3.26 CUMULATIVE IMPACTS

The National Environmental Policy Act (NEPA) and its implementing regulations require federal agencies to identify and analyze the direct, indirect, and cumulative impacts of a proposed federal action in sufficient detail to make an informed decision. A federal agency's responsibility to address these impacts in the NEPA process was established by the Council on Environmental Quality (CEQ) regulations. The CEQ regulations define a cumulative impact as:

"…the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

- 40 §CFR 1508.7

What's in Section 3.26?

Direct and indirect impacts were discussed by resource in the preceding sections. This section addresses the cumulative impacts associated with the No-Action Alternative and the three build alternatives. The analysis of cumulative impacts takes into account past, present, and reasonably foreseeable future actions, regardless of responsible party in the regional study area, to determine the environmental impacts that might result from each alternative. In accordance with CEQ guidance, analysis was performed using available or reasonably obtainable information.

3.26.1 Methodology

As part of the North I-25 Final Environmental Impact Statement (Final EIS) process, a methodology was developed for the analysis of cumulative impacts that included the following steps:

- Identify the resources to be analyzed for cumulative impacts through the public and agency scoping process
- Establish appropriate geographic boundaries for the analysis
- Establish an appropriate time frame for the analysis
- Identify other actions affecting the resources of concern including past, present, and reasonably foreseeable future actions
- Document impacts to resources from past, present, and reasonably foreseeable future projects and determine the magnitude and significance of cumulative impacts

3.26.1.1 SCOPING AND AGENCY COORDINATION

Cumulative impact analysis is resource-specific and is generally performed for environmental resources directly impacted by a federal action and/or identified through scoping as being key resources of concern. Agency scoping meetings were held in February 2004 and May 2006. At these meetings, project needs and potential and cumulative impacts were considered. The following agencies were invited to attend these meetings and/or submit comments in writing:

- Colorado Department of Public Health and Environment (CDPHE)
- Colorado Division of Wildlife (CDOW)
- Colorado Geological Survey (CGS)
- Denver Regional Council of Governments (DRCOG)
- United States Environmental Protection Agency (EPA)
- Federal Railroad Administration (FRA)
- North Front Range Metropolitan Planning Organization (NFRMPO)
- Regional Transportation District (RTD)
- State Historic Preservation Office (SHPO)
- United States Army Corps of Engineers (USACE)
- United States Fish and Wildlife Service (USFWS)
- Upper Front Range Regional Planning Commission (UFRRPC)

Agency scoping and coordination identified six resources of concern to be evaluated for cumulative impacts. All social, economic, and environmental resources were considered before identifying the important issues within the regional study area. The identified areas of particular concern within the regional study area are:

- Land use (growth)
- Water quality
- Wildlife
- Wetlands
- Air quality
- Historic properties and districts

3.26.1.2 GEOGRAPHIC AREAS OF ANALYSIS

The geographic resource boundary to be used for the cumulative impacts analysis is based on the resources of concern and the potential impacts to these resources under a build package. For most resources, this boundary consists of the regional study area for the North I-25 project. East-west boundaries extend from US 85 and the Union Pacific Railroad (UPRR) rail line to approximately three miles west of US 287 and the Burlington Northern Santa Fe (BNSF) rail line. North-south boundaries extend from Wellington to US 6 in Denver. The regional study area spans portions of seven counties and includes more than 38 incorporated cities and towns.

3.26.1.3 Time Frame for Analysis

The time frame for the analysis of cumulative impacts should allow the analysis to recognize long-term trends while remaining focused. Time frames are typically based upon the availability of data or a meaningful event that has influenced existing conditions (construction of a highway or railroad, for example). The time frame established for this cumulative impacts analysis extends from 1950 to 2035. These dates were based upon the availability of aerial photography (1950) and the project horizon (2035).

3.26.1.4 Reasonably Foreseeable Future Projects

Current and reasonably foreseeable actions within the regional study area include development, transportation, and infrastructure projects that are expected to occur regardless of the improvements that are being evaluated in this Final EIS. These projects, listed in **Table 3.26-1**, **Table 3.26-2**, and **Table 3.26-3**, include those that are under construction or have been approved, as well as proposed developments that are known by planners or developers to be reasonably certain but which may not have been approved or permitted as of March 2007. Minor projects including improvements to bicycle and pedestrian facilities, municipal intersections, and bridges are not included in these tables.

Developments were compiled from the DRCOG 2035 Metro Vision Regional Transportation Plan (MVRTP), the North Front Range 2035 Regional Transportation Plan, the 2008-2013 State Transportation Improvement Program (STIP), and development plans, transportation plans, and capital improvement programs from regional study area jurisdictions.

Due to the size of the regional study area and the number of cities and towns it contains, data collection was based on readily available data and was limited to those communities with populations greater than 15,000. Only two percent of Arvada is located within the regional study area, and no ongoing or planned developments in Arvada fall within regional study area boundaries.

Table 3.26-1 Transportation Projects within the Regional Study Area

Project Name/Location	Jurisdiction	Description	Type of Project
I-70/SH 58 and Ward Road (south ramps) Interchanges	--	Construct new ramps	New ramps at interchange
West Corridor, Central Corridor to Jefferson County Center	RTD	New light rail, stations, park-n-Rides	Light rail, stations, and park-n-Rides.
Gold Line, Denver Union Station to Ward Road	RTD	New light rail, stations, parking	New light rail, stations, parking
North Metro Corridor, Denver Union Station to 160th	RTD	New rail, stations, parking	New rail, stations, parking
Northwest Rail, Denver Union Station to Longmont	RTD	New rail, stations, parking	New rail, stations, parking
US 36 BRT, Denver Union Station to Table Mesa	RTD	New slip ramps, access improvements, park-n-Rides	New ramps, access improvements, park-n-Rides
Central Corridor; 30th and Downing to 40th and 40th Extension	RTD	New light rail and stations	New light rail and stations

1 **Table 3.26-1 Transportation Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
East Corridor, Denver Union Station to DIA	RTD	New rail, stations, and park-n-Rides	New rail, stations, and park-n-Rides
Denver Union Station	RTD	Intermodal Center	Intermodal Center
120th Avenue Connection over US 36	CDOT	Build new six-lane road	Build new six-lane road
I-25 from SH 52 to SH 66	--	Widen roadway to six lanes	Widening
SH 121/Wadsworth Boulevard from 36th Avenue to SH 128/120th Avenue	--	Widen roadway to six lanes	Widening
SH 121/Wadsworth Parkway from 92nd Avenue to SH 128/120th Avenue	--	Widen roadway to six lanes	Widening
104th Avenue from Colorado Boulevard to US 85	--	Widen roadway to four lanes	Widening
I-70 Viaduct (East Corridor): Brighton Boulevard to York Street	CDOT	Roadway reconstruction and interchange	Roadway reconstruction and interchanges
I-70 East from I-270 to Havana Street	--	Widen roadway to eight lanes	Widening
I-25 from US 36 to Thornton Parkway	--	Widen roadway to eight lanes	Widening
I-270 from Vasquez to Quebec Street	--	Widen roadway to six lanes	Widening
US 36 at Wadsworth Boulevard	--	Interchange reconstruction	Interchange reconstruction
US 36 from SH 157 to I-25	--	Add HOT lanes	Add HOT lanes
E-470 from I-25 to I-25	E-470 Public Highway Authority	Widen roadway to eight/six lanes; build five new interchanges	Widening and new interchanges
Jefferson Parkway from SH 93 to SH 128	Jefferson Parkway Public Highway Authority	New four-lane tollroad	New tollroad
US 287: Harmony Road to Carpenter Road.	Ft. Collins	Widen 4 to 6 lanes	Capacity widening
US 287: 29th Street to 71st Street	Loveland	Widen 4 to 6 lanes	Capacity widening
US 34: Denver Avenue to I-25	Loveland	Widen 4 to 6 lanes	Capacity widening
US 34: I-25 to LCR 3	Loveland	Widen 4 to 6 lanes	Capacity widening
Timberline Road: Vine Drive to Harmony Road	Ft. Collins	Widen 4 to 6 lanes	Capacity widening

2

1 **Table 3.26.1 Transportation Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
LCR 17: Loveland city limits to Ft. Collins City Limits	Larimer County	Widen 2 to 4 lanes	Capacity widening
LCR 17: LCR 34 to Scenic Drive	Larimer County	Widen 2 to 4 lanes	Capacity widening
LCR 17: US 287 Bypass to Loveland city limits	Larimer County	Widen 2 to 4 lanes	Capacity widening
Boyd Lake Avenue: SH 402 to LCR 20E	Loveland	Widen 2 to 4 lanes plus new segment	Capacity widening
Taft Avenue: 50th Street to 71st Street	Loveland	Widen 2 to 4 lanes	Capacity widening
LCR 19: LCR 28 to Ft. Collins city limits	Larimer County	Widen 2 to 4 lanes	Capacity widening
O Street: 35th Avenue to 59th Avenue	Greeley	Widen 2 to 4 lanes	Capacity widening
LCR 18: I-25 to County Line Road	Larimer County	Widen 2 to 4 lanes	Capacity widening
I-25 at LCR 16 (Johnson's Corner)	Johnstown	Reconstruct interchange, new ramps	Interchange reconstruction
Boyd Lake Avenue: 37th Street to 71st Street	Loveland	Widen 2 to 4 lanes	Capacity widening
SH 14: I-25 to Riverside	Ft. Collins	Widen 4 to 6 lanes	Capacity widening
Prospect Road: I-25 to Poudre River	Ft. Collins	Widen 2 to 4 lanes	Capacity widening
83rd Avenue: 10th Street to US 34 Bypass	Greeley	Widen 2 to 4 lanes	Capacity widening
Harmony Road: I-25 to US 287	Ft. Collins	Widen 4 to 6 lanes	Capacity widening
SH 392: I-25 to 16th Street in Windsor	CDOT	Widen 2 to 4 lanes	Capacity widening
59th/65th Avenue: 20th Street to US 34 Bypass	Greeley	Widen 2 to 4 lanes	Capacity widening
59th Avenue: C Street to 4th Street	Greeley	Widen 2 to 4 lanes	Capacity widening
US 34 Bypass to 37th Street	Greeley	Widen 2 to 4 lanes	Capacity widening
SH 60: I-25 to CR 15	Johnstown	Widen 2 to 4 lanes	Capacity widening
SH 60: US 85 to Two Rivers Parkway	CDOT	Widen 2 to 4 lanes	Capacity widening
Carpenter Road: I-25 to US 287	Ft. Collins	Widen 2 to 4 lanes	Capacity widening

-- = Jurisdiction not specified.

