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## **4.20 Cumulative Impacts**

NEPA and its implementing regulations require federal agencies to consider direct, indirect, and cumulative impacts of a proposed federal action. Direct and indirect impacts have been discussed by resource in the preceding sections. This section discusses cumulative impacts that the system alternatives (System Alternatives 1, 2, 3, and the Preferred Alternative), and the No Action Alternative may have on key resources in concert with other actions.

Cumulative impacts may result from the incremental impact of a particular 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 include the total impacts to a particular resource that have occurred in the past, are occurring now, and are likely to occur in the future.

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. There may be different cumulative impacts on different environmental resources. It is important to note that if a project has no direct or indirect impacts on a particular resource, then it also has no cumulative impacts on that resource.

CEQ and FHWA guidance stress the importance and challenge of analyzing cumulative impacts. Careful consideration during scoping and coordination with other agencies is needed to ensure that the analysis is neither too narrow, such that significant issues are missed, nor too broad, such that the analysis is unwieldy and unfocused.

In addition to providing full disclosure of the impacts of a proposed action, the cumulative impact analysis is intended to ensure that decision makers have adequate information to make an informed decision. This includes FHWA, as well as other federal, state, and local decision makers, such that these decision makers are able to understand the potential relationships between separate actions and make appropriate decisions necessary to achieve desirable outcomes.

### **4.20.1 Methodology for Assessing Cumulative Impacts**

Cumulative impacts result when the effects of an action are added to or interact with effects of other actions in a particular place and within a particular time. It is the combination of these effects, and any resulting environmental degradation, that is the focus of the cumulative impact analysis. While impacts can be differentiated by direct, indirect, and cumulative impacts, the concept of cumulative impacts takes into account all disturbances because cumulative impacts result in the compounding of the effects of all actions over time. The cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of that action and all other activities affecting that resource no matter what entity (federal, non-federal, or private) is taking the actions.

Cumulative impact analysis is resource-specific and generally performed for environmental resources directly impacted by a federal action under study, such as a transportation project. However, not all of the resources directly impacted by a project require cumulative impact analysis. Cumulative impact analysis should focus on resources for which the proposed action will have effects similar to other actions in the area and/or resources that have been historically affected by cumulative actions.

Key resources subject to a cumulative impact assessment for the Valley Highway Project have been established through the scoping process and subsequent discussions with other agencies.

#### 4.20.1.1 SCOPING AND COORDINATION WITH OTHER AGENCIES

Detailed project scoping was completed during 2002 for the Valley Highway Project, as summarized in **Chapter 6 Public Involvement**. Project needs and potential impacts were discussed during the scoping process, and cumulative impact analysis was also considered. Scoping meetings included internal CDOT and FHWA meetings, cooperating/resource agency scoping meetings, and public scoping meetings.

Relative to cumulative impacts, several agencies and individuals raised concern during scoping that there were many transportation projects underway or planned in the Denver metropolitan area, and that coordination was needed. In response, CDOT and RTD have organized a series of monthly corridor coordination meetings between the various project teams to provide communication and coordination between these efforts. The Valley Highway EIS project team has participated in the corridor coordination meetings during the course of this EIS.

Additional coordination and consultation relative to cumulative impacts has included:

- A cumulative impacts planning session between FHWA and CDOT in October 2002
- A follow-up meeting between FHWA and CDOT in July 2003 to confirm the methodology and scope of analysis
- Discussions with the project Technical Working Group in June, July and October 2003, and September 2004
- Information gathering and discussion during various public meetings, Citizen Working Group meetings, and small group meetings

#### 4.20.1.2 KEY RESOURCES AND GEOGRAPHIC AREAS OF ANALYSIS

Key resources to be considered as part of the cumulative impacts assessment were identified on the basis of the direct and indirect impacts of the system alternatives and the potential for impact of other actions on the resources. In addition, a geographic area of analysis has been identified for each key resource, based on the nature of the resource and potential impacts.

**Table 4.20-1** identifies key resources and the associated area of analysis for cumulative impacts.

**Figure 4.20-1** shows the Cumulative Impacts Study Area identified as appropriate for several of the key resources. The Cumulative Impacts Study Area includes neighborhoods adjacent to and near the project area. In some cases, it is necessary to provide a larger-area focus to the resource, such as the background water quality of the project area, or a smaller area such, as for noise impacts along the highway corridor. These resource-specific areas are indicated in **Table 4.20-1**.

**Table 4.20-1 Key Cumulative Impact Resources and Area of Analysis**

Resource / Issue	Area of Analysis
Transportation / Traffic	DRCOG Region (Regional Modeling / Planning by DRCOG)
Socio-Economics and Community	Neighborhoods Adjacent to Project (see <b>Figure 4.20-1</b> )
Parks and Recreation	Neighborhoods Adjacent to Project (see <b>Figure 4.20-1</b> )
Air Quality	DRCOG Region (Conformity Analysis by DRCOG)
Noise	Approximately 500 feet on either side of project
Historic Resources	Neighborhoods Adjacent to Project (see <b>Figure 4.20-1</b> )
Water Quality / Water Resources	South Platte River / DRCOG Region
Floodplains	South Platte River / DRCOG Region
Wetlands	Neighborhoods Adjacent to Project (see <b>Figure 4.20-1</b> )
Construction	Neighborhoods Adjacent to Project (see <b>Figure 4.20-1</b> )

DRCOG – Denver Regional Council of Governments

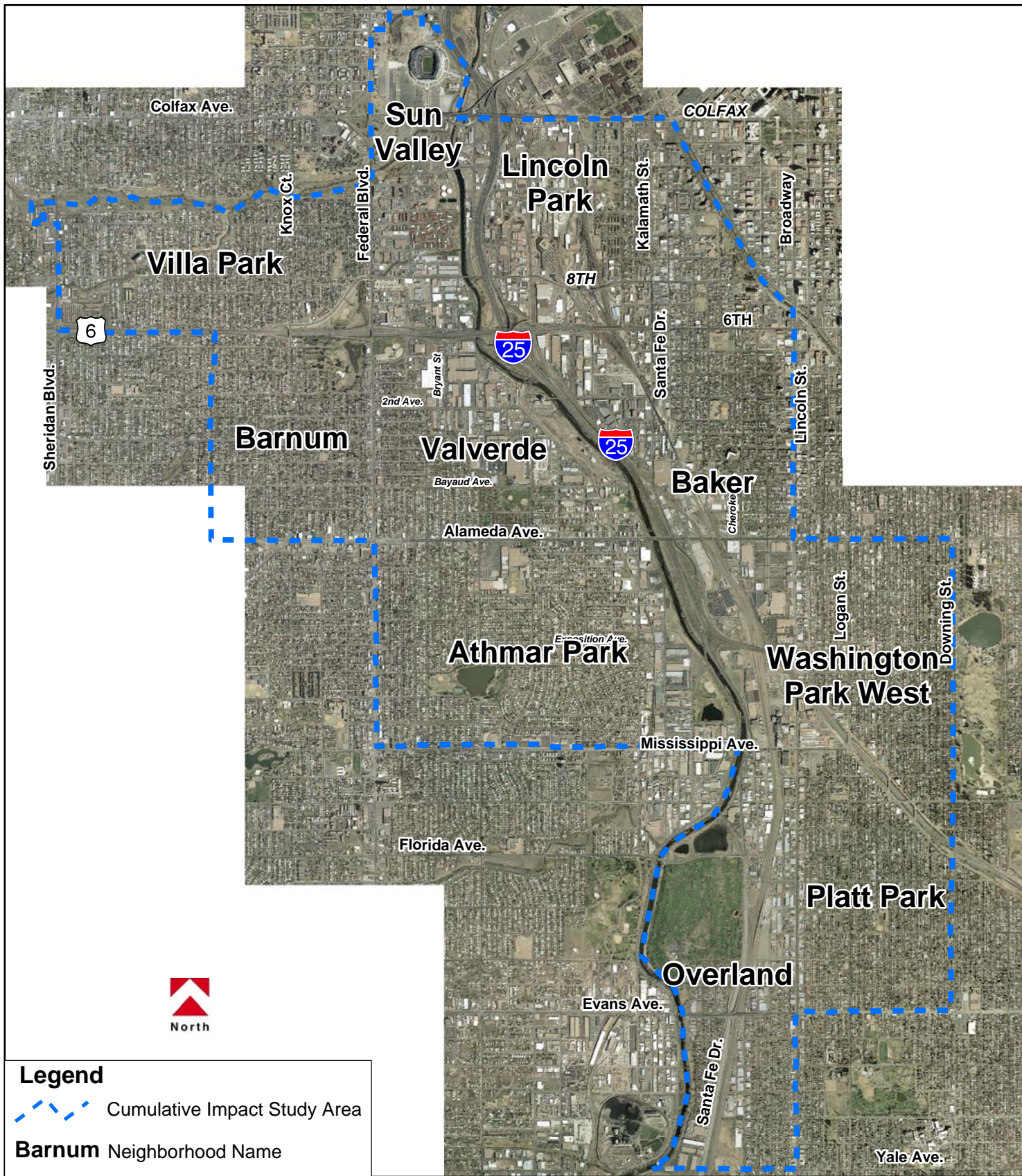
### 4.20.1.3 TIME FRAME FOR ANALYSIS

To focus the assessment of cumulative impacts, it is important to establish an appropriate time frame for analysis. The time frame should be neither too short (such that longer-term trends are not recognized) nor too long (such that the analysis lacks focus). Typical time frames that have been used on other transportation projects include: 20 to 30 years, start of development, original highway construction, or similar time frames based on the characteristics of the area.

