: none"> <li>▪ Benefits to region from increased transit usage and future transit oriented development.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Although the FasTracks program will not result in a large reduction in energy consumed or VMT, future efforts should attempt to encourage fewer passenger vehicles on the road and fewer vehicle miles traveled.</li> </ul>
<b>Construction Impacts</b> <ul style="list-style-type: none"> <li>▪ Energy usage of 172,867 British Thermal Units (BTUs) for construction related activities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>NOISE AND VIBRATION</b>	
<b>Noise</b>	
<b>Direct Impacts</b> <ul style="list-style-type: none"> <li>▪ There would be no noise impacts to receptors (residences or sensitive sites) due to light rail operations.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Indirect Impacts</b> <ul style="list-style-type: none"> <li>▪ Minor proximity impacts to park and trail users from light rail train operations, but overall noise levels do not increase from existing conditions because of adjacent C-470 and Plaza Driver traffic noise.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Construction Impacts</b> <ul style="list-style-type: none"> <li>▪ Construction noise would create short-term impacts to receptors located along the alignments, near station locations, and along designated construction access routes.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Cumulative Impacts</b> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>

**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<b>Vibration</b>	
<b>Direct Impacts</b> <ul style="list-style-type: none"> <li>▪ The project is exempt from vibration analysis since receivers are outside of prescribed screening distances.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Indirect and Cumulative Impacts</b> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Construction Impacts</b> <ul style="list-style-type: none"> <li>▪ No impacts. Impacts are calculated for locations closer than 75 feet and the nearest vibration sensitive receptors are at least 205 feet from the project centerline.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>BIOLOGICAL RESOURCES</b>	
<b>Vegetation</b>	
<b>Direct Impacts</b> <ul style="list-style-type: none"> <li>▪ Minimal Impacts - permanent loss of 20 acres of vegetation (24 acres with Intermediate Station).</li> <li>▪ No Senate Bill 40 impacts in CDOT rights-of-way.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Develop a noxious weed management plan.</li> <li>▪ Use native species when possible for landscape plantings at proposed park-n-Rides and stations.</li> </ul>
<b>Indirect Impacts</b> <ul style="list-style-type: none"> <li>▪ Potential for spread of non-native, weedy species.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Weed control within CDOT and RTD rights-of-way.</li> <li>▪ Replanting of native species</li> </ul>
<b>Construction Impacts</b> <ul style="list-style-type: none"> <li>▪ Minimal impacts – temporary loss of 22 acres of vegetation for staging and work areas.</li> <li>▪ Increased potential for invasive species due to land disturbance.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Minimize size of disturbed areas and length of time such areas remain open, use weed-free hay/mulch, reseed with native species, control invasive species within right-of-way and staging areas, and develop a noxious weed management plan.</li> </ul>
<b>Cumulative Impacts</b> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Wildlife</b>	
<b>Direct Impacts</b> <ul style="list-style-type: none"> <li>▪ Approximately 2 acres of potential wildlife habitat would be permanently impacted due to the track and parking lots, including Intermediate Station.</li> <li>▪ No permanent impacts to wildlife anticipated, because project area is located within developed areas and parallels several transportation corridors.</li> <li>▪ The project does not act as a barrier to wildlife movement.</li> <li>▪ Impacts to aquatic life in Lower Dad Clark Gulch from erosion and shade tree removal.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use appropriate Best Management Practices (BMPs) to avoid water quality impacts to Lower Dad Clark Gulch.</li> <li>▪ Avoid or minimize tree removal along Lower Dad Clark Gulch.</li> </ul>