2

Table 3.26-2 Land Development Projects within the Regional Study Area

Project Name/Location	Jurisdiction	Description	Type of Project
Violet Crossing: 4474 North Broadway Street	Boulder	Mixed use development: 78 residential units and 9,400 sq. ft. of commercial, retail, and office	Concept plan review
Forest Glen: 3945 North Broadway	Boulder	Residential development: 13 units at 4,000 sq. ft.	Preliminary plat
Boulder County Hazmat Facility: 1901 63rd Street	Boulder	Construction of 7,661 sq. ft. hazardous waste facility	Site plan review
1655 Walnut Street	Boulder	Mixed use development: 32 residential units	Site plan review
Table Mesa housing: 4640 Table Mesa Drive	Boulder	Redevelopment of Army Reserve to 40 units of mixed residential and green space	Site plan review
Landmark Lofts: 970 28th Street Frontage	Boulder	Mixed use development: 130 condos/2,000 sq. ft. of retail	Concept plan
Brighton Crossing	Brighton	Residential development: 1,782 units	Under construction
Brighton East Farms	Brighton	Residential development: 1,226 units	Under construction
Bromley Farms	Brighton	Residential development: 475 units	Under construction
Bromley Park	Brighton	Residential development: 102 units	Under construction
Cherry Meadows	Brighton	Residential development: 174 units	Approved
Homestead	Brighton	Residential development: 132 units	Approved
Indigo Trails	Brighton	Residential development: 369 units	Approved
Park Place	Brighton	Residential development: 80 units	Under construction
Pheasant Ridge	Brighton	Residential development: 405 units	Under construction
Preserve	Brighton	Residential development: 246 units	Under construction
Sugar Creek	Brighton	Residential development: 278 units	Under construction
The Village	Brighton	Residential development: 361 units	Under construction
Sunflower Meadows	Brighton	Residential development: 180 multi-family units	Under construction
Park 36 Broomfield Urban Transit Village: Northwestern corner of Sheridan Boulevard and SH 7	Broomfield	Mixed use development: 805 apartment units/1.7 million sq. ft. of commercial; Big box development; park-and-Ride	Planning stages
Pepsi Center: Speer Boulevard/Auraria Parkway	Denver	Parking and office development	Planning stages

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
Department of Human Services: West 12th Avenue/Federal Boulevard	Denver	Facilities expansion	Planning stages
East West Partners Development	Denver	Mixed use development: 3,000 residential units	Planning stages
Pepsi Center: Speer Boulevard/Auraria Parkway	Denver	Parking and office development	Planning stages
Department of Human Services: West 12th Avenue/Federal Boulevard	Denver	Facilities expansion	Planning stages
Ashcroft Park Subdivision: North of 37th Street and west of 35th Street	Evans	Residential development: 79 single-family lots	Under construction
Borchert Point Subdivision: Southwestern corner of 23rd Avenue and 37th Street	Evans	Residential development: 13.3 acres	Annexation approved
Cave Creek Community: 36th Avenue and Prairie View	Evans	Residential development: 449 manufactured home sites	Under construction
The Grove/Campus Crest: Southeastern corner of 32nd Street and 11th Avenue	Evans	Residential development: high density residential – 192 units in 10 buildings	Permitted
IGO Farm: Southwestern corner of 37th Street and 65th Avenue	Evans	Development of 257 acres of residentially zoned land and 17 acres of commercially zoned land	Annexation and zoning approved
Neville's Crossing: Northwestern corner of 49th Street and 47th Avenue	Evans	Residential development: 82 large lot single-family units	Under construction
North Pointe Subdivision: Northwestern corner of 29th Avenue and 37th Street	Evans	Construction of 225 single-family dwellings and 26 duplexes	Under construction
Orchard Park Townhomes: 65th Avenue and Chardonnay Street	Evans	Construction of 17 multi-family dwellings	Under construction
Parker Meadows: Northwestern corner of 17th Avenue and 42nd Street	Evans	Residential development: 10 duplexes on 3 acres	Under construction
Parker Meadows: Northwestern corner of 17th Avenue and 42nd Street	Evans	Residential development: 10 duplexes on 3 acres	Under construction
Rehmer Lake: Southeastern corner of 49th Street and 65th Avenue	Evans	Residential development: 306 lots	Final plat approved
Ridge at Prairie View: South of 42nd Street between 23rd Avenue and 29th Avenue	Evans	Residential development: 357 lots	Under construction

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
Tuscany Development: 37th Street and 47th Avenue	Evans	Residential development: 303 single-family lots, 22 duplexes, and 339 multi-family units	Under construction
Vintage Villas: Barrossa and Chardonnay	Evans	Residential development: 52 patio homes	Under construction
Prospect Road Expanded Condo: 800, 808, and 814 West Prospect Road	Fort Collins	Mixed use development: 61 condos and 148 sq. ft. of commercial	Project development plan approved
Arcadia: south side of West Willox Lane at Woon Lane	Fort Collins	Residential development: 58 single-family units on 28.8 acres	Project development plan approved
Bella Vira: west side of Overland Trail at Elizabeth Street	Fort Collins	Residential development: 60 single-family/25 multi-family units on 34.7 acres	Project development plan approved
Caribou Apartments: Southwestern corner of Timberline Road and Caribou Street	Fort Collins	Residential development: 193 affordable multi-family units on 10.3 acres	Project development plan approved
Dry Creek	Fort Collins	Request to replat for 230 single-family lots	Request in review
East Ridge: Southeastern corner of Timberline Road and Vine Drive	Fort Collins	Development of 393 single-family lots, parks, and open spaces on 153.3 acres	Project development plan in review
Fox Meadows Business Park Tract B Timberline Plaza: Southeastern corner of Timberline Road and Bighorn Road	Fort Collins	Request for a 25,000 sq. ft. health club on 3.4 acres	Project development plan approved
Front Range Village: Corbett Drive and Harmony Road	Fort Collins	Regional shopping center on 100 acres	Under construction
Lind Property: Northeastern corner of CR 11 and CR 52	Fort Collins	Construction of 158 dwelling units on 44.2 acres	Project development plan approved
Frey Avenue Cottages: Southeastern corner of Frey Avenue and LaPorte Avenue	Fort Collins	Request for 5 single-family homes on 3.4 acres	Project development plan approved
Old Town North: Oslander Street to Pascal Street	Fort Collins	Request for 40 single-family homes in 8 buildings	Project development plan approved
Rigden Farm: Northeastern corner/Southeastern corner of Custer Drive and Iowa Drive	Fort Collins	Development of 63 condos and assisted living facility on 5.0 acres	Project development plan approved
Seven Generations Office Park: Southwestern corner of Eastbrook Drive and Vermont Drive	Fort Collins	Request for 48,000 sq. ft. of flex/office space on 3.6 acres	Project development plan approved
Talon Estates: West of South Taft Hill Road,80 north of Falcon Drive	Fort Collins	Request for 13 single-family lots on 9.4 acres	Project development plan in review

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
The Center at Rigden Farms	Fort Collins	Request to develop 95,000 sq. ft. of commercial space in 11 structures	Project development plan approved
Trailhead Village Townhomes: North of E. Vine Drive and Greenfields	Fort Collins	Development of 100 townhomes on 16.4 acres	Project development plan approved
Water's Edge at Richard's Lake: Northwest of Richard's Lake Road and Turnberry Road	Fort Collins	Development of 394 units on 108 acres	Project development plan approved
Residential and commercial development throughout the City of Greeley	Greeley	Construction of 53 individual developments totaling over 4,550 residential, commercial, and office units distributed throughout the city.	Approved
Elementary School #95	Jefferson County	Elementary school to accommodate 576 students	Planning stages
Ralston Valley High School	Jefferson County	High school to accommodate 600 students	Planning stages
Grand Station at Centerra: I-25 and US 34	Larimer County	Development of 1 million sq. ft. of mixed use development on 60 acres	Approved
The Shops at Hover Crossing: 17th Avenue E. of Hover Street and west of Cook Court	Longmont	Commercial development	Development review
AJ Martinez Business Park: North of Nelson Road between 89th Street and Nelson Park Lane	Longmont	Light industrial development on 8.4 acres	Conditionally approved
American Honda Motor Center: Longmont Business Center	Longmont	Data center and office on 60,700 sq. ft.	Conditionally approved
Beaucanon Villas: Southwestern corner of Pace Street and Mountain View Avenue	Longmont	Residential development: 140 condominiums on 15.2 acres	Approved
CARA Investments: 907 South Sherman Street	Longmont	Development of 3,600 sq. ft. building for an auto repair/towing operations	Development review
Clover Meadow: West of Fordham Street and north of Clover Basing Drive	Longmont	Development of 9 single-family residential lots on 2.6 acres	Conditionally approved
Diagonal Trade Center: Southeast of SH 119 and west of South Sherman Street	Longmont	Development of industrial distribution center	Under construction
Dry Creek detention basin and Community Park	Longmont	Development of regional detention basin in conjunction with Community Park.	Development review

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
Eastgate Development: Southwestern corner of 17th Avenue and County Line Road	Longmont	Development of 148 residential units on 74 acres	Development review
Grandview Meadows: East of Grandview Meadows Drive and South of Redmond Drive	Longmont	Development of 96 apartments on 5.8 acres	Conditionally approved
Harvest Junction: Between Ken Pratt Boulevard and Quail Road	Longmont	Mixed use development on 24 acres	Under construction
Holiday Inn Express: Longmont Business Center	Longmont	Commercial development on 1.9 acres	Under construction
Hover Place: West of Charles Drive, E. of Hover Park	Longmont	Development of 48 multi-family units on 3.7 acres	Under construction
Main Street Market Place: West of Main Street and south of 19th Avenue	Longmont	Development of 8,239 sq. ft. commercial building	Development review
Mountain Vistas: Northwestern corner of 9th Avenue and Hover Street	Longmont	Residential development: 124 dwelling units for assisted living on 8.7 acres	Development review
Pleasant Valley: South of SH 66, north of 17th Avenue, and west of Pace Street	Longmont	Residential development: 56 single-family dwellings on 20 acres	Development review
Prairie Village: South of SH 66, west of Alpine Street, north of 21st Avenue	Longmont	Residential development: 71 lots on 15.7 acres	Development review
Primrose Schools: Longmont Business Center	Longmont	Construction of 10,620 sq. ft. daycare/preschool	Approved
Provenance: Southeastern corner of SH 66 and Sundance Drive	Longmont	Residential development: 227 lots on 76 acres	Development review
Red Fox Run: North of East 9th Avenue between Fox Hill Drive and Wolf Creek Drive	Longmont	Residential development: 35 condominium units on 6.5 acres	Conditionally approved
Renaissance: North and south of Clover Basin Drive, east of Meadow Mountain, and west of the Renaissance	Longmont	Residential development: 143 single-family dwellings on 38.4 acres	Conditionally approved
Sandstone Market Place: Southeastern corner of SH 119 and County Line Road	Longmont	Commercial development: 150,000 sq. ft. including a Wal-Mart Supercenter and Sam's Club	Development review
Sienna Park: Southwestern corner of South Sherman Street and Kansas Avenue	Longmont	Residential development: 45 homes on 18.4 acres	Approved
Somerset Meadows: West of Airport Road and south of Pike Road	Longmont	Residential development: 14 lots	Development review
Tapestry Townhomes: West of Renaissance Drive, south of Renaissance Development	Longmont	Residential development: 72 townhomes on 6.7 acres	Development review