The following time frame was established for this cumulative impacts analysis:

- **Past** – The analysis begins in the mid 1950s, before construction of the original Valley Highway. This time frame allows a view of the history of the corridor and how the Valley Highway may have affected the area.
- **Future** – The analysis extends 20 to 25 years into the future. This corresponds to the horizon used for regional transportation planning. It is also similar to the 20-year horizon used in *Blueprint Denver* (City and County of Denver, 2002c).

Thus, the time frame for cumulative impacts analysis for the Valley Highway Project extends from approximately 1955 to approximately 2030.



Valley Highway, 02-069, 10/27/2004

# Cumulative Impact Study Area

Figure 4.20-1

#### **4.20.1.4 IDENTIFICATION OF CURRENT AND FUTURE PROJECTS**

The identification of other projects that could affect key resources is integral to the assessment of possible cumulative impacts. It is important to focus on projects that are likely to happen, and to this end NEPA guidance indicates that projects should be considered if they are “*reasonably foreseeable*” and not merely “*speculative*.”

CDOT and FHWA have worked with cooperating and resource agencies to identify reasonably foreseeable projects that should be considered for cumulative impacts. These projects fall into the following broad categories:

- **Current and Future Transportation Projects** (see **Table 4.20-2**) – This includes projects currently under construction (e.g. T-REX), and projects included in current regional plans (e.g.; Federal Boulevard improvements – Alameda Avenue to US 6, and FasTracks transit improvements).
- **Local Agency Planning Projects** (see **Table 4.20-3**) – This includes planning efforts that may include requirements and elements relevant to cumulative impacts.
- **Development or Redevelopment Projects** (see **Table 4.20-4**) – This includes projects that are either planned/programmed, or can be reasonably anticipated based on development trends and the local planning framework. An example is the redevelopment of the former Gates Rubber Company site, which is currently in the planning stage.

**Table 4.20-2 Current and Future Transportation Projects within the Study Area**

<b>Project Name / Location</b>	<b>Description</b>	<b>Status</b>
"H" Ramp at Colfax and "A" Ramp at 6 <sup>th</sup> Avenue	Ramp improvements	Recent project
Santa Fe Drive at Iowa and Florida	Signal upgrade for safety improvement	Recent project
T-REX (Southeast Corridor)	Double tracked LRT line totaling 19.12 miles extending south from the Broadway Station and I-25 improvements extending eight through lanes plus collector/distributor lanes from Logan Street south	Current project
I-25 / Broadway Viaduct	Viaduct replacement	Current project
Louisiana LRT Station Plaza	Construction of Light Rail Transit Station Plaza and realignment of Buchtel South	Current project
Buchtel South Bicycle / Pedestrian Improvements	Construction of bicycle lane and sidewalk improvements on Buchtel South between Logan Street and University Boulevard	Current project
Federal Boulevard from Alameda Avenue to 6 <sup>th</sup> Avenue	Widening; transportation improvement project	Planned future project
Federal Boulevard at Lakewood Gulch	Bridge replacement and widening; transportation improvement project	Planned future project
West Corridor LRT	LRT from Downtown Denver to Golden	Planned future project
FasTracks	Major expansion of LRT network throughout the Denver metro area	Planned future project
Alameda Avenue: Knox Court to I-25	Widening (possible lane addition)	Possible future project (included in proposed 2030 Metro Vision Plan)
Federal Boulevard from Colfax Avenue to Hampden Avenue	Widening (possible lane addition)	Possible future project (included in proposed 2030 Metro Vision Plan)
Santa Fe Drive / Kalamath Street: 13 <sup>th</sup> to Speer	Widening (possible lane addition)	Possible future project (included in proposed 2030 Metro Vision Plan)
Broadway / Lincoln Street Improvements near I-25	Improvements/reconfiguration to be considered; specific improvements not yet known.	Future project (City and County of Denver)
Alameda Avenue Underpass between Cherokee Street and Santa Fe Drive	Maintenance, additional pedestrian and bicycle ways, and urban design elements	Possible future project (City and County of Denver)
Mississippi Avenue / Santa Fe Drive Intersection	Reconstruction / improvements	Possible future project (City and County of Denver)
Rail Relocation to Eastern Plains	Relocation of Consolidated Main Line for through trains	Preliminary study



**Table 4.20-3 Current Local Agency Planning Projects**

Project Name / Location	Description	Status
Downtown Multimodal Access Plan	Integrated plan for vehicular, freight, pedestrian, bicycle and transit access into and throughout Downtown Denver	Current project
Denver Pedestrian Master Plan	Master plan intended to improve pedestrian conditions and increase pedestrian activity, especially with Areas of Change	Current project
Denver Storm Drainage Master Plan	Review of existing stormwater systems and identification of future improvements	Current project
Stormwater Quality Master Plan	Identify locations for water quality enhancements and create guidelines by which to enforce enhancement for development / redevelopment	Current project
La Alma/ Lincoln Park Neighborhood Plan	Small area plan for neighborhood	Current project

**Table 4.20-4 Current and Future Development Projects within the Study Area**

Project Name / Location	Description	Status
South Platte River channel improvements - 8 <sup>th</sup> Avenue north	Drop structure upstream of 8 <sup>th</sup> Avenue and lowering of channel from there downstream	Current project
Rude Recreation Center 2855 West Holden Place	City bond project to expand and rebuild existing facility	Recent project
Alameda Square Shopping Center Alameda Avenue and Zuni	Redevelopment of existing shopping center	Possible future project
West Corridor Transit Oriented Development -14 <sup>th</sup> Ave and Decatur St.	Transit oriented development near proposed light rail stop	Future project
Cherokee Denver Transit Oriented Development I-25 and Broadway (west side)	Redevelopment of portion of former Gates Rubber Company industrial site (west of Broadway). Rezoned for mixed-use development. Development to include demolition/ replacement of some buildings and may include reuse of some buildings. Project is in initial stage; ultimate development details are not yet available.	Current project
Lionstone Transit Oriented Development I-25 and Broadway (east side)	Redevelopment of portion of former Gates Rubber Company industrial site (east of Broadway). Rezoned for mixed-use development. Development to include reuse of some buildings and demolition/replacement of some buildings. Project is in initial stage; ultimate development details are not yet available.	Current project
Denver Health Medical Center 777 Bannock	Expansion of west wing of medical center	Current project
Rita Bass Trauma and Education Center -150 W. 6 <sup>th</sup> Avenue	New trauma center	Recent project
Former RTD Bus Barn Site Alameda Avenue and Santa Fe Drive	Potential redevelopment; transit oriented use indicated in Baker Neighborhood Plan	Possible future project
Shattuck Site Remediation Jewell and Bannock Street	Contaminated site remediation; possible redevelopment site	On-going remediation, possible future development
General Chemical Site Remediation South Platte River Drive and Bayaud Avenue	Contaminated site remediation; possible redevelopment site	On-going remediation, possible future development
Rosemont Pharmaceutical Alameda Avenue and Cherokee Street	New building, expansion of existing building, removal of existing parking lot	Current project
UniCal Facility 14 <sup>th</sup> and Elliot (approximate)	Contaminated site remediation; possible redevelopment site	On-going remediation, possible future development
Atlas Metals Site Auraria Parkway and Colfax Avenue	High-density student housing on former industrial site (550-750 units).	Current project

**Table 4.20-4 Current and Future Development Projects within the Study Area (continued)**

<b>Project Name / Location</b>	<b>Description</b>	<b>Status</b>
Townhome Development – Washington/Clarkson/Arizona	11 townhomes	Current project
Condo and neighborhood business development – Buchtel South and Clarkson	Redevelopment; reconstruction of street with bikeway and sidewalks	Current project
Santa Fe Commons 1001 Santa Fe Drive	Redevelopment; construction of 38-unit loft building with ground floor retail	Current project
Osage Mercado - 10 <sup>th</sup> and Osage Light Rail Transit Station	Mixed-use development with public market, housing, and retail	Possible future project

### 4.20.2 Analysis of Past Development / Land Use Changes

This section presents a summary of past development and land use change within the Cumulative Impact Study Area, concentrating on the time frame for analysis beginning in the mid 1950s (before construction of the original Valley Highway). This is based to a large extent on a review of historical aerial photographs, and considers development patterns rather than individual projects and actions. This analysis forms the basis for the discussion of past cumulative impacts presented in **Section 4.20.3**.