**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<b>Indirect Impacts</b> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Construction Impacts</b> <ul style="list-style-type: none"> <li>▪ Minimal construction impacts to wildlife that currently use the project area for forage or prey, because the wildlife is likely accustomed to noise and movement due to proximity to transportation corridors and development. The increase in noise and activity during construction may cause wildlife to temporarily leave the area.</li> <li>▪ Potential impacts to migratory birds during nesting season.</li> <li>▪ Potential to impact water quality in Lower Dad Clark Gulch, which could harm fish and invertebrates.</li> </ul>	<ul style="list-style-type: none"> <li>▪ RTD will comply with the requirements of the Migratory Bird Treaty Act.</li> <li>▪ RTD will coordinate with the Colorado Division of Wildlife and implement their Raptor Guidelines, as needed.</li> <li>▪ Survey of construction area during nesting season for ground-nesting migratory birds (April 1 and August 31).</li> <li>▪ Removal of trees during non-nesting season of migratory birds that nest in trees (August 31 to April 1).</li> <li>▪ Inactive tree nests can be removed at any time.</li> <li>▪ Use appropriate BMPs to avoid water quality impacts to Lower Dad Clark Gulch during construction.</li> <li>▪ Place temporary barriers around access roads and staging areas to minimize wildlife interaction with construction equipment.</li> </ul>
<b>Cumulative Impacts</b> <ul style="list-style-type: none"> <li>▪ Minimal cumulative impacts to wildlife as a result of disturbance from human activity, potential loss of prey, or loss of habitat primarily because the context of the study area is in a developed or developing urban area.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Threatened, Endangered, and Sensitive Species</b>	
<b>Direct Impacts</b> <ul style="list-style-type: none"> <li>▪ No federally-listed species are located in the project area.</li> <li>▪ Displacement of prairie dogs.</li> <li>▪ Impacts to aquatic life in Lower Dad Clark Gulch from erosion and shade tree removal.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Relocation efforts for prairie dog towns greater than two acres shall be conducted in accordance with CRS 35-7-203, as well as any other applicable laws or regulations. Prairie dog impacts on CDOT right-of-way will follow the CDOT Black-tailed Prairie Dog Policy (CDOT, 2009); otherwise, impacts will adhere to the FasTracks Prairie Dog Policy (RTD, 2007).</li> <li>▪ If a relocation site cannot be located for towns larger than two acres, the prairie dogs will be captured and donated to raptor rehabilitation facilities, or turned over to the Fish and Wildlife Service (USFWS) for the black-footed ferret reintroduction program. Burrowing owl surveys will be conducted within 1 year prior to construction.</li> <li>▪ Replant vegetation and trees along gulch.</li> <li>▪ Implement permanent BMPs to control erosion.</li> </ul>
<b>Indirect Impacts</b> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Construction Impacts</b> <ul style="list-style-type: none"> <li>▪ Disturbance of prairie dog colonies outside of construction zone.</li> <li>▪ Potential for impacts to common garter snake and northern leopard frog habitat.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Erect construction/visual barriers between construction areas and active prairie dog colonies to minimize disturbance and encounters with construction equipment. Remove prairie dogs from the construction side of the barriers.</li> <li>▪ Implementation of BMPs to maintain water quality during construction.</li> </ul>



**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<p><b>Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Minimal impacts to prairie dogs from the Southwest Corridor Light Rail Extension project compared to the planned development surrounding the project area.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>NATURAL RESOURCES</b>	
<b>Mineral Resources/Geology and Soils</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Geotechnical impacts (mass movement, erosion, expansive soil and bedrock, compactable and compressible soil, floods, corrosivity, and seismicity).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use appropriate engineering techniques/design to minimize potential impacts. Mitigation measures could include:               <ul style="list-style-type: none"> <li>– Shoring of excavations, retaining walls, drainage/dewatering systems, excavation and/or engineered or imported fill, compaction, pre-construction flooding and/or loading, and use of geogrids or geotextiles to mitigate for collapsible soils.</li> <li>– Drainage systems to direct surface water and runoff, slope design, covering slope during construction, use of engineered fill, and prompt and appropriate revegetation.</li> <li>– Deep foundations into bedrock below perennial water table, specialized piers and footings, over-excavation with moisture treatment and compaction of backfill, engineered or imported fill, subsurface drainage systems, and surface water diversions to mitigate for expansive bedrock, soil, and surficial materials.</li> <li>– Use of coated and resistant steel and concrete and drainage systems to mitigate for corrosive soils.</li> <li>– Engineered fills and dewatering systems to mitigate for shallow groundwater.</li> <li>– Designing alignment requirements with existing and altered topographies.</li> <li>– Engineering techniques and design to conform to anticipated probable maximum seismic events.</li> </ul> </li> </ul>
<p><b>Indirect and Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Soil erosion</li> </ul>	<ul style="list-style-type: none"> <li>▪ Minimize size of disturbed areas and length of time disturbed areas remain open.</li> <li>▪ Seed and/or plant and mulch all areas of exposed soil throughout construction.</li> <li>▪ Develop and implement a stormwater management plan (SWMP) that specifies BMPs to minimize soil erosion, and methods for monitoring conditions before, during and after construction.</li> <li>▪ BMPs to control erosion and blowing dust during construction, include drainage systems for direct surface water and runoff; slope design; prompt and appropriate revegetation; and using water or a wetting agent to control fugitive dust.</li> </ul>