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
The Oaks at Longmont: South of SH 66, north of 17th Avenue, west of County Line Road, and E. of Main Street	Longmont	Residential development: 96 condominiums on 19.9 acres	Development review
Union Development Plan: Northeast Circle of SH 119 and WCR 3.5	Longmont	Mixed use development: 317 single-family units, 5 blocks for commercial/religious on 313 acres	Development review
Xilinx: South of Logic Drive and west of SH 119	Longmont	Industrial development on 33.1 acres	Conditionally approved
CTC Business Center: North of Dillon Rd, west of SH 42	Louisville	Development of 315,973 sq. ft. of office, light industry, and warehousing	Approved
Takoda Village: 271 96th Street	Louisville	Development of 32.4 acres	City council hearing
Gateway Subdivision: South Boulder Road and McCaslin Boulevard	Louisville	Residential development	Proposed
Park Villas: 200 West South Boulder Road	Louisville	Single-family development	Preliminary plat
North End Properties: North of South Boulder Road	Louisville	Mixed use development: 350 dwelling units, 65,550 sq. ft. commercial, 18.6 acres of public land	Approved
Lincoln Place: 5th and North Lincoln Avenue	Loveland	Mixed use development: 200 apartments and 22,000 sq. ft. of commercial	Under construction
Wal-Mart Supercenter: 250 West 65th Street	Loveland	Commercial development	Permitted
Mirasol Senior Apartments: Finch Street and South Madison Avenue	Loveland	Residential development and community center	Permitted
Eagle Crossing: I-25 and Crossroads Boulevard	Loveland	Development of 180-acre business park	Permitted
St. Louis Village: East 1st Street and South Street Louis Avenue	Loveland	Development of 28 single-family units on 4 acres	General development plan
High Country Farms: East of US 287, south of SH 402	Loveland	Residential development: 442 single-family units on 69 acres	General development plan
Staples Farm: North Taft Ave, north of Big Thompson River	Loveland	Residential development: 24 single-family lots on 15 acres	Preliminary plat
Orchards Estates: Southwest of 29th Street and north Garfield Avenue	Loveland	Mixed residential development	Planning stages
Timberpark Offices: 1st Street	Loveland	Development of 104,000 sq. ft. of office on 9 acres	Planning stages

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
Millenium: Southwest of Rocky Mountain. Avenue and CR 24E	Loveland	Development of 115,694 sq. ft. of commercial/office space on 87 acres; 84 residential dwellings	Special review
Top Acres: North of US 34 and east of Cascade Avenue	Loveland	Residential development: 39 lots on 8 acres	Preliminary plat
Meadowbrook Ridge: West of North Wilson Avenue between 22nd Street and 29th Street	Loveland	Residential development: 180 lots on 37 acres	Preliminary plat
Sanctuary at the Park: North Monroe Avenue and east 23rd Street	Loveland	Residential development: 208 lots on 17 acres	Preliminary plat
Willow Park: North Monroe Ave and east 23rd Street	Loveland	Residential development: 22 lots on 5 acres	Preliminary plat
Ridge at Thompson Valley: Northeast of 42nd Street and South Lincoln Avenue	Loveland	Residential development: 152 single-family lots on 1-24 acres	Preliminary plat
Lee Farm: West of North Wilson Avenue and north of 36th Street	Loveland	Residential development: 620 single-family lots and 480 multi-family lots on 246 acres	Preliminary plat
Copper Ridge: North of West 57th Street between North Taft Avenue and North Garfield Avenue	Loveland	Residential development: 117 single-family lots and 117 multi-family units on 56 acres	Preliminary plat
Lodge at 7 Lakes: South of E. 37th Street at Horseshoe Lake	Loveland	Residential development: 132 units on 9 acres	Preliminary plat
Fairgrounds Hotel: I-25 north of Crossroads Boulevard	Loveland	Residential development: 315,488 sq. ft. hotel space on 20 acres	Preliminary plat
Lakeview Development: West of Boyd Lake Avenue and north of CR 24E	Loveland	Lakeshore development: 255 single-family lots on 1-60 acres	Preliminary plat
Longs Subdivision: Between 1st and 14th Street west of Mariano Reservoir	Loveland	Residential development: 33 single-family lots on 26 acres	Planning stages
Thompson Overlook: Southeast of North Wilson Avenue and West Eisenhower Boulevard	Loveland	Residential development: 29 units on 10 acres	Final plat
Hunters Run West: West of North Wilson Boulevard at 29th Street	Loveland	Residential development: 212 single-family lots on 146 acres	Final plat
Dakota Glen: East of Cummings and north of 14th Street	Loveland	Residential development: 94 single-family lots, 112 multi-family lots on 127 acres	Final plat
Mariana Butte: North of 1st Street, west of Marianne Butte Golf Course	Loveland	Residential development: 91 single-family lots on 49 acres	Planning stages

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
Glen Isle Town Center: Southwestern corner of North Wilson Avenue and West 43rd Street	Loveland	Commercial development: 107,910 sq. ft. on 11 acres	Planning stages
Kendall Brook: North Taft Avenue and West 43rd Street	Loveland	Residential development: 188 units on 6 acres	Planning stages
Overlook at Mariana: North of 1st Street and west of George Flat Reservoir	Loveland	Residential development: 67 single-family lots on 35 acres	Planning stages
Larkridge Regional Retail Center: I-25 and SH 7	Thornton	Retail/commercial development	Under construction
Hilltop Village Center: 136th Avenue and Colorado Boulevard	Thornton	Retail/commercial development	Under construction
Northridge Retail Center: 128th Avenue between Colorado Boulevard and Bellaire Street	Thornton	Retail/commercial development	Under construction
Quebec Riverdale: 128th Avenue and Quebec Street	Thornton	Commercial development: 258 residential units	Approved
Northview Business Park: 124th Avenue and Washington Street	Thornton	Retail/commercial development	Under construction
Shops at Settlers Chase: 104th Avenue and Steele Street	Thornton	Retail/commercial development	Under construction
98th Avenue and Washington Boulevard	Thornton	Retail/commercial development	Under construction
Adams 12 Middle School: 128th Avenue and Huron Street	Westminster	School	Under construction
Colorado Ridge Church: Southwestern corner of 122nd Avenue and Park Centre Drive	Westminster	Church	Proposed
Country Club Highlands: Northeastern corner of 120th Avenue and Zuni Street	Westminster	Residential/commercial development	Under construction
Country Club Village: Northeastern corner of 120th Avenue and Federal Boulevard	Westminster	Retail/commercial development	Under construction
Foster Property: 136th Avenue and Orchard Parkway	Westminster	Retail/commercial development	Under construction
Harmony Park: Northwestern corner of 128th and Zuni Street	Westminster	Residential development: 313 single-family units	Under construction
Huntington Trails: Southwestern corner of 144th Avenue and Huron Street	Westminster	Residential development: 210 single-family units	Under construction

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
Interchange Business Park: Southwestern corner of 136th and I-25	Westminster	Retail/commercial development	Under construction
The Orchard: Northeastern corner of 144th Avenue and Huron Street	Westminster	Retail/commercial development	Under construction
Quail Crossing: Southwestern corner of 136th and Huron Street	Westminster	Retail/commercial development	Under construction
Park Center Place: Northeastern corner of 120th Avenue and Tejon Street	Westminster	Retail/commercial development	Under construction
Sedona Office Complex: Northwestern corner of 124th Avenue and Huron Street	Westminster	Office	Proposed
Savannah Suites: Northwestern corner of 124th Avenue and Huron Street	Westminster	Retail/commercial development	Proposed
Orchard View: Southeastern corner of 144th Avenue and Huron Street	Westminster	Retail/commercial development	Proposed
Northridge Commons: Northwestern corner of 122nd Avenue and Pecos Street	Westminster	Office	Proposed
Meadow Point: Northeastern corner of 92nd Avenue and Sheridan Boulevard	Westminster	Retail/commercial development	Proposed
Covenant: Northwestern corner of 112th Street and Sheridan Boulevard	Westminster	Office	Proposed
Bradburn: South of 120th Avenue and west of Lowell Boulevard	Westminster	Traditional mixed use development of 535 units and a church	Under construction
Cedar Bridge: Northeastern corner of 111th Avenue and Bryant Court	Westminster	Residential development: 12 single-family units	Under construction
Northwest Business Park: Northwestern corner of 108th Avenue and Westminster Boulevard	Westminster	Traditional mixed use development of 600 units	Under construction
Cottonwood Village: Northwestern corner of 88th Avenue and Federal Boulevard	Westminster	Residential development: 82 multi-family units	Under construction
Elliot Street Duplexes: Northeastern corner of 104th Avenue and Elliot Street	Westminster	Residential development: 10 single-family units	Proposed
Family in Christ Community Church: Northwestern corner of 113th and Sheridan	Westminster	Church	Under construction

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
Highlands at Westbury: Northeastern corner of 112th Street and Pecos Street	Westminster	Residential development: 201 single-family units	Under construction
Hyland Village: Southwestern corner of 98th Avenue and Sheridan Boulevard	Westminster	Traditional mixed use development of 483 units	Proposed
Lake Arbor Industrial: West of Marshall Court and 89th Avenue	Westminster	Retail/commercial development	Approved
Church Ranch Home: 7399 Church Ranch Boulevard	Westminster	Business park	Proposed
West 101st Court: Southwestern corner of 101st Avenue and Sheridan Boulevard	Westminster	Residential development: 12 single-family units	Proposed
Keystone Senior Housing: Southwestern corner of 112th Avenue and Federal Boulevard	Westminster	Senior housing	Proposed
Legacy Ridge: Between 104th and 113th on Sheridan Boulevard	Westminster	Residential development: 409 single-family units	Under construction
Primrose Academy: Northwestern corner of 118th and Sheridan Boulevard	Westminster	Retail/commercial development	Proposed
Myananda Residences and Spa: 10650 Promenade North Drive	Westminster	Traditional mixed use development: 68 units	Proposed
Ranch Reserve II: Northwestern corner of 112th Avenue and Ranch Reserve	Westminster	Residential development: 61 single-family units	Under construction
Savory Farm Estates: 111th Avenue and Federal Boulevard	Westminster	Residential development: 28 single-family units	Proposed
Sheridan Green Commercial Center: Southwestern corner of 112th Avenue and Benton Street	Westminster	Office	Under construction
Countryside: Northeastern corner of Countryside Drive and Simms Street	Westminster	Residential development: 10 single-family units	Approved
North Wadsworth Business Center: Northeastern corner of 108th Avenue and Dover Street	Westminster	Office	Proposed
Meadow View: 107th Avenue and Simms Street	Westminster	Residential development: 20 single-family units	Under construction
Mission Hill: Northwestern corner Wadsworth Parkway and 88th Avenue	Westminster	Retail/commercial development	Under construction
Mountain Vista Village: 86th Avenue and Yukon Street	Westminster	Residential development: 24 single-family units	Approved