#### 4.20.2.1 DENVER’S ORIGINS

Denver originated in 1858, when several parties of hopeful prospectors arrived in the area in search of gold along the South Platte River and its tributaries. By the spring of 1859, settlements existed along the banks of Cherry Creek. From 1860 to 1870, over \$27 million in gold was mined, and Denver became a regional business and cultural center.

Denver’s expansion was fueled with the construction of a railroad line to Cheyenne, Wyoming in 1870, tying Denver into the nation’s transportation and communication network. The mining district continued to prosper between 1870 and 1900, producing over \$224 million in gold and \$541 million in silver, spurring population and business booms in Denver. By 1920, the population of Denver was 256,491.

South Broadway was constructed in 1871 to provide a convenient and direct route into the city from the southern suburbs. These suburbs were built as people moved from the city to escape overcrowding, unsanitary conditions, and roadhouses and saloons.

#### 4.20.2.2 CONSTRUCTION OF THE VALLEY HIGHWAY

By the 1930s, Denver’s automobile traffic was a concern, and the city began to plan improvements. Initially, several corridors were investigated including Colorado Boulevard, Broadway, Federal Boulevard, and the eventual Valley Highway route. Ultimately, the Valley Highway route was chosen because it provided the most efficient traffic service and direct access, and minimized impacts to existing business and residences.

Construction of the Valley Highway Project commenced in September 1948 and was completed in 1958. The new freeway included 13 major interchanges, four minor interchanges, and no fewer than 62 bridges and grade separations.

Maintaining adequate transportation facilities to handle ever-increasing volumes of traffic has been one of Denver's major challenges. This is true for the Valley Highway, which was incorporated as a segment of I-25, a major transportation route that serves through traffic, as well as local traffic.

#### **4.20.2.3 LAND USE PATTERNS – 1956**

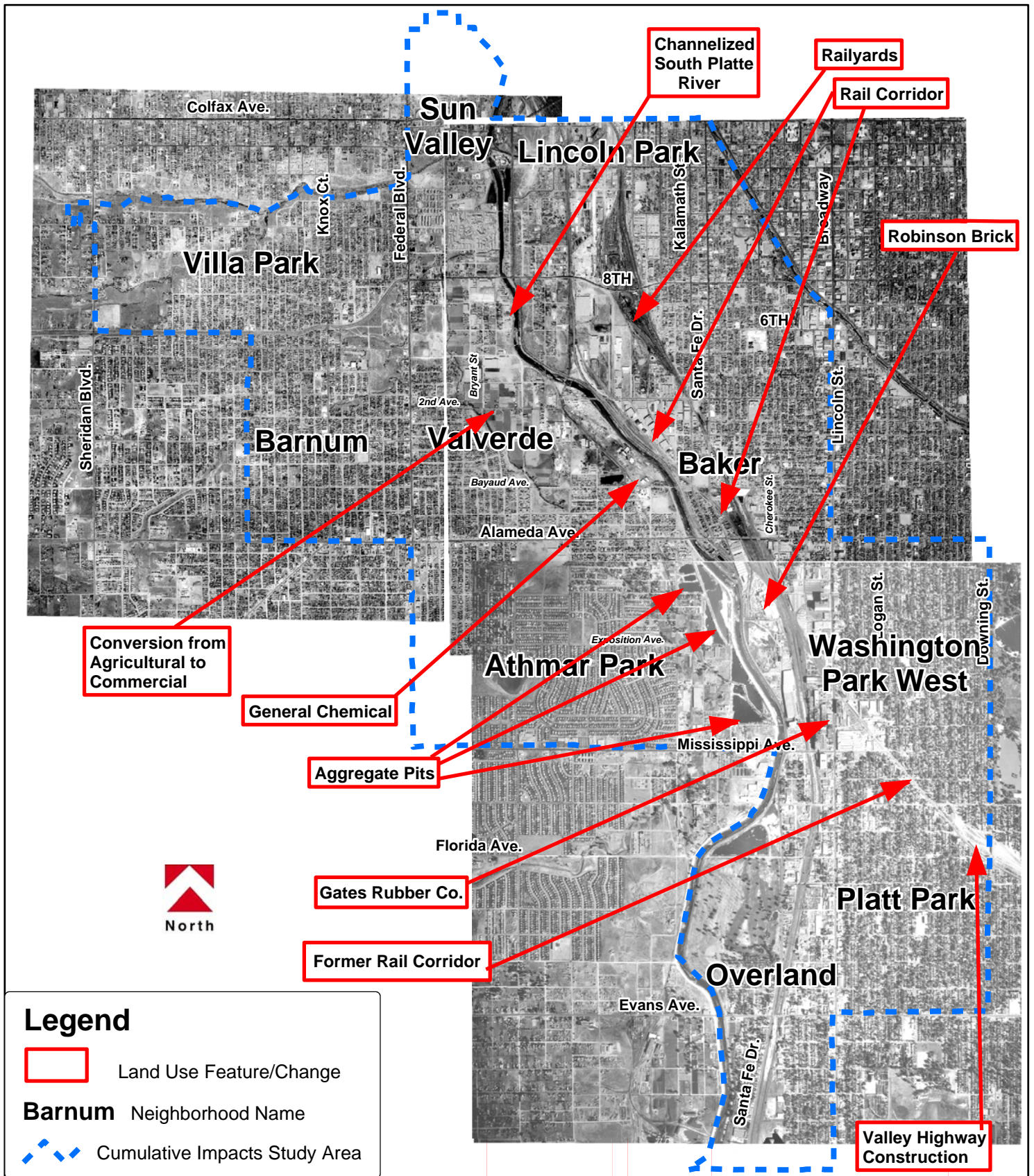
**Figure 4.20-2** presents an aerial photographic mosaic from 1956. The cumulative impacts study area is delineated, and several land use features are noted. From analysis of the aerial photograph and available historical information, the following observations can be made regarding the characteristics of the study area before construction of the Valley Highway:

- The initial Valley Highway construction is visible near Downing Street. The alignment along which the highway would be constructed was primarily an existing rail corridor and mostly vacant land along the South Platte River. At least 20 years before construction of the Valley Highway, the South Platte River had been channelized and the floodplain elevated with fill material.
- The primary land uses within the study area were already established in 1956, much as they are today. Residential neighborhoods were well established, with the Athmar Park neighborhood clearly showing up as recently developed in this photograph. The industrial corridor was also clearly established at this time; however, a number of agricultural or vacant parcels are apparent that would later be converted to industrial or commercial use. The area adjacent to the South Platte River contained primarily industrial and commercial land uses. The residential areas were located on the alluvial terraces above the river floodplain.
- The South Platte River appears as a channelized feature, with much the same form that it has today. Available information indicates that the river was channelized before or during the 1930s. A number of aggregate pits are visible along the river. These later were used as landfills and eventually became parks and commercial properties.

#### **4.20.2.4 LAND USE PATTERNS – 1962**

**Figure 4.20-3** presents an aerial photographic mosaic from 1962. Available photographs do not cover the entire cumulative impacts study area; however, the central portion is covered and several changes are noted:

- The Valley Highway construction was completed. The portion of US 6 / 6<sup>th</sup> Avenue from Federal Boulevard to Kalamath Street was also completed as part of the original Valley Highway project. A portion of the South Platte River in the vicinity of Alameda Avenue was relocated to provide space for the Valley Highway.
- In the central portion of the study area along the South Platte River, some former agricultural and vacant land was converted to commercial use.
- A few blocks of residences located north of Alameda Avenue along Santa Fe Drive and Kalamath Street were being converted to commercial use.
- Most of the former aggregate pits along the South Platte River have been filled. Vanderbilt Lake remains.



Conversion from Agricultural to Commercial

General Chemical

Aggregate Pits

Gates Rubber Co.