**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<b>Water Resources and Water Quality</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Increased runoff from new impervious surfaces.</li> <li>▪ Increase in mass loading from runoff.</li> <li>▪ Destruction of native/riparian vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continued coordination with CDOT and developers regarding drainage design.</li> <li>▪ Use permanent stormwater quality BMPs to treat stormwater runoff from the site. Probable BMPs could include grass buffer strips (ditches); re-grading, seeding and revegetating soils and slopes; mulch protection for new plantings; and stormwater control channels for use in conjunction with water quality basin and detention ponds where required. Pollutant removal to or below the existing conditions for McClellan Reservoir and the South Platte River is achievable by effective use of these BMPs.</li> <li>▪ Follow CDOT's municipal separate storm sewer system (MS4) permit as required by RTD MS4 permit, where applicable.</li> <li>▪ If necessary, permanent stormwater retention ponds will be developed. None are anticipated at this time.</li> <li>▪ Reestablish native vegetation.</li> <li>▪ If any permanent water quality degradation occurs, waters shall be mitigated to appropriate water quality standards (existing conditions prior to impact).</li> </ul>
<p><b>Indirect Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Additional impervious surfaces introduced by transit-oriented development.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed; new development will be subject to the requirements of the local jurisdictions.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Soil erosion; stormwater discharges.</li> <li>▪ Acquisition of monitoring and supply wells.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Develop and implement SWMP that specifies BMPs to minimize soil erosion, and methods for monitoring conditions before, during and after construction.</li> <li>▪ Coordinate with CDOT for approval of SWMP for impacts on CDOT right-of-way.</li> <li>▪ Use stabilization BMPs such as mulching, temporary seeding, or erosion control blankets.</li> <li>▪ Use temporary erosion control BMPs such as staging construction to reduce disturbance, minimizing access areas, temporary seeding, early final grading and seeding of completed areas, clean water diversions, silt fences, erosion bales, erosion control blankets, sediment traps, sediment basins, soil stockpile management, and temporary diversion structures.</li> <li>▪ Install BMPs prior to ground disturbance activities</li> <li>▪ Develop a spill control plan as required by RTD and CDOT MS4 permits; train staff in proper fueling procedures and procedures to contain spills to minimize the potential for surface and groundwater.</li> <li>▪ Operational monitoring and supply wells will be protected or replaced in the same or similar location depending on the site conditions. Non-operational monitoring and supply wells will be abandoned in accordance with state requirements.</li> </ul>