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
Village at Standley Lake: Northwestern corner of 100th Avenue and Wadsworth Parkway.	Westminster	Retail/commercial development	Under construction
Walnut Grove: 104th Avenue and Wadsworth Parkway.	Westminster	Residential development: 66 single-family units	Under construction
Wayne Carl Middle School: 100th Avenue and Countryside	Westminster	School	Under construction
Westmoor Technology Park: 108th Avenue and Simms Street	Westminster	Office	Proposed
DeCroce: Southwestern corner of 101st and Church Ranch Boulevard	Westminster	Office	Under construction
Kokoszka: 7985 Church Ranch Boulevard	Westminster	Office	Proposed
Covenant Retirement Community: 9030 Yarrow Street	Westminster	Residential development: 30 senior housing units	Approved
Woodrow Wilson Charter School: 8300 West 92nd Avenue	Westminster	School	Under construction
My Business Park at Mandalay: 108th Avenue and Wadsworth Boulevard	Westminster	Office	Approved
East Bay: 68th Avenue and Lowell Boulevard	Westminster	Mixed residential development: 59 units	Under construction
La Conte Shopping Center: Northeastern corner of 72nd Avenue and Federal Boulevard	Westminster	Retail/commercial development	Proposed
Harris Park: 7300-7365 Lowell Boulevard	Westminster	Residential development: 12 townhomes	Proposed
Village at Walnut Creek: South of Lower Church Lake	Westminster	Retail/commercial development	Under construction
Valle Vista: 104th Avenue and Federal Boulevard	Westminster	Retail/commercial development	Under construction
Westfield: 95th Avenue and Federal Boulevard	Westminster	Retail/commercial development	Proposed
Green Acres Commercial: Northeastern corner of 112th Avenue and Sheridan	Westminster	Retail/commercial development	Proposed
Hylands Baptist Church: Southwestern corner of 92nd Avenue and Utica Street	Westminster	Church	Under construction
Alpine Vista: Northwestern corner of 88th Avenue and Lowell Boulevard	Westminster	Residential development: 100 townhomes	Under construction
Walgreens: Southeastern corner of 96th Avenue and Sheridan Boulevard	Westminster	Retail/commercial development	Proposed

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
Ball Campus: 108th Avenue and Wadsworth Parkway	Westminster	Office	Under construction
Christ Community Covenant Church: Northwestern corner of 100th Avenue and Wadsworth Parkway.	Westminster	Church	Approved
Village at Harris Park: Northwestern corner of 73rd Avenue and Bradburn	Westminster	Mixed residential development: 38 units	Proposed
Shoenberg Farms: Northwestern corner of 72nd Avenue and Sheridan Boulevard	Westminster	Mixed residential/retail/commercial	Under construction
Spresser Chiropractic Clinic: 7490 Sheridan Boulevard	Westminster	Retail/commercial development	Approved
Street Anthony North: 84th Avenue and Alcott Street	Westminster	Office	Approved
Summit Pointe: Southeastern corner of 82nd Avenue and Clay Street	Westminster	Residential development: 74 single-family units	Under construction
Shoenberg Farms: Northeastern corner 72nd Avenue and Depew Street	Westminster	Mixed residential development	Approved
Holy Trinity Catholic Church	Westminster	Church	Proposed
Crystal Lakes: Southeastern corner of 75th Avenue and Sheridan Boulevard	Westminster	Office	Proposed
Harris Park Square: 7249 and 7287 Lowell Boulevard	Westminster	Traditional mixed use development	Proposed
Adams County Government Center	Westminster	Facility development	Land purchased
Orchard Town Center: I-25 and 144th Avenue	Westminster	Retail/entertainment: 215 acres	Under construction
Prairie Gateway: Quebec Street between SH 2 and 56th Avenue	Westminster	Mixed use development: 917 acres	Under construction
Avery Meadows: Southeastern corner of WCR 15 and WCR 70	Windsor	Residential development: single-family suburban	Master plan
Eastbrook Subdivision: Northwestern corner or Main Street and WCR 2	Windsor	Mixed use development: residential mixed use	Rezoning
Fossil Ridge Subdivision: 5515 Evangeline Drive	Windsor	Residential development	Development review
Highland Meadows Golf Community: Southeastern corner of Fairgrounds Avenue and Colonial Drive	Windsor	Residential/commercial development	Rezoning
Poudre Heights: Northwestern corner of CR 17 and CR 64	Windsor	Mixed use development: 586 units	Rezoning, final site plan

2

1 **Table 3.26.2 Land Development Projects within the Regional Study Area (cont'd)**

Project Name/Location	Jurisdiction	Description	Type of Project
The Oxbow on the River: South of Poudre River and SH 392 west of County Line Road	Windsor	Residential mixed use	Rezoning, subdivision
Shiloh Creek: Northeastern corner of WCR 74 and County Line Road	Windsor	Residential mixed use development	Annexation, subdivision
Ptarmigan Business Park: Northeastern corner of CR 392 and I-25	Windsor	Commercial business park	Site plan
Westwood Village: Southeastern corner of 14th Street and Main Street	Windsor	Commercial development	Subdivision, site plan
Highlands: Northeastern corner of Crossroads Boulevard and County Line Road	Windsor	Mixed use development	Annexation, rezoning
Winter Farm Subdivision: Southeastern corner of WCR 70 and WCR 19	Windsor	Residential mixed use development	Subdivision
Water Valley Subdivision: North of Crossroads Boulevard, south of Eastman, east of 7th Street	Windsor	Residential mixed use development, open space and golf course	Subdivision, site plan
Trautman Subdivision: Southeastern corner of 7th Street and Crossroads Boulevard	Windsor	Residential development	Subdivision
Southgate Business Park: SH 34 and CR 17	Windsor	Commercial business park	Subdivision, site plan
River Valley Crossing: Southwestern corner of Main Street and 15th Street	Windsor	Commercial development	Annexation, master plan
Highlands Industrial Park: Highlands Meadows Pkwy. and Crossroads Boulevard	Windsor	Light and heavy industrial development	Site plan
Jacoby Farm: Northwestern corner of Main Street and 15th Street	Windsor	Residential/commercial development	Final site plan
Great Western Development: Southeastern corner of WCR 23 and WCR 64	Windsor	Heavy industrial park	Rezoning, site plan
Fairgrounds Business Park: Northeastern corner of Crossroads Boulevard/LCR 5	Windsor	Business park with industrial and commercial use	Subdivision

Table 3.26-3 Major Infrastructure Projects within the Regional Study Area

Project Name/Location	Jurisdiction	Description	Type of Project
Halligan Seamen Reservoir	Larimer County	Coordinated enlargement of Halligan and Milton-Seaman Reservoirs in Larimer County to improve water management for Fort Collins and Greeley.	DEIS in progress
Moffat Collection System Project	U.S. Army Corps of Engineers	Development of 18,000 acre-feet per year of new, annual firm yield to the Moffat Treatment Plant and raw water customers upstream of the Moffat Treatment Plant.	DEIS in progress
Northern Integrated Supply Project	U.S. Army Corps of Engineers	Water infrastructure to bring more water to the Front Range; Preferred Alternative is the construction of Glade Reservoir and South Platte Water Conservation Project.	DEIS in progress
Windy Gap Firming Project – Big Thompson Project	U.S. Bureau of Reclamation	Water infrastructure to bring more Colorado River water to the Front Range; Construction of Reservoirs and other facilities	DEIS in progress
Big Dry Creek Wastewater Plant: 131st Avenue and Huron Street	Westminster	Storage building/wastewater plant expansion	Under construction/ Proposed

Additional future actions not included in **Table 3.26-1**, **Table 3.26-2**, or **Table 3.26-3** include the following:

- Expansion of local transit services in Fort Collins, Johnstown, and Windsor
- New RTD park-n-Rides: Church Ranch, Superior/Louisville, Flatiron Circle, and Broomfield
- Infill, redevelopment, or revitalization plans in Longmont and Loveland
- Sidewalk improvements and minor trail connections in Broomfield
- River restoration, most notably the Fort Collins *Downtown River Corridor Implementation Plan*, which protects and enhances the Cache La Poudre River
- Minor water/sewer improvements
- Annexation proposals

As **Table 3.26-1**, **Table 3.26-2**, and **Table 3.26-3** show, substantial development is anticipated within the regional study area in the near future. Development is especially strong in northern communities, where large residential and commercial developments are anticipated. Development is also strong in Westminster, where large residential and commercial developments are under construction.

3.26.2 Affected Environment

The Affected Environment section provides the historical context for the cumulative impact analysis and includes an assessment of historical growth and development within the region. Historical actions impacting resources of concern are described in greater detail for each resource in **Section 3.26.3** *Environmental Consequences*.

Early settlement in the area between Denver and Wellington began in the 1800s with the cultivation of agriculture. Some of the earliest settlers developed planned communities under the colony movement. The premise behind this movement was to have an entire group of people, or colony, settle an area together in a cooperative manner rather than have each family unit settle on its own. Colonies were established in Greeley, Platteville, Green City, and Evans. Shortly after colony communities were established, individual settlers came out to Colorado and moved into Weld County. In the 1860s, the area was an agriculturally productive region, which had expanded from dry crop production to include cattle grazing and production. In the late 1880s, new advances in farm machinery (e.g., steam-powered tractors) allowed farmers to increase the size of their farms and acreage of their harvests. By 1895, Weld County had become one of the major potato producing areas of the nation.

Feedlots and meat packing operations associated with Monfort, Inc. (established in 1930) had a major influence on the economy and population the regional study area north and south of Greeley. The Monfort feedlot grew quickly into one of the largest in the country, with a 3,500-head capacity in the midst of World War II, 8,000 by 1950, and 32,000 by 1960. During the 1960s the feedlot expanded rapidly into the first 100,000-head feedlot by 1968. In 1960, Monfort purchased a slaughterhouse in Greeley and five years later added processing to the plant.