Former Rail Corridor

Valley Highway Construction



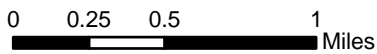
**Legend**

Land Use Feature/Change

**Barnum** Neighborhood Name

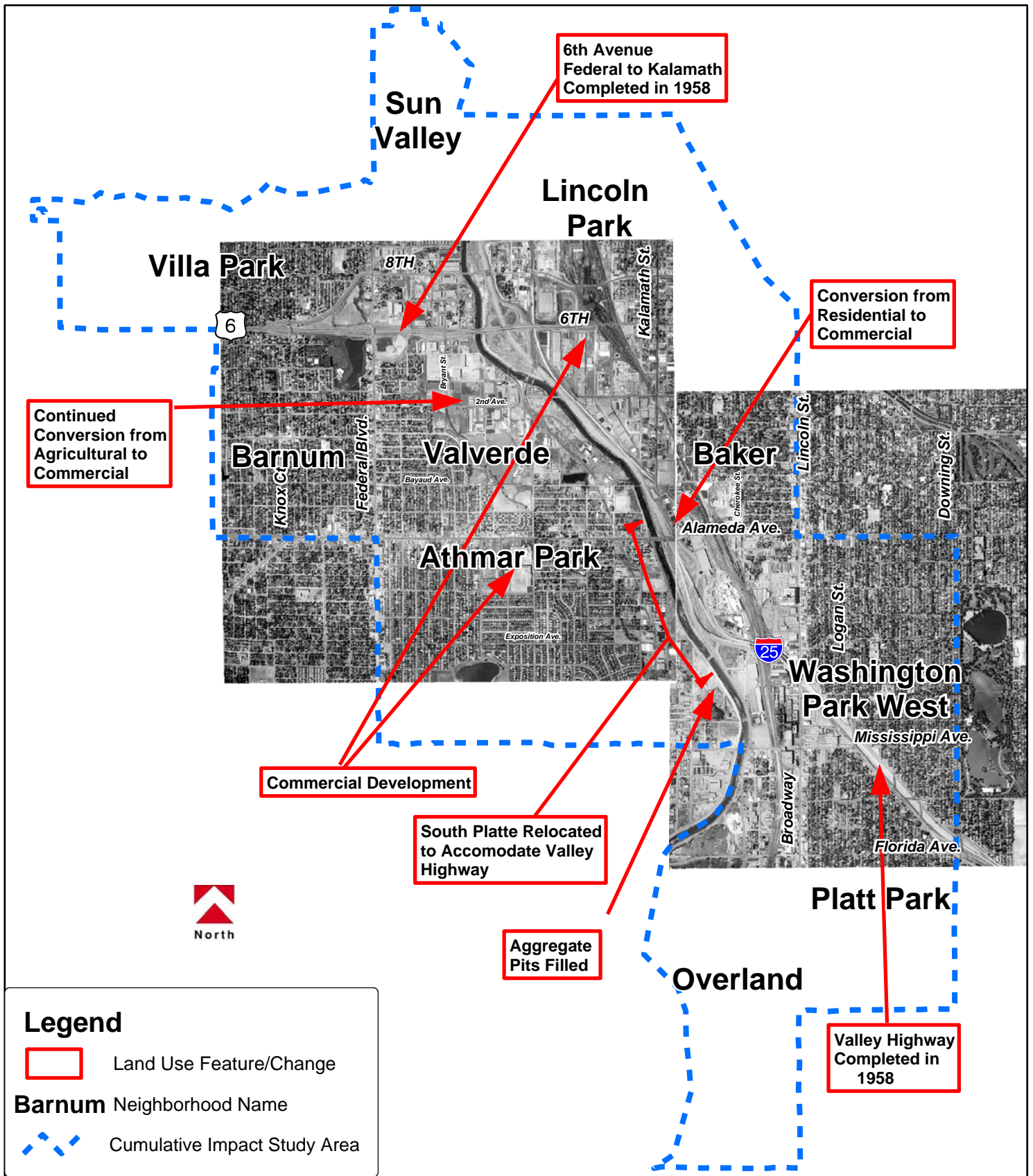
⋯ Cumulative Impacts Study Area

Valley Highway, 02-069, 10/27/2004



**Land Use-1956**

Figure 4.20-2



Valley Highway, 02-069, 10/27/2004

## Land Use-1962

Figure 4.20-3

#### **4.20.2.5 LAND USE PATTERNS – 1975**

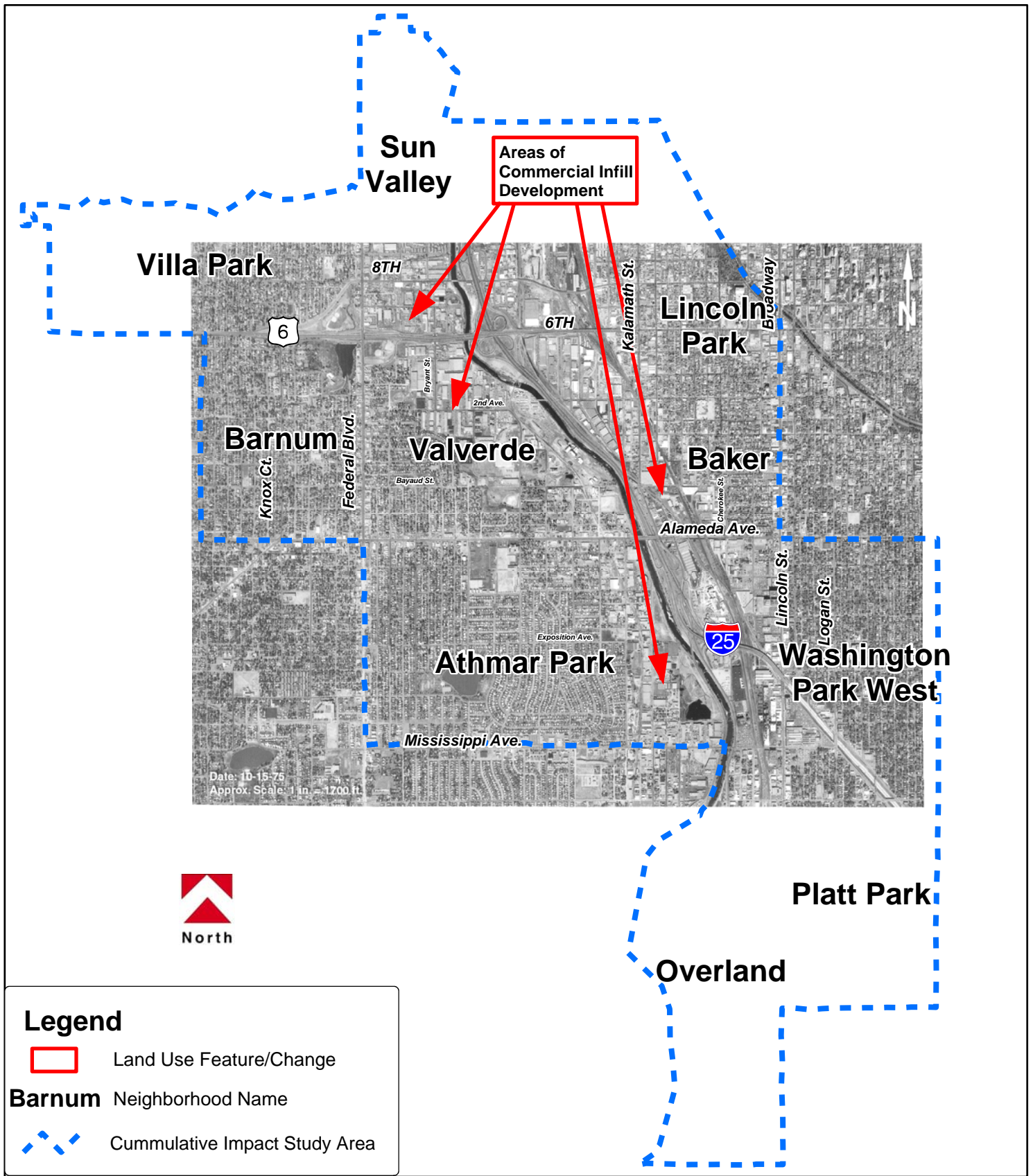
**Figure 4.20-4** presents an aerial photographic mosaic from 1975. Again, available photographs do not cover the entire cumulative impacts study area; however, the central portion is covered. The aerial photograph clearly shows areas of commercial infill development occupying the remaining vacant parcel in the central industrial/commercial corridor adjacent to I-25. The development of the original Valley Highway may have contributed to this infill development; however, the pattern was clearly established before the highway was built. The infill development occurred primarily within, and adjacent to, industrial areas with railroad access along the South Platte River.

#### **4.20.2.6 LAND USE PATTERNS – 2002**

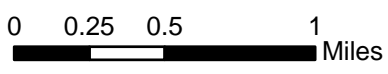
**Figure 4.20-5** presents an aerial photographic mosaic from June 2002. This mosaic shows the area much as it is today, but before initiation of construction of the T-REX and I-25/Broadway viaduct replacement projects.