**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<p><b>Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ RTD has adopted beneficial policies.</li> <li>▪ Negligible impacts from additional impervious surface in watershed.</li> <li>▪ Negligible water use from project would have minor impacts.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Floodplains and Drainage/Hydrology</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ 6 new piers added in Lower Dad Clark Gulch 100-year floodplain; 3 piers removed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complete detention and water quality treatment in accordance with the UDFCD and local jurisdictions and implement BMPs.</li> <li>▪ Coordinate floodplain management with UDFCD and local jurisdictions.</li> </ul>
<p><b>Indirect Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Additional impervious surfaces introduced by transit-oriented development.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No project mitigation needed; new development will be subject to the requirements of the local jurisdictions.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Construction activities in 100-year floodplain of Lower Dad Clark Gulch.</li> <li>▪ Construction activities in proximity to the High Line Canal.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Adhere to UDFCD and local jurisdiction requirements</li> <li>▪ Coordination with Denver Water for construction activity restrictions in proximity to the High Line Canal when water flows between April and November.</li> </ul>
<p><b>Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ RTD has adopted beneficial policies</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Wetlands and Waters of the U.S.</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Approximately 0.24 acre of permanent and temporary impacts to waters of the U.S. and wetlands will occur.</li> <li>▪ Approximately 0.08 acre of temporary waters of the U.S. and wetlands impacts at Lower Dad Clark Gulch will occur. Temporary access road will be built across drainage to allow construction equipment (e.g., crane) access.</li> <li>▪ Permanent impacts to riparian vegetation will occur along High Line Canal and a drainage ditch parallel to the C-470 Trail.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue on-going avoidance and minimization measures throughout design and construction phases of project.</li> <li>▪ Minimize impacts by fencing construction zones.</li> <li>▪ Minimize impacts to wetland areas near construction access by covering them with layers of geotextile, straw or soil prior to use.</li> <li>▪ Removal of riparian vegetation should be avoided or minimized as much as possible.</li> <li>▪ Prepare Section 404 permit applications for submittal to USACE.</li> <li>▪ RTD and consultant will conform to requirements of the Section 404 permit.</li> <li>▪ Wetland and riparian impacts will be mitigated through purchase of wetland mitigation bank credits or conditions of the Section 404 permit.</li> </ul>
<p><b>Indirect Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Minimal indirect impacts could occur due to changes in water quality, downstream sedimentation, temporary or permanent changes in hydrology, and weed infestations</li> </ul>	<ul style="list-style-type: none"> <li>▪ See mitigation for construction impacts.</li> </ul>



**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Temporary wetland and waters of the U.S. impacts caused by construction equipment in Lower Dad Clark Gulch.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Utilize appropriate permanent BMPs to stabilize the soil within the project area.</li> <li>▪ Avoid inadvertent temporary impacts by fencing the limits of disturbance during construction.</li> <li>▪ Cover wetland areas used for construction access with a layer of geotextile, straw, and soil prior to use. Remove temporary structures, fill, and geotextile after construction is completed.</li> <li>▪ Reestablish native vegetation.</li> <li>▪ Restore wetlands temporarily affected during construction to pre-construction conditions.</li> <li>▪ If the construction contractor determines that additional temporary impacts to wetlands or waters of the U.S. will occur to gain access to a site, the contractor will be responsible for obtaining the necessary Section 404 permits.</li> </ul>
<p><b>Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Based on assumption of growth in the Denver metro region over the next 25+ years, wetland impacts will continue to occur.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Denser development will lead to fewer wetland impacts since the development will be occurring in a smaller area, thus leaving more opportunities to preserve open space and wetland (RTD, 2007). No mitigation needed.</li> </ul>
<b>HAZARDOUS MATERIALS</b>	
<p><b>Direct, Indirect and Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Potential for hazardous materials sites to become exposed during construction.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Prepare a Materials Management Plan to address the potential to encounter contaminated soil and groundwater.</li> <li>▪ Conduct individual site-specific Phase I Environmental Site Assessment for properties prior to acquisition, especially along railroad right-of-way and near Bowen Farm.</li> <li>▪ Complete an asbestos survey and a lead-based paint survey on the bridge proposed for demolition; and complete abatement as needed prior to demolition of the structure.</li> <li>▪ Prepare and implement a Health and Safety Plan to protect worker health and safety.</li> <li>▪ Comply with Occupational Safety and Health Administration requirements for construction workers who may be exposed to hazardous materials.</li> <li>▪ Follow CDOT 250 specification for hazardous materials when on CDOT right-of-way.</li> </ul>