Sugar beet cultivation and processing had a major influence on the regional study area in the late part of the 19th century. The state agricultural college in Fort Collins (now Colorado State University) experimented with sugar beets and helped publicize their suitability for the irrigated plains. In 1901, a sugar beet processing facility was opened in Loveland. Local farmers started producing sugar beets in such quantities that the Loveland plant could not process them all. As a result, sugar beet processing plants were built in Greeley, Eaton, Fort Lupton, and Windsor. In 1905, the Great Western Sugar Company was formed and thousands of acres of sugar beets were brought into production, as were many new settlers to grow beets, ship beets, and process beets. Sugar beets continued to be a strong part of the region's economy through World War II, until beet diseases and competition from other sweeteners led to their eventual demise.

The "Dust Bowl," although geographically defined by the federal government to include southern but not northeastern Colorado, still had a major impact on agricultural production in northern Colorado throughout the 1930s. Farmers eventually recovered and continued to prosper. By the mid-1970s, Weld County was ranked number one in the state of Colorado for total crop value.

The development of the railroads supported the burgeoning agricultural economy of the regional study area. Operational in 1870, the Denver Pacific rail line traveled through Weld County in a general north-south direction, bringing settlers to Colorado and facilitating the distribution of agricultural products. Although the Denver Pacific was the first railroad through Weld County, numerous other railroads were developed in the ensuing decades that extended service to other agricultural areas. The Burlington and Missouri River Railway

extended their line west from McCook, Nebraska, reaching Denver in the early 1880s. The Union Pacific then built a line from La Salle generally following the valley of the South Platte River eastward to Julesburg. This made a good network and a solid connection to the eastern regions of the United States. In promoting their service, the railroads encouraged thousands of farmers to relocate to this area.

As rural areas developed, the pressure increased for local and regional roadway connections. Early roadways were built between Denver and Fort Collins, through Denver, and in Greeley. The beginnings of the interstate system came with the passage of the Federal-Aid Highway Act of 1944. This act directed the Bureau of Public Roads to create a master plan for an interstate highway system. After the planning, little else was done until the passage of the Federal-Aid Highway Act of 1956, which authorized $25 billion for 12 years to move forward with construction of a national system of interstate and defense highways. Interstate 25 was completed during the 1960s. Traffic far exceeded original projections and numerous improvements and expansions have been constructed over the years. By the late 1980s, new off-ramps known as flyovers helped drivers get on and off I-25 at greater speeds. The access improvements provided by the interstate system spurred new growth along I-25, which has necessitated further capacity and interchange improvements.

The North Front Range of Colorado has experienced tremendous growth over the past 50 years. As **Table 3.26-4** shows, Adams, Boulder, and Larimer counties experienced the greatest increase in population between 1950 and 2000. This growth has translated into the development of housing, employment centers, and community facilities, focused in the 38 incorporated cities and towns present in the regional study area today.

Table 3.26-4 Census Population Totals by County 1950-2000

County	Population				
	1950	1970	1990	2000	Percent (%) Change 1950 to 2000
Adams	40,234	185,789	265,038	363,857	804%
Boulder	48,296	131,889	225,339	291,288	503%
Broomfield	---	7,261	24,638	38,272	427%[1]
Denver	415,786	514,678	467,610	554,636	33%
Larimer	43,554	89,900	186,136	251,494	477%
Weld	67,504	89,297	131,821	180,936	168%

[1] Percent change in Broomfield is calculated between 1970 and 2000, since data for 1950 is not available.

Source: Colorado Department of Local Affairs, State Demography Office, Historical Census 1870–2000.

Based on population and housing forecasts prepared by DRCOG and NFRMPO, population is expected to continue to increase within the regional study area through 2035, whether or not any transportation improvements related to this project are implemented. According to the data provided by these organizations, population within the regional study area is expected to increase 69 percent between 2005 and 2035, translating into approximately 317,648 new households.

3.26.3 Environmental Consequences

3.26.3.1 Land Use

In the early 20th century, the regional study area mostly contained small farming or mining communities. Larger cities with a variety of land use activities included Denver, Greeley, Fort Collins, Longmont, and Boulder. Population growth and increasing water availability (made possible by the Colorado-Big Thompson River Project in 1937) contributed to the expanding development that occurred throughout the 1950s as undeveloped communities began to devote more agricultural land to residential and employment uses.

Construction of I-25 north out of Denver began in the early 1960s. By the time the final segment between Fort Collins and Wellington was completed in 1968, low-density, suburban residential development was expanding outward from major city centers along the highway. Expansion of I-25 helped spur development north of Denver and contributed to land use change in the years that have followed. Communities whose town centers had been built along the BNSF rail line (e.g., Fort Collins, Loveland, and Longmont) realized that access to I-25 was crucial to increasing commercial and industrial growth in their cities. In response, they began developing commercial and residential uses east of their city centers and closer to I-25.

Population growth, development, and land use change have continued within the regional study area. Industrial development along the UPRR between Greeley and Denver has resulted in the expansion of residential and employment uses in the communities of Brighton and Fort Lupton. Major commercial centers (e.g., Flatirons Crossing, Centerra) have developed around highway corridors. Residential development has continued north of Denver in a suburban pattern. Communities have used programs to preserve open space, parks, and agricultural lands as a means to separate themselves from other cities and towns in the region. This has, in turn, spurred development in smaller surrounding communities.

Table 3.26-5 shows land uses in the regional study area between 1950 and 2005. Acres of land devoted to agricultural uses in the regional study area have decreased by 17 percent between 1950 and 2005. During the same time period, acres of land devoted to employment and residential uses have increased by 8 percent and 14 percent respectively.

Table 3.26-5 Land Use Change in Acres 1950-2005

Land Use Category	Approximate Acres							
	1950		1970		1990		2005[1]	
	Acres	%	Acres	%	Acres	%	Acres	%
Agriculture	570,580	75	504,064	66	451,874	59	446,400	58
Employment Area	12,788	2	30,939	4	44,800	6	75,100	10
Parks/Open Space	1,929	<1	6,040	<1	11,121	1	65,300	8
Residential	30,071	4	64,033	8	93,447	12	143,000	18
Transportation	7,557	1	12,447	2	13,225	2	---[2]	---[2]
Vacant-Unknown	124,195	16	123,120	16	123,515	16	6,400	1
Water	13,939	2	20,415	3	23,077	3	39,900	5
Total	**761,059**	**100**	**761,059**	**100**	**761,058**	**100**	**776,100[1]**	**100**

Notes:

Land use data from the USGS, Front Range Infrastructure Resources Project, and Land Characterization Program is not available for years after 1990. Land use acreages in 2005 are derived from **Section 3.1** *Land Use*. As a result, minor differences in the data can be noted:

[1] Total acres within the regional study area differ between data sets. The USGS did not collect data in the northernmost part of the regional study area, which may account for the discrepancy.

[2] Land use classifications differ between data sets. As a result, there is no classification for Transportation recorded for 2005.

Source: U.S. Geological Survey, Front Range Infrastructure Resources Project, Land Characterization Program.

As part of this Final EIS, reasonably foreseeable future developments and land use plans were reviewed to assess future growth patterns. Based on this review, it is expected that the general pattern of urbanization would continue. Development would continue outward from town centers and more agricultural land would be converted for employment and residential uses. This pattern of growth is expected to occur regardless of whether the improvements considered in this Final EIS are implemented.

DRCOG envisions future growth and development as relatively compact with high-density mixed-use urban centers along major transportation corridors. According to the DRCOG *2035 MVRTP* (DRCOG, 2007) many significant challenges must be addressed to fulfill this vision. Regional challenges include severe traffic congestion that can impede economic development and job creation; concerns about air quality, water quality and water supply; the burden of paying for new facilities and services required to serve growth; and preservation of open space for current and future generations. The *North Front Range 2035 Regional Transportation Plan* (NFRMPO, 2007) also cites interregional commuting, jobs/housing imbalance, and sprawl as challenges presented by regional growth.

Likely major impacts resulting from development are increased impervious surfaces (e.g., roads, driveways, rooftops, parking lots), loss of agricultural lands, loss and fragmentation of wildlife habitat, degradation of air and water quality, loss of wetlands and aquatic resources, declining quality of life, and stress on infrastructure, water availability and water supply. Minimizing these impacts will require regional coordination. This is a particular challenge in southwest Weld County, where pressure to develop rural agricultural land has been increasing and local jurisdictions are in disagreement as to where, when, and how growth should occur. In the absence of intergovernmental cooperation and coordination, development could result in a fragmented urban landscape that is costly to service and maintain.

Under the No-Action Alternative, anticipated development along I-25 would continue based on market forces and in accordance with city and county plans as described in **Section 3.1** *Land Use*. In the absence of transit or capacity improvements, regional visions for compact development along major transportation corridors would not be realized.

Implementation of Package A would support regional planning and municipal planning efforts (including transit-oriented development) as described in **Section 3.1** *Land Use*. Under Package B, anticipated development along I-25 would continue in accordance with city and county plans. Bus rapid transit would support this development. In the absence of transit or capacity improvements in Fort Collins, Loveland and Longmont, development would most likely continue to spread outward from city centers. The Preferred Alternative is a combination of components presented in Packages A and B, and includes multimodal improvements on multiple corridors. The Preferred Alternative would be mostly compatible with existing land uses, zoning, and comprehensive plans, with impacts similar to those described for Package A.

Conversion of agricultural and open lands into urban uses will continue regardless of whether a build package is implemented or not. The construction of a build package would not contribute noticeably to cumulative land use impacts in comparison to what is already anticipated through land development projects and other roadway improvements, especially since the construction of most of the three packages will occur over a long period of time. Implementing Package A or the Preferred Alternative could minimize the conversion of agricultural land in the outlying areas of communities along the BNSF rail line as development shifts toward higher densities and urban centers in Fort Collins, Loveland, and Longmont.

3.26.3.2 WATER QUALITY

There are six watersheds in the regional study area: the South Platte River, Clear Creek, Big Dry Creek, St. Vrain Creek/Boulder Creek, Big Thompson River, and Cache La Poudre River. Numerous streams, tributaries, canals, ditches, reservoirs, and lakes are either adjacent to or cross under I-25, US 85, or the BNSF (see **Figure 3.7-2** in **Section 3.7** *Water Resources*).

Before land cultivation for agriculture, the natural ecosystem was largely unaffected by human activity. Oil and gas development, agricultural activity, and urbanization have impacted water quality. Some surface waters in the regional study area do not currently meet water quality standards. These impaired streams were identified by CDPHE- Water Quality Control Division and are listed in the 303(d) *List of Impaired Streams*. Streams that do not meet established water quality standards are required to go through a remediation process (i.e., total maximum daily load analysis) to help improve water quality conditions. All but two streams identified as impaired or potentially impaired within the regional study area are attributed to pollutants that are not related to highway construction and operations (E.coli, aquatic life use, organic sediment, and selenium). Typically, the presence of E coli, aquatic life use, organic sediment, and selenium in the surface water are a result of wastewater treatment plant discharges, predominance of invasive invertebrates, industrial discharges, and irrigation return water from high selenium soils, respectively. Because these pollutants are not known to be associated with highways, the improvements identified in Package A, Package B, or the Preferred Alternative are not anticipated to result in an increase of these pollutants in the streams within the regional study area.