The following land use changes have occurred since the time of the 1975 aerial photograph and are noted on **Figure 4.20-5**:

- The original LRT Central line and the Southwest Corridor LRT line have been constructed with LRT transfer and park-n-Ride stations at Broadway, Alameda Avenue, and 10<sup>th</sup>/Osage Street.
- Several commercial properties have been redeveloped. Several additional former commercial or industrial properties are currently being planned or considered for redevelopment.
- The South Platte River greenway has been developed.
- Invesco Field has replaced the former Mile High Stadium.

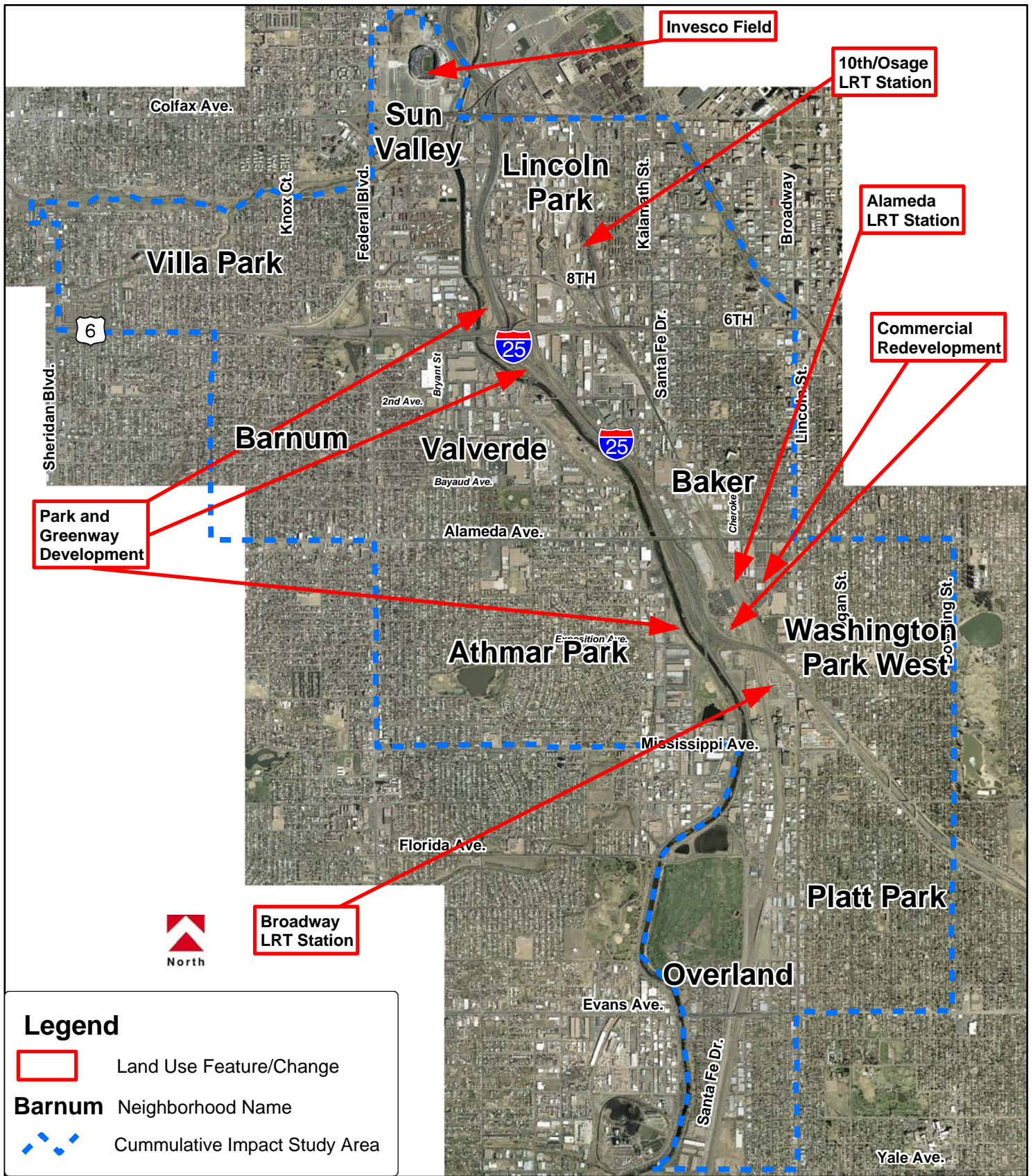


Valley Highway, 02-069, 10/28/2004



## Land Use-1975

Figure 4.20-4



Valley Highway, 02-069, 10/28/2004

0 0.25 0.5 1 Miles

# Land Use-2002

Figure 4.20-5



### 4.20.3 Cumulative Impacts Assessment

The project area has been largely developed for over 100 years, since construction of the railroads. The Valley Highway was completed in 1958. Some areas in the vicinity of the project are currently undergoing redevelopment. Much of this redevelopment has already been outlined in current planning documents. Many factors will ultimately affect the outcome of redevelopment, including changes in population and employment, land use plans and zoning practices, the location of business markets and job centers, site-specific amenities, physical and socioeconomic constraints, land owner and developer resources, preferences regarding development, and the availability of other developable lands.

This section identifies potential cumulative impacts of other actions, in concert with the No Action Alternative and the systems alternatives (System Alternatives 1, 2, 3, and the Preferred Alternative). This discussion is presented in two steps:

- First, the potential impacts of other current and future actions are identified
- Second, the cumulative impacts are discussed for each of the key resources/issues identified previously

For each key resource, potential mitigation strategies are also highlighted, as appropriate.

#### 4.20.3.1 POTENTIAL CUMULATIVE IMPACTS BY PROJECT

**Table 4.20-5** presents potential impacts of current and reasonably foreseeable future projects on the key resources identified above in **Table 4.20-1**. The impacts identified are those that fall within the identified area of analysis for each resource (see **Table 4.20-1**).

**Table 4.20-5 Potential Impacts of Other Projects**

Current or Future Action <sup>1</sup>	Potential Impacts to Key Resources <sup>2</sup> within Area of Analysis <sup>3</sup>
<b>Transportation Projects</b>	
"H" Ramp at Colfax and "A" Ramp at 6 <sup>th</sup> Avenue	Beneficial safety improvements and congestion reduction
Santa Fe Drive and Iowa and Florida	Beneficial safety improvements
T-REX (Southeast Corridor)	Beneficial safety improvements and congestion reduction Business relocations Noise impacts (with mitigation provided by noise walls) Stormwater drainage improvements Construction impacts including: dust, noise, sediment, detours, and access
I-25 / Broadway Viaduct	Beneficial safety improvements and congestion reduction Construction impacts including: noise and short-term road closures
Louisiana Light Rail Transit Station Plaza	Beneficial effect on overall transportation system Construction impacts including: dust, noise, sediment, and detours

**Table 4.20-5 Potential Impacts of Other Projects  
(continued)**

<b>Current or Future Action<sup>1</sup></b>	<b>Potential Impacts to Key Resources<sup>2</sup> within Area of Analysis<sup>3</sup></b>
Buchtel South Bicycle / Pedestrian Improvements	Beneficial effect on local pedestrian/bicycle mobility Construction impacts including: dust, noise, sediment, and detours
Federal Boulevard from Alameda Avenue to US 6	Beneficial safety improvements and congestion reduction Business relocations and access changes Residential relocation may be required Possible park impacts, not yet determined but likely to be minor Construction impacts including: dust, noise, sediment, and detours
Federal Boulevard at Lakewood Gulch	Beneficial safety improvements and congestion reduction Wetland impacts possible (would be mitigated) Construction impacts including: dust, noise, sediment, and detours
West Corridor Light Rail Transit	Beneficial effect on overall transportation system Adverse affect to historic rail line Stormwater drainage improvements Construction impacts including: dust, noise, sediment, and detours
FasTracks	Beneficial effect on overall transportation system May be additional business and residential relocations and/or environmental effects not yet determined
Alameda Avenue: Federal Boulevard to I-25	Beneficial safety improvements and congestion reduction May be business relocations Construction impacts including: dust, noise, sediment, and detours
Federal Boulevard from Colfax Avenue to Hampden Avenue	Beneficial safety improvements and congestion reduction May be additional business and residential relocations and/or environmental effects not yet determined Construction impacts including: dust, noise, sediment, and detours
Santa Fe Drive / Kalamath Street:13 <sup>th</sup> to Speer	Beneficial safety improvements and congestion reduction May be additional business and residential relocations and/or environmental effects not yet determined Construction impacts including: dust, noise, sediment, and detours
Broadway / Lincoln Street Improvements near I-25	Beneficial safety improvements and congestion reduction May be additional business and residential relocations and/or environmental effects not yet determined Construction impacts including: dust, noise, sediment, and detours
Alameda Avenue Underpass between Cherokee Street and Santa Fe Drive	Pedestrian and bicycle improvements Construction impacts including: dust, noise, sediment, and detours