**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<b>SAFETY AND SECURITY</b>	
<b>Station Area and On-Board Crime</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ The operation of the Build Alternative would neither increase nor decrease crime rates in the project area.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed beyond adherence to the RTD station design guidelines for safety and security.</li> <li>▪ Fencing or barriers will be provided along the proposed alignment and surrounding station areas. These will be designed to be a safety barrier to prevent trespassers, vehicles, trucks, and other roadway users from entering the trackway. They will also be designed to prevent road debris or plowed snow, slush, and ice from entering the trackway or station areas. Safety measures will be incorporated on elevated sections to provide fall protection as well as adequate space for maintenance workers.</li> <li>▪ Stations will be designed with a minimum of two access and egress points. These points would facilitate safe and efficient evacuation of a station in four minutes or less.</li> <li>▪ Security cameras and emergency telephones that would be connected with the RTD security command center and monitored by security personnel.</li> <li>▪ Crime prevention through environmental design (CPTED) will be incorporated in the entire design. 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.</li> <li>▪ RTD will work with local police and sheriff's departments to plan for appropriate security and would increase the number of private security guards on patrol within the corridor proportionate to the increase in service. RTD will also work with police, fire, and transportation agencies during project design to ensure reliable emergency access is maintained and develop alternative plans or routes to avoid delays in emergency response times.</li> </ul>
<p><b>Indirect and Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Potential security hazards if the work areas are not adequately secured.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Secure construction areas to reduce security hazards.</li> <li>▪ RTD will work with police, fire, and transportation agencies to ensure reliable emergency access is maintained during construction</li> <li>▪ Coordinate Traffic Control Plans with public service agencies and CDOT.</li> </ul>
<b>Public Services - Police, Fire and Emergency</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ The Build Alternative would not add any new grade crossings</li> </ul>	<ul style="list-style-type: none"> <li>▪ RTD will continue to coordinate with the Fire and Life Safety Committee in preparing an emergency plan and coordinating emergency responses.</li> </ul>
<p><b>Indirect and Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No Impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>

**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Potential Impacts due to major roadway closures during bridge or other facility construction or if extensive detours require significant out-of-direction travel and increased response times.</li> </ul>	<ul style="list-style-type: none"> <li>▪ RTD will work with police, fire, and transportation agencies to ensure reliable emergency access is maintained during construction.</li> </ul>
<b>UTILITIES</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Approximately 37 potential utility impacts including electrical, street lighting feeds, fiber optics, telephone, cable, water, sanitary sewers, gas, and storm sewer lines.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Avoid utilities during final design and construction.</li> <li>▪ Reinforce or protect utilities through casing pipes and other construction methods.</li> <li>▪ Use cathodic protection to mitigate corrosion or electrical grounding to mitigate effects of induced voltages caused by alternating current.</li> <li>▪ Relocate utilities in coordination with the utility owner or municipality.</li> </ul>
<p><b>Indirect Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Additional utility station areas and resources needed because of increased population densities as a result of transit-oriented development.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<p><b>Construction Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Temporary service interruptions to protect or relocate utilities, as need.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Coordinate temporary interruptions in utility service with affected property owners and tenants.</li> </ul>
<p><b>Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>TRANSIT</b>	
<p><b>Direct, Indirect, Construction, and Cumulative Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Compatible with local transportation plans.</li> <li>▪ New feeder bus service would be implemented.</li> <li>▪ 22 percent increase in transit market share (1,411-rider increase).</li> <li>▪ Increase in RTD system-wide linked transit trips (2,579 trips).</li> <li>▪ Reduction of boardings at Mineral Station by 1,150 which in turn decreases parking demand.</li> <li>▪ Increase in number of park-n-Ride spaces by 1,000 (Lucent Station) and an additional 404 spaces if the Intermediate Station, which is not a part of the FasTracks program, is implemented.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>TRAFFIC/TRANSPORTATION</b>	
<p><b>Direct Impacts</b></p> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>



**TABLE ES-1: SUMMARY OF IMPACTS AND MITIGATION**

Summary of Potential Impacts	Proposed Mitigation
<b>Indirect Impacts</b> <ul style="list-style-type: none"> <li>▪ No impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>
<b>Construction Impacts</b> <ul style="list-style-type: none"> <li>▪ Temporary construction easements may be needed to gain access to the dedicated right-of-way. Any adjacent property used during construction activities will be returned to its original condition once construction is completed.</li> <li>▪ Grade separated crossing of C-470.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintenance of trail traffic at all times through detours and temporary trails.</li> <li>▪ RTD will develop a traffic control plan that must be approved by CDOT regarding any lane closures on C-470 during construction.</li> <li>▪ Approved traffic control plan will be shared with public service agencies (e.g. fire/police/emergency services) as necessary.</li> <li>▪ RTD will coordinate with CDOT regarding permits needed to bridge C-470 and parallel Santa Fe Drive.</li> </ul>
<b>Cumulative Impacts</b> <ul style="list-style-type: none"> <li>▪ No Impacts</li> </ul>	<ul style="list-style-type: none"> <li>▪ No mitigation needed.</li> </ul>