Two stream segments are impaired or potentially impaired from pollutants that are associated with highway construction and operations (Little Thompson River [copper] and Big Dry Creek [iron]). It is estimated that the water quality BMPs that have been included as part of the design will remove up to 38 percent of copper in the runoff. This is approximately the same amount of anticipated increase in copper loading to the Little Thompson River from Package A, Package B, or the Preferred Alternative. The water quality BMPs will remove 50 to 60 percent of the iron, which is more than enough to account for the expected 30 percent increase in iron loading in Big Dry Creek. Therefore, the water quality BMPs will remove copper and iron to a level approximately the same as existing conditions.

Agricultural practices have resulted in surface and groundwater contamination. Contaminants include nutrients (nitrogen and phosphorous), pesticides and herbicides, and volatile organic compounds. Nitrates have consistently exceeded drinking water standards. CDPHE regulations do not apply to irrigation canals and ditches that are present throughout the regional study area despite their important function of transporting drinking water (CDPHE, 2003).

Cumulative impacts to water quality would primarily result from changes in hydrologic conditions caused by development already planned in the regional study area. Development rapidly consumes and converts natural landscapes to impervious surfaces such as parking lots, roads, and rooftops. Water runs off these impervious surfaces, often carrying pollutants directly into water bodies instead of allowing for the natural filtering of pollutants through the soil. Impacts that follow include species loss, oxygen depletion, lower groundwater levels, increased peak flows, and flooding. Impacts associated with additional impervious surface area are typically mitigated through the implementation of best management practices.

The analysis of cumulative effects to water quality is broader in scope than what is presented in **Section 3.7**, *Water Resources*. Comprehensive mapping of planned developments within the regional study area was not available. As a result, this analysis used area maps from DRCOG and NFRMPO. As part of the traffic analysis process, each traffic analysis zone (TAZ) is classified as one of five general land area types (central business district, central business district-fringe, urban areas, suburban areas, and rural areas). When considered on a very broad, regional scale, these data generally portray where future growth is envisioned. The percent imperviousness for each TAZ area type is derived from the Urban Drainage and Flood Control District (UDFCD) *Drainage Criteria Manual* (2008). Based on available data and estimated percent impervious surface areas for each general land use type, impervious surface area is anticipated to increase by approximately 69,000 acres (19 percent) between 2005 and 2035 as a result of future urbanization within the regional study area. Future urbanization would occur regardless of whether the improvements under construction are constructed.

With the No-Action Alternative, the amount of impervious surface would continue to increase as planned development occurs. Impacts to water quality within the regional study area would result from an increase in surface runoff and pollutants being carried into receiving waters. The greatest change to water quality could occur in the Middle South Platte watershed, due to the large increase in impervious surface area that is anticipated between 2005 and 2035.

Implementation of a build package would facilitate future development along existing transportation corridors, consistent with future land use planning efforts. This would facilitate denser development patterns (particularly for Package A and the Preferred Alternative) and help reduce the impervious surface area associated with development and its related water quality effects.

Implementation of a build alternative would result in additional impervious surfaces as a result of highway widening, transit stations, and parking lots. While the build alternatives result in greater total impervious surface area (1,946 acres for Package A, 2,001 acres for Package B, and 1,982 acres for the Preferred Alternative) than the No-Action Alternative, the percentage of the area that will be treated with best management practices is also greater (90.7 percent under Package A, 125 percent under Package B, and 101 percent under the Preferred Alternative). A percentage greater than 100 indicates that the volume provided is greater than the defined water quality capture volume, which is equal to one-half inch of rainfall times the impervious area. Capture volumes greater than 100 percent can sometimes be used to offset other locations on the highway system where 100 percent capture cannot be achieved. For comparative purposes, 5.1 percent of the 1,257 acres of total impervious surface associated with the No-Action Alternative would be treated. Future impacts to water quality could arise from maintenance activities, such as snow plowing, sanding, and deicing. The additional impervious surface area would contribute minimally to water quality impacts when compared to what is expected from planned development. These impacts to water quality would be reduced through implementation of maintenance programs and best management practices in both construction and design (see **Section 3.7** *Water Resources*).

3.26.3.3 WILDLIFE

Past actions affecting wildlife distribution and movement corridors in the regional study area include commercial and residential development, road construction, and gravel mining. These activities have directly displaced wildlife habitat, increased habitat fragmentation, and altered wildlife movements. Although gravel mining temporarily disrupts wildlife habitat, it may also create lakes, which benefit some species. In general, the amount and connectivity of wildlife habitat has declined in the regional study area since 1950.

Impacts to wildlife from anticipated development were evaluated using wildlife data from CDOW, field survey data collected by ERO Resources in 2006, Colorado State Patrol vehicle-animal collision data from 1993 to 2004 for wildlife movement corridors, and land use data collected in 2000 (see **Section 3.1** *Land Use*). Geographic information System (GIS) maps depicting future land uses were reviewed to evaluate expected impacts on wildlife. Future land use maps were based on forecasts for 2035 from DRCOG and the NFRMPO, as described in **Section 3.1** *Land Use*.

Land uses that provide habitat for wildlife include agriculture, open space, parks, surface water areas, and vacant lands. Residential and commercial land uses are less likely to provide habitat for wildlife because they are more developed. According to data provided in **Section 3.1** *Land Use*, approximately 210,800 acres of agricultural and vacant lands are expected to be converted to residential and commercial land uses between 2000 and 2035. Open spaces and parks are expected to increase by 116,100 acres during the same period. Lands protected or enhanced for wildlife would help to offset some of the effects of overall habitat loss.

General wildlife habitat in the regional study area would be expected to decline with highway expansion, residential and commercial development, and the decrease of open lands used for agriculture. Residential and commercial development also will contribute to habitat fragmentation and further reduce open areas used as movement corridors by wildlife. Disruption of movement corridors, vehicle collisions with wildlife, and habitat fragmentation are concerns expressed during scoping meetings with CDOW, other agencies, and the public. The potential for cumulative impacts to wildlife corridors or crossing sites as a result of reasonably foreseeable projects is described below. If direct or indirect effects from the North I-25 project would occur, this is noted.

- **I-25 from SH 1 to SH 14.** Substantial new residential and commercial development is expected to occur in this area by 2035. However, no major wildlife movement corridors or crossing sites were identified in this area.
- **Fossil Creek Reservoir at SH 392.** Windsor and Fort Collins slate this area for development. However, no major wildlife movement corridors or crossing sites were identified in this area.
- **Cache La Poudre River at I-25.** Future land use mapping shows limited growth in the area around I-25 and the Poudre River. Mapping also shows a substantial increase in the area planned for designation as open space or parkland along the river. Future land uses are likely to support the continued use of the Cache la Poudre River at I-25 as a wildlife movement corridor.
- **Big Thompson River at I-25.** Future land use mapping shows planned residential and commercial development south of the Big Thompson River at I-25. The land surrounding the river is largely located within the Big Thompson Ponds State Wildlife Area west of I-25 and agricultural land east of I-25 is likely to remain undeveloped. Future land uses are likely to support the continued use of the Big Thompson River at I-25 as a wildlife movement corridor.
- **Little Thompson River at I-25.** Some residential development is expected south of the Little Thompson River, but in general, the surrounding land use will remain agricultural. The Little Thompson will likely remain a wildlife crossing area.
- **I-25 between Little Thompson and St. Vrain Creek.** This area is expected to remain agricultural. Future development would not prevent the area from being used as a wildlife crossing area.
- **St. Vrain Creek at I-25.** Extensive new commercial and residential development is planned on both sides of SH 119, potentially fragmenting existing wildlife habitat along St. Vrain Creek. This movement corridor will likely be heavily impacted by future development.
- **I-25 West of Firestone and Frederick.** Extensive new development is planned along I-25 in this area. Wildlife movements are likely to be heavily impacted by this new development.
- **Little Dry Creek at I-25.** New commercial and residential developments are planned west of I-25 and near the I-25/E-470 interchange. New development will likely affect wildlife movements in the area.
- **Big Dry Creek at I-25.** Big Dry Creek at I-25 is located in an area that is already developed. Impacts to wildlife movements from new development are expected to be low.

- **Fossil Creek at the BNSF Rail Line.** The area around Fossil Creek at the proposed commuter rail alignment is mostly built out and is not expected to have substantial new residential or commercial growth. Retaining walls and fences adjacent to the commuter rail would create a barrier to wildlife movement, resulting in moderate impacts to wildlife. These impacts would only be expected under Package A and the Preferred Alternative.
- **Big Thompson River at the BNSF Rail Line.** Much of the land along this reach of the river is protected parks or open space. Changes in land use near this wildlife-crossing site are expected to be minimal.
- **Little Thompson River at the BNSF Rail Line.** Land use near the Little Thompson River at I-25 is expected to remain agricultural with few changes planned. Retaining walls and fences adjacent to the commuter rail would create a barrier to wildlife movement, resulting in moderate impacts to wildlife. These impacts would only be expected under Package A and the Preferred Alternative.
- **Ish Reservoir Area.** Land use in the area around Ish Reservoir is expected to remain mostly agricultural, with few changes planned. Retaining walls and fences adjacent to the commuter rail would create a barrier to wildlife movement, resulting in high impacts to wildlife. These impacts would only be expected under Package A and the Preferred Alternative.
- **St. Vrain Creek at SH 119.** Extensive new commercial and residential development is planned on both sides of SH 119, potentially fragmenting existing wildlife habitat along St. Vrain Creek. This movement corridor will likely be heavily impacted by future development. Retaining walls and fences adjacent to the commuter rail would create a barrier to wildlife movement, resulting in moderate impacts to wildlife. These impacts would only be expected under Package A and the Preferred Alternative.
- **BNSF Rail Line west of Firestone and Frederick.** Extensive new development is planned along I-25 near this wildlife crossing area. Wildlife movements in this area are likely to be heavily impacted by the new development. Retaining walls and fences adjacent to the commuter rail would create a barrier to wildlife movement, resulting in high impacts to wildlife. These impacts would only be expected under Package A and the Preferred Alternative.
- **Little Dry Creek at the BNSF Rail Line.** Land use in this area is expected to remain mostly agricultural. Impacts to wildlife from future growth would be minimal. Retaining walls and fences adjacent to the commuter rail would create a barrier to wildlife movement, resulting in high impacts to wildlife. These impacts would only be expected under Package A and the Preferred Alternative.