**Table 4.20-5 Potential Impacts of Other Projects  
(continued)**

Current or Future Action <sup>1</sup>	Potential Impacts to Key Resources <sup>2</sup> within Area of Analysis <sup>3</sup>
Mississippi Avenue / Santa Fe Drive Intersection	Beneficial safety improvements and congestion reduction Possible wetland or other environmental impacts not yet determined
Rail Relocation to Eastern Plains	Beneficial safety improvements and congestion reduction Beneficial effect on air quality and noise in central Denver Environmental effects at eastern plains location not determined
<b>Local Agency Planning Projects</b>	
Downtown Multimodal Access Plan	Beneficial effect on overall transportation system
Denver Pedestrian Master Plan	Beneficial effect on overall pedestrian mobility and safety
Denver Storm Drainage Master Plan	Beneficial effect on overall stormwater management
Denver Stormwater Quality Master Plan	Beneficial effect on water quality Water quality ponds of outfall structures could impact wetlands or other resources
<b>Development Projects</b>	
South Platte River Channel Improvements 8th Avenue north	Beneficial impact on floodplain and water quality Wetland impacts (mitigated)
Rude Recreation Center 2855 West Holden Place	Beneficial improvement in local recreation facilities Increased traffic
Alameda Square Shopping Center Alameda Avenue and Zuni	Increased traffic Beneficial effect on economic activity, jobs, and local availability of goods and services Construction impacts including: dust, noise, sediment
West Corridor Transit Oriented Development 14 <sup>th</sup> Avenue and Decatur Street	Increased traffic Beneficial impact on economic activity, available residences, jobs and local availability of goods and services Construction impacts including: dust, noise, sediment
Cherokee Transit Oriented Development Project I-25 and Broadway (west side)	Increased traffic Beneficial impact on economic activity, available residences, jobs and local availability of goods and services Adverse impacts to historic structures with NRPH-eligible historic district (former Gates Rubber Company site) Construction impacts including: dust, noise, sediment
Gates Transit Oriented Development I-25 and Broadway (east side)	Increased traffic Beneficial impact on economic activity, available residences, jobs and local availability of goods and services Adverse impacts to historic structures with NRPH-eligible historic district (former Gates Rubber Company site) Construction impacts including: dust, noise, sediment

**Table 4.20-5 Potential Impacts of Other Projects  
(continued)**

Current or Future Action <sup>1</sup>	Potential Impacts to Key Resources <sup>2</sup> within Area of Analysis <sup>3</sup>
Denver Health Medical Center 777 Bannock	Increased traffic Beneficial community impact through availability of medical services
Rita Bass Trauma and Education Center 150 W. 6th Avenue	Increased traffic Beneficial community impact through availability of medical services
Former RTD Bus Barn Site Redevelopment Alameda Avenue and Santa Fe Drive	Increased traffic Beneficial impact on economic activity, available residences, jobs and local availability of goods and services Construction impacts including: dust, noise, sediment
Shattuck Site Remediation Jewell and Bannock	Beneficial impact of removal of contaminated material from community
General Chemical Site Remediation South Platte River Drive and Bayaud Avenue	Beneficial effects on water quality Specific remediation plan and possible site redevelopment not currently known
Rosemont Pharmaceutical Alameda Avenue and Cherokee Street	Beneficial impact on economic activity and local jobs
UniCal Facility Approx. 14th and Elliot	Beneficial impact of removal of contaminated material from community Specific remediation plan and possible site redevelopment not currently known
Atlas Metals Site Auraria Parkway and Colfax	Beneficial increase in available residences
Townhome Development – Washington/Clarkson/Arizona	Increased traffic Beneficial increase in available residences
Condo and Neighborhood Business Development – Buchtel South and Clarkson	Increased traffic Beneficial increase in available residences
Santa Fe Commons 1001 Santa Fe Drive	Increased traffic Beneficial impact on economic activity, available residences, jobs and local availability of goods and services Construction impacts including: dust, noise, sediment
Osage Mercado 10 <sup>th</sup> and Osage Street LRT Station	Increased traffic Beneficial impact on economic activity, available residences, jobs and local availability of goods and services Construction impacts including: dust, noise, sediment

Notes:

<sup>1</sup> See **Tables 4.20-2, 4.20-3, and 4.20-4** for project description and status.

<sup>2</sup> Potential impacts are noted for key cumulative impact resources as identified in **Table 4.20-1**. For future projects, impacts are often not known with certainty, but impacts that are reasonably foreseeable have been indicated.

<sup>3</sup> Area of analysis is defined for each key resource in **Table 4.20.1**.

### 4.20.3.2 CUMULATIVE IMPACTS AND MITIGATION STRATEGIES BY RESOURCE

This section describes potential cumulative impacts on each identified key resource that may result from the additive effects of multiple projects, as described above. The incremental effect of the system alternatives (System Alternatives 1, 2, 3, and the Preferred Alternative) and the No Action Alternative are included in this discussion. This section also identifies existing and possible mitigation strategies that could be used to reduce adverse cumulative impacts on these resources.

#### Transportation / Traffic

Since the mid 1950s, the transportation system within the Cumulative Impacts Study Area has undergone a series of changes in response to the relatively steady growth in population and travel demand within the Denver Metro area. Major developments in the transportation system within this timeframe include:

- Construction of the Valley Highway and the 6<sup>th</sup> Avenue Freeway, which were initially completed in 1958 and were expanded over time in response to increasing traffic volumes.
- Expansion of key arterial streets providing access to downtown Denver, including the Broadway/Lincoln Street and Santa Fe Drive/Kalamath Street one-way pairs.
- Expansion of Santa Fe Drive, including HOV lanes, from I-25 south to provide a transportation corridor linking central Denver with the southern suburbs.
- The current T-REX project will provide highway improvements to I-25 from Logan Street south.
- Initiation of LRT, with initial service connecting the I-25/Broadway Station with downtown Denver. This LRT service was subsequently extended to the southwest and into central Platte Valley. The Southeast Corridor LRT line currently under construction (as part of T-REX) will connect to the southeast, and a metro-wide LRT network will be established over the next 10-15 years under FasTracks. The Louisiana LRT Station Plaza and the RTD West Corridor (listed in **Table 4.20-5**) are part of the LRT expansion.

The improvements to the transportation system over time have generally been outpaced by the growth in transportation demand, resulting in a general increase in congestion. The current and future transportation projects identified above in **Table 4.20-5** have been identified through the local and regional transportation planning process as necessary to help address future demand in the area.

Several development or redevelopment projects have been identified above in **Table 4.20-5** as having the potential to increase demands on the transportation system in the vicinity of the Valley Highway project. These projects are generally consistent with the local planning goals of the City and County of Denver, and with the regional planning objectives of DRCOG. Each of these seeks to facilitate opportunities for redevelopment, often with increased density, in areas close to employment centers and transit facilities. Transportation projects planned or being considered for central Denver, including the Valley Highway project, are generally responding to current and/or anticipated travel demand.

**Table 4.20-5** includes several transit oriented development projects. On a regional scale, transit oriented development projects have benefits in that urban sprawl may be limited and automobile

trips may be reduced, thereby providing positive impacts on congestion and other environmental resources. On a local scale, benefits may be realized through revitalization of underutilized properties, thus providing housing, employment, and tax revenues. To the extent that redeveloped areas are served by transit, local transportation benefits may also accrue. However, because the redeveloped areas are also expected to generate substantial numbers of motor vehicle trips, local negative impacts to the transportation system may occur and future transportation projects may be required.

The transportation modeling and analysis conducted for the system alternatives, including the Preferred Alternative, as presented in **Chapter 3 Transportation Analysis**, include traffic projections prepared in cooperation with DRCOG and the City and County of Denver to account for additional traffic that would be generated by major planned redevelopments. Therefore, the cumulative impacts of reasonably foreseeable projects on the operation of I-25 and its connections to the arterial street system have been accounted for and planned for in the system alternatives.