Notable project impacts and mitigation are summarized in the following paragraphs:

- **Cultural Resource Impacts:** The proposed light rail alignment will cause the relocation of a portion of the historic Denver & Rio Grande Railroad (now the UPRR) tracks and removal of a historic trestle bridge. Official consultation with the Colorado State Historic Preservation Office (SHPO) and Native American Consultation will be required to support the Clean Water Act Section 404 permitting process related to Lower Dad Clark Gulch (wetlands and water of the U.S. impacts).
- **Temporary Trail Impacts:** Temporary impacts to the High Line Canal and C-470 multi-modal trails will occur as a result of this project. Since both are used by bicycle commuters, alternative access/detours will always be maintained during construction.

## ES.4 Traffic and Transportation

Transportation impacts were evaluated for the No Action and Build Alternatives. These impacts were subdivided by mode of travel and include transit service, ridership and operations; traffic conditions; pedestrian and bicycle facilities; and freight rail operations.

### ES.4.1. FasTracks Improvements with Project Completion

The Build Alternative will extend light rail service from the existing end of line for the C and D lines at Mineral Station south to Lucent Station near C-470. The extension of these lines will provide direct transit service to downtown Denver along the C (Union Station to Mineral) and D (30th and Downing to Mineral) lines from Highlands Ranch.

### ES.4.2 2035 Transit Service and Ridership

Table ES-2 shows the headways for the existing (2008) corridor transit services, as well as for those services provided under the No Action and Build Alternatives. The Build Alternative would

bring improvements to area local bus operations; extending and reconfiguring five bus routes to improve service and travel times in the Highlands Ranch community.

**TABLE ES-2: TRANSIT SERVICE FREQUENCY IN THE SOUTHWEST CORRIDOR**

Transit Line	Peak/Off-Peak Headways (Minutes)		
	2008	No Action Alternative 2035	Build Alternative 2035
Light Rail Line C at Mineral Station	30/- <sup>1</sup>	15/15	15/15
Light Rail Line D at Mineral Station	10-15/15-30	10/15	10/15
Route 0	Not in service	Not in service	30/30
Route 75	Not in service	40/120	40/120
Route 77	30/-	30/-	30/-
Route 401	30/60	30/60	30/60
Route 402Ltd	30/60	30/60	30/60
Route 403	30/60 <sup>2</sup>	30/60	30/60
Route 470L	Not in service	30/-	30/-
Route 63X	50/- <sup>3</sup>	50/-	50/-
Route AT	Not in service	75/60	75/60

Source: RTD 2008 Published Schedule; RTD 2035 Travel Demand Model.

Notes: 1. No off-peak service from Mineral Station; 2. No evening service; 3. Three AM and PM trips, no off-peak service.

The Build Alternative would shift more market share to transit. Average weekday ridership along the Southwest Corridor Line is projected to approach 35,000 in 2035, a 1,411-rider increase over the No Action Alternative and a 22 percent increase over current ridership. The supporting bus routes serving Highlands Ranch and the new Lucent light rail station would see moderate changes in ridership levels.

RTD system-wide linked transit trips indicate the total number of patrons using transit. The forecast difference in linked transit trips between the No Action Alternative and Build Alternative indicate the net gain in transit riders brought about by the Southwest Corridor Extension. Linked transit trips in the Build Alternative would exceed those in the No Action Alternative by 2,579 trips, meaning the Southwest Light Rail Extension would attract over 2,500 new transit patrons.

### ES.4.3 New Station Locations and Parking Locations

The Southwest Corridor Extension would have two new stations (including the Intermediate Station and associated 400 space park-n-Ride, which is not in the FasTracks program). The light rail would be supported by a network of four local bus routes and by bicycle and pedestrian facilities. At the Lucent end-of-line station, a total of 1,000 parking spaces will be provided by 2035. Of the 2,152 boardings anticipated in 2035, 63 percent of light rail riders are expected to arrive by private auto, 29 percent arriving by bus, and 9 percent arriving on foot or bicycle.