To minimize impacts to wildlife at crossing sites, breaks in fencing would be provided where considerable wildlife conflicts are expected. The build packages would widen and extend culverts and bridges. While widening would facilitate wildlife movement, extending the length of a culvert or bridge would lengthen the distance wildlife would have to travel to cross I-25 or the BNSF rail line.

Prairie dog colonies are used as an index of prairie habitat because they provide habitat for a number of other wildlife species and are used as foraging areas by numerous predators including coyotes, badgers, bald eagles, and other raptors. Cumulative impacts to black-tailed prairie dogs were evaluated by quantifying the potential loss of existing prairie dog colonies within one-half of a mile of the improvements being evaluated for Package A, Package B, and

the Preferred Alternative. Currently, there are approximately 1,526 acres of prairie dog colonies within one-half of a mile of Package A. Planned development would impact 793 acres of these colonies (52 percent) and the construction of improvements included in Package A would impact approximately 60 acres (4 percent). There are approximately 1,812 acres of prairie dog colonies within one-half of a mile of Package B. Planned development would impact 913 acres of these colonies (50 percent) and the construction of improvements included in Package B would impact 97 acres (5 percent). There are approximately 2,910 acres of prairie dog colonies within one-half of a mile of the Preferred Alternative. Planned development would impact 1,233 acres of these colonies (42 percent) and the construction of improvements included in the Preferred Alternative would impact 86 acres (3 percent).

Bald eagle populations in the regional study area have been increasing for the past ten to twenty years, and new nests have been identified in the regional study area every year for the past few years. At least 17 active bald eagle nests were known to occur in the regional study area in 2010, and six of these occur within three miles of the I-25 improvements or rail alignments. The future increase of bald eagle nesting in the regional study area may be limited from a lack of suitable nesting sites located in areas with large numbers of trees, near water, with a food source nearby, and isolated from human disturbance. Future land use projections show an increase in development in some areas used by bald eagles, such as along SH 119 near the confluence of St. Vrain and Boulder creeks. Loss of foraging habitat, especially loss of prairie dog towns, and increased disturbance from new commercial and residential development, may lead to stabilizing or declining numbers of bald eagles in the regional study area in the future. The loss of foraging habitat and other impacts from future development would be much greater than impacts from any build package.

Historically, populations of the Preble's meadow jumping mouse within the regional study area have most likely declined. Preble's meadow jumping mouse were no longer present at many sites where they had previously been trapped, including near Longmont within the regional study area (Ryon, 1996). Preble's occupied habitat would likely be impacted by planned residential and commercial development along I-25, south of the Big Thompson and Little Thompson Rivers. In both locations, impacts from any build alternative would be minimal (less than one acre).

As described in **Section 3.12** *Wildlife*, Package A would impact 49 raptor nests, 12 wildlife movement corridors, 2 acres of sensitive wildlife habitat and 1.8 acres of aquatic habitat. Package B would impact 43 raptor nests, 7 wildlife movement corridors, 2.4 acres of sensitive wildlife habitat, and 2.3 acres of aquatic habitat. The Preferred Alternative would impact 57 raptor nests, 14 wildlife movement corridors, 1.9 acres of sensitive wildlife habitat, and 1.5 acres of aquatic habitat.

Planned transportation and development actions will contribute to further loss and degradation of wildlife habitat within the regional study area. Approximately 206,900 acres of agricultural/vacant lands are expected to be converted to residential or commercial land uses. This would occur regardless of whether a build alternative is implemented, resulting in cumulative impacts to wildlife, wildlife habitat, and other biological resources in the regional study area.

The construction of a build alternative would not contribute to cumulative impacts to wildlife in comparison to what is already anticipated through land development projects and other roadway improvements. For example, there are 9,195 acres of important foraging habitat for

bald eagles in the study area. Of those, Package A would directly affect 43.1 acres, Package B would directly affect 70.06 acres, and the Preferred Alternative would directly affect 58.2 acres. Each of the three alternatives would affect less than one percent of the important bald eagle foraging habitat in the study area. In addition, less than 1,000 acres of agricultural/vacant lands would be converted to a transportation use.

3.26.3.4 WETLANDS

Wetlands in the regional study area are primarily associated with natural drainages, seep areas, ponded sites, and irrigation and roadside ditches. Major drainages within the regional study area include Cache la Poudre River, Big Thompson River, South Platte River, Little Thompson River, Boxelder Creek, Fossil Creek, St. Vrain Creek, Boulder Creek, Little Dry Creek, Coal Creek, and Big Dry Creek.

Early explorers and settlers to the Front Range found riparian areas and wetlands to be the most habitable environments. These areas were full of wildlife and game, trees that could be cultivated as timber and water. Wetlands themselves were viewed as waste areas, and the practice of dredging or filling wetlands to convert the land to other uses became standard practice. The rich, alluvial soils could be converted easily to agricultural land by draining the water from the area or channelizing the water for use in irrigation. Although seasonal flooding hampered early development of these areas, settlers learned to adapt to flooding events in order to capitalize on the resources of floodplains. As the area was converted to agricultural land and development spread, wetland loss occurred widespread and at a rapid rate.

Although there is no concise inventory of historical wetlands in Colorado, national estimates, taken from data collected by the National Wetlands Inventory in conjunction with status and trends reports, have shed some light on wetland loss and degradation. It is estimated that Colorado experienced a 50 percent loss of wetlands from the 1700s into the latter part of the 20th century. Rapid urbanization, mining, and agriculture have impacted wetlands in the regional study area greatly since 1940.

To study how urban growth has impacted wetlands in the regional study area, data from the U.S. Geological Survey (USGS) were used. This analysis involved use of GIS to analyze data that portray land cover over different time periods. The USGS included as wetlands those areas where the water table is at, near, or above the land surface for a significant part of most years and covers more than 25 percent of the land surface. Wetlands less than 2.5 acres in size were not included in the analysis. Thus, the data provide a very gross estimate of wetlands and under report the number and acreage of wetlands in the regional study area. Data collected in the 1970s show approximately 3,188 acres of wetlands present in the regional study area. Data collected in the 1990s shows 2,951 acres of wetlands in the regional study area, a decrease of 237 acres, or 7.4 percent of wetland acreage. This is in accordance with past trends of wetland loss for the area.

Wetland scientists conducted wetland delineations that identified 675 acres of wetlands and jurisdictional open waters within the project area, which includes 534 acres of wetlands and 141 acres of jurisdictional open waters.

Estimating direct impacts of reasonably foreseeable development to wetlands in the regional study area is difficult, as final design for many of the proposed projects have not yet been determined. As the Denver Metropolitan Corridor spreads northward, planned development is

likely to result in further direct and indirect impacts to wetland communities. A conservative estimate of this loss could be up to 300 acres by 2035, assuming the same rate of wetland loss as occurred between 1970 and 1990.

Under the No-Action Alternative, wetland degradation and loss is anticipated to continue as growth and development continue to occur in undeveloped areas. Impacts to any jurisdictional wetlands would be mitigated on a one-for-one basis, resulting in no net loss of jurisdictional wetlands. Because CDOT requires mitigation on a one-to-one basis for any wetland impact (regardless of jurisdictional status), there would be no net loss of wetlands as a result of CDOT actions.

Package A would directly impact an estimated 18 acres of wetlands and 4 acres of jurisdictional open waters (22 total acres). Package B would directly impact 19 acres of wetlands and 2 acres of jurisdictional open waters (21 total acres). The Preferred Alternative would directly impact 15 acres of wetlands and 3 acres of jurisdictional open waters (18 total acres). Therefore, of the total 675 acres of wetlands and jurisdictional open waters identified within the project area, Package A would impact 3.3 percent, Package B would impact 3.1 percent, and the Preferred Alternative would impact 2.7 percent.

Of the approximately 300 acres that could be impacted by reasonably foreseeable future development (with our without a transportation improvement), Package A and the Preferred Alternative have the most potential to result in more concentrated growth near a commuter rail station. This could decrease the acreage of wetlands impacted.

The incremental impact of the build alternatives represents 3.0 percent of the total wetlands and jurisdictional open waters identified in the regional study area. Because CDOT requires mitigation on a one-to-one basis for any wetland impact (regardless of jurisdictional status), there would be no net loss of wetlands as a result of the impacts associated with any of the build alternatives.

3.26.3.5 Air Quality

Ambient air quality monitoring began along the Front Range in the 1960s. Data since that time show that pollution emissions controls and programs instituted as a result of the Clean Air Act and its amendments have been successful in reducing criteria pollutant levels. Effective November 20, 2007, the EPA designated the Denver metro area and the north Front Range as a non-attainment area for the 8-hour ozone (O_3). Ozone is not directly emitted into the atmosphere, but is created by a chemical reaction of various pollutants (nitrogen oxides [NOx] and hydrocarbons) with sunlight. The pollutants that contribute to the generation of ozone are referred to as "precursors".

In March 2008, EPA strengthened the NAAQS for the 8-hour ozone standard from 0.080 ppm to 0.075 ppm. The EPA had revoked the 1-hour ozone standard for all areas except for non-attainment Early Action Compact (EAC) areas (areas which have no effective date for their 8-hour designations). Once those areas have a designation date, the 1-hour ozone standard will be revoked one year after the effective designation. The effective date for non-attainment designation was April 15, 2008. Therefore, the 1-hour ozone standard has been revoked as of April 15, 2009 for the Denver metro area and the north Front Range.

Rigorous adherence to reduction programs and precursor emissions controls will prevent future air quality deterioration. Future mobile source pollutant emissions of carbon monoxide (CO), NOx, PM, and toxics are expected to continue to decline as a result of new low sulfur fuel requirements, stricter retrofit and engine exhaust emission controls, and engine efficiency improvements.

Transportation projects that might exacerbate air quality problems must meet certain requirements before they can proceed. Particularly, a regional air quality conformity analysis is needed to show that projects are compatible with the State Implementation Plan. In addition, a local hot spot analysis for carbon monoxide is needed to show that an action will not cause violations of the NAAQS. Potential carbon monoxide and (PM10) hot spots were identified through evaluation of intersections in the regional study area (see **Section 3.5** *Air Quality*). No CO or PM10 hot spots emissions in violation of the NAAQS are predicted to result from the build alternatives under modeled 2035 traffic volumes.

While the number of pollution sources is expected to grow, pollution emissions are not expected to increase proportionately due to implementation of stricter regulatory controls such as evaporative emissions controls applied to area oil and gas production facilities, development of wind and renewable energy sources for large scale electrical power generation, and continued conversion of fossil fuel burning to unconventional fuels and fuel hybrids. Within the Denver, Fort Collins, Greeley, and Longmont criteria pollutant attainment/maintenance areas, 2035 design year total CO emissions for the build alternatives would be well below local attainment/maintenance plan emissions budgets, although slightly above No-Action levels because of the increase in VMT.