Local streets and arterials may experience traffic impacts due to redevelopment and resulting increase in activity and traffic. Planning to identify measures to mitigate these impacts is already underway by local and regional agencies. These efforts include:

- City and County of Denver – Blueprint Denver, local area plans, the Pedestrian Master Plan, the Downtown Multi-modal Access Plan, the development review process
- RTD – Southeast Corridor implementation, Central Corridor improvements, the FasTracks proposal for metro-wide transit expansion
- DRCOG – the regional planning process

Each of the transportation projects identified in **Table 4.20-5** will play a part in serving future transportation needs in the area. Coordination and implementation of these projects will help to address the traffic impacts of redevelopment and regional growth. Implementation of identified improvements will be dependent on the availability of funding. Additionally, it will be important that improvement projects are timed to coincide with anticipated traffic impacts.

In summary, the Valley Highway system alternatives, including the Preferred Alternative, provide improvements to transportation systems compatible with other planned transportation improvements. The system alternatives are part of the overall transportation improvement process, contributing a cumulative improvement in the transportation system relative to the future No Action Alternative.

## **Socio-Economics and Community**

The City and County of Denver, along with the rest of the Denver Metro area and the State of Colorado have experienced a number of economic cycles over the past 50 years. These economic cycles have caused fluctuations in the level of economic activity and prosperity; however, the underlying trend throughout this period has been one of growth in population, employment, income and economic diversity.

Through much of the 1990s, Denver enjoyed a booming economy which resulted in growth in population and employment. Most recently, Metro Denver has experienced an economic



downturn consistent with State and National trends, but this downturn has shown signs of moderating (as of late 2004).

**Section 4.20.2.3** provided a summary of land use changes within the Cumulative Impacts Study Area since the mid 1950s. These land use changes are reflective of the pattern of socio-economic development and community change. The overall pattern has been relative stability of most residential areas.

More dramatic changes have occurred within the largely commercial and industrial lands on either side of the South Platte River, the I-25 corridor and Consolidated Main Line railroad corridor. Since the mid 1950s, these areas saw initial buildout of the existing heavy and light industrial base, followed by partial conversion to commercial and retail uses as the heavy industrial base declined.

The gradual reduction in heavy manufacturing in the area, as evidenced by the closing of former manufacturing facilities including Robinson Brick, General Chemical, Burkhart Steel, Gates Rubber Company, as well as the RTD Bus Barn/ Maintenance Facility, led to a decline in manufacturing jobs in the area. As this industrial base contracted, workers found employment in other parts of the metro area. More recently, mixed use and high density residential redevelopment has emerged, including anticipated transit oriented development associated with the expanding LRT network. Properties fronting major arterials have also seen a large measure of change, with retail development predominating.

Multiple projects may impact the local community in the vicinity of the Valley Highway Project, as described above. The impacts include changes in aesthetics, neighborhood cohesion, employment, tax base, and access to public facilities. These impacts may be positive or negative, and planning efforts, such as *Blueprint Denver* and future planning efforts, will assist in reinforcing positive impacts and identifying appropriate mitigation for negative impacts. However, there are many factors that will influence positive outcomes, such as the level of funding available for public projects and the economic conditions as they relate to private developments.

As shown in **Table 4.20-5**, several major development projects are being planned or considered in the area. These include redevelopment of the Alameda Square Shopping Center, the former Gates Rubber Company site (Cherokee Transit Oriented Development Project and Gates Transit Oriented Development Project), the RTD Bus Barn site, and a number of smaller redevelopment projects. These projects will bring economic growth and increased vitality to the area, but will also require careful planning by the City and County of Denver and the developers to ensure that the quality of life is maintained for existing and new residents alike.

The City and County of Denver plays a dominant role in the public sector regarding community planning within the city. As a result, involvement of city staff in major projects provides the key to ensuring that positive results are achieved for local neighborhoods and the community as a whole.

The system alternatives, (System Alternatives 1, 2, 3, and the Preferred Alternative) would require relocating a number of businesses (including small businesses). A limited number of residents would also be relocated in three of the four system alternatives, including the Preferred Alternative.

There are a number of other projects which may involve business displacements. Projects with the greatest potential for business displacements within the Cumulative Impact Study Area include:

- T-Rex (property acquisition completed)
- Federal Boulevard from Alameda to 6<sup>th</sup> Avenue
- Alameda Avenue: Federal Boulevard to I-25

The availability of suitable replacement properties would be dependent on market conditions at the time of relocation; under current market conditions, replacement properties would likely be available. Future market conditions may vary, but planned and potential redevelopment projects may also provide relocation opportunities.

## **Parks and Recreation**

The City and County of Denver has developed an extensive system of parks and recreation facilities over the past 135 years. Denver's park system currently includes nearly 3,000 acres of city parks and parkways, approximately 2,500 acres of urban natural area, and an additional 14,000 acres of Denver-owned mountain parks outside the boundaries of the city. The City and County of Denver also owns and operates 29 recreation centers, seven municipal golf courses, and an extensive network of trails for pedestrians and bicyclists (Game Plan Denver; CCD, 2003c). Denver is continuing its long-standing commitment to parks and recreation, with an additional 334 acres of neighborhood and community parks and 1100 acres of natural areas currently planned.

Since the mid 1950s, a number of parks and recreation facilities have been established and/or developed by the City and County of Denver within the Cumulative Impacts Study Area. Major facilities established or developed during this timeframe include:

- The existing Barnum Park, Barnum North Park and Barnum East Park were developed with facilities including ball fields, the Barnum Recreation Center, picnic areas, walking paths and other amenities
- Vanderbilt Park and Habitat Park were developed atop former aggregated mining areas
- The South Platte River Trail was developed along the South Platte River, along with amenity areas such as Milstein Grove and Frog Hollow Park
- In addition to the Barnum Recreation Center, the following recreation centers are located within the Cumulative Impacts Study Area: Rude Recreation Center, La Alma Recreation Center, La Familia Recreation Center, and Platt Park Senior Center. The Athmar Recreation Center and Washington Park Recreation Center are also nearby

Transportation projects occasionally require the use of property from the edge of parks. However, given the level of legal and planning protection currently in place, such uses are carefully considered and implemented such that the recreation function and value of the facilities is not diminished. In addition, transportation projects often include improvements to recreation amenities. For example, the system alternatives being considered in this EIS all include improvements to pedestrian and bicycle access to the South Platte River Trail. Each of the system alternatives, including the Preferred Alternatives, would require the use of portions of Barnum Park, Barnum North Park and Barnum East Park. These impacts are described in



detail in **Section 4.3 Parks and Recreation** and **Chapter 5 Section 4(f) Evaluation**. The No Action Alternative would not impact parks.

As shown in **Table 4.20-5**, only one other project, Federal Boulevard from Alameda to US 6, has been identified as having the potential to impact parks. This project may impact Barnum Park and/or Barnum East Park if land along the edges of either or both of these parks is required for widening of Federal Boulevard. This will be determined in the Environmental Assessment currently being conducted by CDOT for this project.

It is very unlikely that any current or future development projects would be allowed to use land currently occupied by Denver parks land or recreation facilities. Some of these development projects may include improvements to the park and recreation system. For example, transit oriented development of the former Gates Rubber Company site may include the addition of amenities to the currently undeveloped Vanderbilt East Park and improved pedestrian/bicycle connections to the South Platte River Trail.

Parks within the City and County of Denver are generally well protected from physical encroachment by City ordinance and other protections. Section 4(f) has provided protection and required mitigation for the impacts of federal transportation projects since its inception in 1966. The City and County of Denver has provided an overarching planning framework titled *Game Plan Denver* (CCD, 2003c). The *Long Range Management Framework for the South Platte River Corridor* (CCD, 2003a) also provides an important planning framework for parks and recreation facilities along the South Platte River.

Due to the strong protections already in place for parks and requirements for mitigation, negative impacts are often offset by beneficial improvements so that park functions are retained. Project development efforts typically focus on avoiding impacts or maintaining and enhancing park and recreational facilities. This has typically been accomplished by working with the City and County of Denver and other agencies, organizations, and individuals.

## **Air Quality**

Cumulative impacts to air quality are an issue of concern, particularly considering Denver's historic air quality problem. In general, the Denver metro area has made substantial progress in improving air quality over the past couple of decades and in working toward long-term attainment of air quality criteria.

In the past, air quality in the Denver metropolitan area was poor in several respects, but it has been steadily improving over the past several decades. The improving air quality condition has occurred along with dramatic growth in population and VMT in the Denver area. This condition is reflected by the former nonattainment status for Denver for CO, 1-hour O<sub>3</sub> and PM<sub>10</sub>, which is now attainment/maintenance status for all three pollutants. This condition is further indicated by declining pollutant concentrations at air quality monitoring stations near the project area (**Figure 4.20-6**). **Figure 4.20-6** shows the annual maximum concentrations measured for the pollutants, while the second-highest annual concentrations measured are the values used to determine compliance with the NAAQS (these concentrations may not exceed the NAAQS more than one day per year).