**Parking Demand and Mitigation.** The FasTracks Plan (2004) estimated and budgeted for 1,000 surface parking spaces at the Lucent Station. By 2035, modeling shows that the planned number of spaces is adequate. Drive trips will constitute the primary mode of access to Lucent Station, but the station design also facilitates pedestrian and bicycle access. Since planned parking meets the proposed demand for this the Lucent Station, no parking mitigation strategies are identified.

**Station Area Traffic Impacts and Mitigation.** Future traffic impacts were evaluated at intersections interfacing directly with and in the vicinity of proposed stations. Traffic generation in the study area is influenced by transit readership, parking space availability, and mode of access to the station. The projections show that the intersections and movements along Lucent Boulevard will operate at unsatisfactory levels in 2035, under both the No Action and Build Alternatives. Intersections along other key roadways, including Plaza Drive and Erickson Boulevard, will operate at satisfactory levels under both alternatives. No mitigation measures are proposed under the Build Alternative, because the degradations in traffic flow are due to overall growth in travel demand and not a result of the proposed light rail stations.

## **ES.5 Public Stakeholder and Agency Involvement**

RTD is committed to involving agencies and the public in all phases of the FasTracks Southwest Corridor Extension Project as public involvement is crucial to the program's success. Stakeholder input serves as a critical element in the decision-making process. The ultimate goal of the public involvement process is to ensure maximum agency and public participation in the Environmental Evaluation process by implementing a proactive and responsive Public Involvement Program.

The Environmental Evaluation procedures include a community involvement process, evaluation of alternatives (including a summary of prior studies), selection of the build alternative, and identification of potential impacts and mitigation. Agencies and the public continue to be given adequate opportunity to provide input and comment on the project.

RTD worked cooperatively with the City of Littleton, City of Englewood, Highlands Ranch Metro District, Denver Water, CDOT, residents, businesses, and property owners throughout the Environmental Evaluation and Basic Engineering process. A project website, telephone hotline and other contact information allowed the public and other stakeholders to issue comments or concerns at their convenience. The project team also held three public meetings.

While a portion of the study area is within the US-85 and railroad corridors, and also abuts commercial areas, it does include or pass close to existing residential communities including Wolhurst, Windcrest, and Highlands Ranch. RTD engaged these neighborhoods in the planning process.

The Project Team reached the general public and majority of key community groups were through public and individual meetings with businesses and neighborhood associations. In addition, unaffiliated residents were reached through:

- Public meetings - over 120 people attended two meetings to date;
- Project hotline;
- Small group and individual briefings - over 200 people reached at small group meetings;

- Collateral materials - three newsletters focused on scoping, alternatives, and final recommendations reached 5,000 stakeholders;
- News media - outreach in 5 local newspapers with circulation of 50,000;
- Project website - via FasTracks website; and
- Project database - RTD's Comment Sense.

The Project Team engaged a variety of different agencies to provide input through participation in key milestone meetings, individual consultation with the issue-specific staff, and written input and comment at the key milestones. Combined Agency Working Group and Regulatory Agency meetings were held March 16, 2009 and again in Fall/Winter 2009. Participants from federal, state, and local environmental resource agencies attended, including: the Colorado Department of Public Health and Environment, CDOT, Colorado Division of Wildlife, Colorado Office of Archeology and Historic Preservation, Denver Urban Drainage and Flood Control District, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service. Additionally numerous coordination meeting have occurred with CDOT throughout the project due to overlapping rights-of-way along the C-470 corridor.

Public Meetings were scheduled as follows:

- 1st Public Meeting - Scoping/Defining Purpose and Need, October 16, 2008
- 2nd Public Meeting - Alternatives Development/Environmental Evaluation, March 19, 2009
- 3rd Public Meeting - Final Recommendation, November 18, 2009

After public and agency review, as the decision-maker for this project, the RTD Board of Directors will review the Environmental Evaluation and the record of public comment, select the preferred alternative, and commit to any mitigation measures needed to off-set impacts.



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