Any incremental emissions impacts to air quality from the build alternatives would be small compared to current pollutant emissions levels. Additionally, transit facilities and service would not contribute to direct air quality impacts and would act to reduce the growth of single occupancy vehicle use, lowering vehicle miles traveled (VMT) and traffic emissions for the region overall.

The issue of global climate change is an important national and global concern that is being addressed in several ways by the Federal government. The transportation sector is the second largest source of total greenhouse gases (GHGs) in the U.S., and the greatest source of carbon dioxide (CO_2) emissions – the predominant GHG. In 2004, the transportation sector was responsible for 31 percent of all U.S. CO_2 emissions. The principal anthropogenic (human-made) source of carbon emissions is the combustion of fossil fuels, which account for approximately 80 percent of anthropogenic emissions of carbon worldwide. Almost all (98 percent) of transportation-sector emissions result from the consumption of petroleum products, such as gasoline, diesel fuel, aviation fuel, and residual fuel.

Recognizing this concern, FHWA is working with other modal administrations through the DOT Center for Climate Change and Environmental Forecasting to develop strategies to reduce transportation's contribution to greenhouse gases - particularly CO_2 emissions - and to assess the risks to transportation systems and services from climate changes.

There are also several programs underway in Colorado to address transportation GHGs. The Governor’s Climate Action Plan, adopted in November 2007, includes measures to adopt vehicle CO_2 emissions standards and to reduce vehicle travel through transit, flex time, telecommuting, ridesharing, and broadband communications. CDOT issued a Policy Directive on Air Quality in May 2009. This Policy Directive was developed with input from a number of

agencies, including the CDPHE, the EPA, FHWA, the Federal Transit Administration (FTA), RTD, and the Denver Regional Air Quality Council (RAQC). This Policy Directive addresses unregulated MSATs and GHG produced from Colorado's state highways, interstates, and construction activities.

As part of CDOT's commitment to addressing MSATs and GHGs, some of CDOT's program-wide activities include:

1. Developing truck routes/restrictions with the goal of limiting truck traffic in proximity to facilities, including schools, with sensitive receptor populations.
2. Continue researching pavement durability opportunities with the goal of reducing the frequency of resurfacing and/or reconstruction projects.
3. Developing air quality educational materials, specific to transportation issues, for citizens, elected officials, and schools.
4. Offering outreach to communities to integrate land use and transportation decisions to reduce growth in VMT, such as smart growth techniques, buffer zones, transit-oriented development, walkable communities, access management plans, etc.
5. Committing to research additional concrete additives that would reduce the demand for cement.
6. Expanding Transportation Demand Management (TDM) efforts statewide to better utilize the existing transportation mobility network.
7. Continuing to diversify the CDOT fleet by retrofitting diesel vehicles, specifying the types of vehicles and equipment contractors may use, purchasing low-emission vehicles, such as hybrids, and purchasing cleaner burning fuels through bidding incentives where feasible. Incentivizing is the likely vehicle for this.
8. Exploring congestion and/or right-lane-only restrictions for motor carriers.
9. Funding truck parking electrification (note: mostly via exploring external grant opportunities)
10. Researching additional ways to improve freight movement and efficiency statewide.
11. Committing to incorporating ultra-low sulfur diesel (ULSD) for non-road equipment statewide – likely using incentives during bidding.
12. Developing a low- Volatile Organic Compounds (VOC) emitting tree landscaping specification.

Section 3.21 *Energy* contains a calculation of carbon dioxide produced by the various alternatives. **Table 3.21-3** *Daily Co_2 Production by Alternative* shows that Package A results in CO_2 production that is 0.8 percent higher than the No-Action Alternative, Package B CO_2 production is 0.4 percent higher, and the Preferred Alternative CO_2 production is 0.9 percent higher.

Over time, it would be expected that the rail components of Package A and the Preferred Alternative would provide more options for lower energy consumption because more trains could be easily added. The TELs in Package B and the Preferred Alternative would eventually

fill up with buses and carpoolers. Transit stations would, over time, serve as a stimulus to transit-oriented development, which would potentially reduce energy consumption due to mixed use and higher density development.

In addition, all three build packages contain other energy reducing components such as TDM and ITS programs, along with additional carpool lots to encourage carpooling.

The relationship of current and projected Colorado highway emissions to total global CO_2 emissions is presented in the table below. Colorado highway emissions are expected to increase by 4.7 percent between now and 2035. The benefits of the fuel economy and renewable fuels programs in the 2007 Energy Bill are offset by growth in VMT; the *2035 Statewide Transportation Plan* predicts that Colorado VMT will double between 2000 and 2035. **Table 3.26-6** also illustrates the size of the project corridor relative to total Colorado travel activity.

Table 3.26-6 Annual CO_2 Emissions Comparison

Global CO_2 emissions, 2005, MMT[1]	Colorado highway CO_2 emissions, 2005, MMT[1]	Projected Colorado 2035 highway CO_2 emissions, MMT[1]	Colorado highway CO_2 emissions, % of global total (2005)	Project corridor VMT, % of statewide VMT (2001)
27,700	29.9	31.3	0.108	22

[1]MMT...Million metric tons

Source: EIA, International Energy Outlook 2007

3.26.3.6 Historic Properties and Districts

In the early 20th century, most of the regional study area was used for agricultural purposes. Individual farmsteads were usually one or two quarter sections of land (160 or 320 acres). As the automobile and tractor started replacing the horse and carriage, roads were built. Road access facilitated additional development. Much of the new development was auto-related with service stations and restaurants built to serve the motoring public. Many small settlements were established throughout the region, many serving as supply and social centers as well as produce shipping points for dispersed farms.

The late 1960s brought more residential development, with the development of large-scale subdivisions beginning in the 1980s. These residential developments have put pressure on many of the country roads that were never envisioned to carry the amount of traffic generated by large-scale development. The small downtowns of many of the historic settlements are now experiencing renewed activity as a result of development of nearby residential subdivisions. As land becomes more valuable for development, farmers are increasingly pressured to sell or develop their land.

Under the No-Action Alternative, the conversion of the remaining historic farmsteads into urban development would continue in accordance with local development plans. Traffic and congestion within the regional study area would continue to increase and would result in an increase in noise, air emissions, and visual obstructions affecting historic properties and districts. Planned growth within the I-25 corridor would result in more traffic through some historically smaller communities.

Implementation of Package A would result in adverse impacts to Louden Ditch (5LR.8930), the Denver Pacific/Kansas Pacific/Union Pacific Railroad - Denver & Boulder Valley Branch (5WL.1969/5BF.130), and four historic structures - Old City Electric Building (5BL.1245), the Colorado & Southern / BNSF Depot (5BL.1244), the Hingley Farm (5WL.5263), and the Jillson Farm (5WL.6564). Construction of the commuter rail components (A-T1 and A-T2) would support municipal plans for downtown redevelopment and would increase overall density and footprint of urban centers along the BNSF rail line. While the conversion of historic properties and farmsteads would continue, it would likely occur more slowly in areas adjacent to the BNSF rail line. The commuter rail component also would result in additional trains within the BNSF corridor. This would alter the current character of the railroad from a freight line to a combination passenger/freight line service.

Implementation of Package B would result in adverse impacts to Louden Ditch (5LR.8930). The conversion of the remaining farmsteads into urban and subdivision development would continue in accordance with local development plans. Increasing traffic and congestion within the regional study area would continue and would result in an increase in noise, air emissions, and visual obstructions for historic properties and districts. This impact would not affect the district's and property's eligibility to the National Register of Historic Places.

Implementation of the Preferred Alternative would result in adverse impacts to Louden Ditch (5LR.8930), the Denver Pacific/Kansas Pacific/Union Pacific Railroad - Denver & Boulder Valley Branch (5WL.1969/5BF.130), and two historic structures - the Hingley Farm (5WL.5263) and the Jillson Farm (5WL.6564). Indirect effects associated with this alternative would be similar to those described under Package A.

As discussed in **Section 4.2.4** *Transportation Impacts, Effects on Arterials*, the increased traffic on I-25 with the build alternatives would reduce traffic on the roadways parallel to I-25 compared to the No-Action Alternative. Overall, the magnitude of this effect on arterials would be relatively small, as the changes are spread among many individual roads. The effect on peak-hour arterial conditions would not be notable. This indicates that traffic within historic districts in Fort Collins, Loveland, and Longmont would not increase as a result of the build alternatives.

Cumulative impacts to historic properties and districts have occurred and will continue to occur in the regional study area due to the conversion of agricultural lands and farmsteads to urban land uses and limited local historic preservation regulations. Planned transportation and development actions will, over time, result in the additional loss of historic properties and will alter the historic character of small farming communities. These impacts will occur regardless of whether or not a build alternative is implemented. The construction of a build alternative would not contribute to cumulative impacts to historic resources in comparison to what is already anticipated through land development projects and other roadway improvements. For reasonably foreseeable future projects that are federally funded or require a federal action, federal legislation protects historic resources [National Historic Preservation Act of 1966, as amended and Section 4(f) of the U.S. Department of Transportation Act] and requires that adverse effects be mitigated.

3.26.4 Conclusion

Environmental impacts from the build alternatives, when added to past, present, and reasonably foreseeable future projects, would result in additional cumulative impacts to environmental resources of concern. However, the majority of these cumulative impacts are a result of the growth and development already expected to occur in the regional study area, with or without any transportation improvements. The construction of a build package would not change the overall cumulative impacts noticeably. The exception is for Package A and the Preferred Alternative, where additional barriers at wildlife crossing sites would result in impacts to wildlife. However, these impacts can be minimized by limiting fencing in areas where substantial impacts would occur or by using wildlife friendly fencing that large mammals can easily cross. In other areas, culverts and bridges could be used to facilitate wildlife movement (see **Section 3.12** *Wildlife*).

To avoid additional impacts to the identified resources of concern, local authorities and planning entities must continue to review and scrutinize development proposals to ensure that new development is consistent with local area planning goals. One way local planning jurisdictions can reduce environmental impacts is through the implementation of smart growth initiatives. These initiatives can provide economic, social, and environmental benefits to a community. Nearly every community in the regional study area incorporates smart growth principles into their comprehensive/land use plans. Of 29 planning documents that were reviewed for smart growth principles, 65 percent included eight to ten of the smart growth principles. The next step is for local jurisdictions to strictly enforce these principles through their development review process.

Local authorities and planning entities should also require appropriate avoidance or mitigation as part of any new development project. Resources most at risk that could be protected are riparian areas, floodplain areas, historic properties, and wildlife habitat areas. For transportation projects, CDOT will ensure that all best management practices and mitigation measures specified in this Final EIS are followed appropriately.