Future regional air quality conditions are estimated by DRCOG through the regional conformity process where planned future transportation improvements must conform to the State Implementation Plan. Through the RTP, DRCOG looks more than 20 years into the future, which is a thorough examination of cumulative air quality trends and predictions for the region. In simple terms, the conformity evaluation consists of calculation of regional pollutant emissions for comparison to a region-wide pollutant budget to ensure that air quality does not decline. When pollutant emissions do not exceed pollutant budgets, conformity is demonstrated.

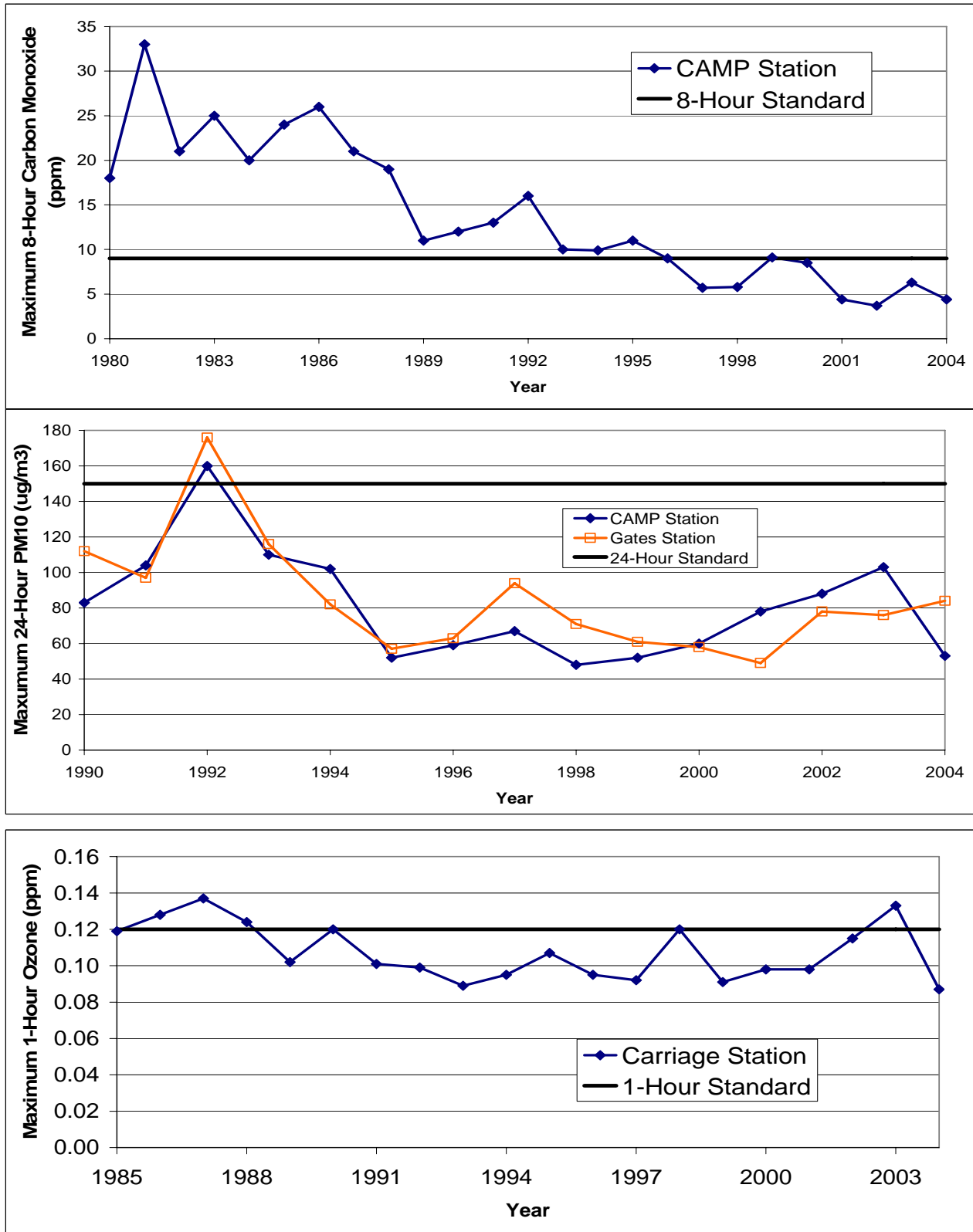
The emissions results for the approved 2025 RTP and the preliminary 2030 RTP are summarized in **Table 4.20-6**. These results show that predicted emissions are within the allotted budgets and that no significant cumulative air quality impacts are likely from reasonably foreseeable projects.

**Table 4.20-6 Regional Conformity Emissions Results**

Pollutant	2025 RTP (tons per day)		2030 RTP <sup>a</sup> (tons per day)	
	Emissions	Budget	Emissions	Budget
CO	710	800	1207	1520
PM <sub>10</sub>	50.2	51	49	51
Nitrogen oxides (PM <sub>10</sub> )	89	101	29	101
Volatile organics (O <sub>3</sub> )	86	119	42	119
Nitrogen oxides (O <sub>3</sub> )	93	134	32	134

<sup>a</sup> Results are preliminary and subject to change.

**Figure 4.20-6 Air Quality Monitoring Data from Nearby Monitoring Stations**



## Noise

The overall ambient noise at a given location depends on the noise from multiple sources. However, noise impacts decrease rapidly with distance so that the closest major sources often predominate. Noise concerns and monitoring have emerged relatively recently; therefore, it is difficult to establish how noise levels may have changed over the last several decades. Traffic has increased on highways and local streets, but vehicles have become quieter over time. In addition, noise from other sources, such as industrial sites, may have decreased over time as site uses have changed.

The noise modeling and analysis, presented in **Section 4.6 Noise and Vibration**, include the noise impacts of traffic noise sources in the vicinity of the project and thus represent the cumulative impact with regard to traffic noise. As additional transportation projects are considered the noise impacts will typically be evaluated for these projects in a similar manner.

As redevelopment projects are proposed and reviewed, noise contributions by these projects should be considered. In addition, these projects should consider the ambient noise environment and provide appropriate land use planning consideration with regard to noise. An example of this would be to position residential units away from noise sources and/or in a position such that commercial buildings provide shielding from noise sources.

## Historic Resources

There are a number of historic structures, historic districts, and potential historic districts within the cumulative impacts study area. These historic resources could be impacted by several future projects as indicated in **Table 4.20-5**. In addition, past projects have impacted historic resources.

Private land owners, developers, and local agencies are not bound by the same requirements for considering and selecting alternatives as are required for a federal transportation project. Thus, the greatest potential for impacts to historic structures within the cumulative impacts study area is likely to come from redevelopment of historic sites. The extent to which these historic resources are preserved has depended and will depend on the interest and plans of the owners/developers, local planning requirements, and possible community input. Facilitation of preservation actions by local and state agencies and preservation organizations can also play a key role.

In the 1950s, as the Valley Highway was taking form, prolific new commercial and industrial development occurred in proximity to the highway, including a warehouse district on Rio Grande Boulevard (between 1<sup>st</sup> and 3<sup>rd</sup> Avenues) on the former site of Lake Archer; a light industrial area extending along the east side of I-25, between 8<sup>th</sup> and 3<sup>rd</sup> Avenues; and another industrial/warehouse district along Kalamath Street and Santa Fe Drive, north of Alameda Avenue. Most of these changes occurred in lightly developed areas and thus did not displace many historical buildings. Improvement of US 6 in the 1950s, between the Valley Highway and Federal Boulevard, transformed the sparsely settled residential areas both north and south of 6<sup>th</sup> Avenue into an industrial and warehouse district. A small brick dwelling at 649 Canosa Court, recorded during the cultural resource inventory for the Valley Highway EIS, is an anachronistic survivor of the earlier residential land use pattern in this area.

Two major trends characterize the historic preservation situation in the project area during the 46 years since the Valley Highway was finished (1958):

- many parts of the Cumulative Impact Study Area have experienced relatively little change
- historic preservation regulations, incentives activity have sharply increased over time, particularly during the last 20 years

In most areas along the project corridor large numbers of historical buildings have been preserved, and the land use pattern has been relatively stable over the past 4½ decades. A notable exception is the area bounded by Cherokee Street, Virginia Avenue, Broadway and Alameda Avenue, which contained a neighborhood of numerous modest residences prior to its conversion into a sprawling modern shopping center. Other historical residential neighborhoods adjoining the project have been retained, including Baker, West Washington Park, Platte Park, and Athmar Park. In one mixed-use area, located north of Alameda Avenue in the vicinity of Kalamath Street and Santa Fe Drive, scattered historical dwellings have been converted to commercial uses.

Intentional historic preservation in the Denver area was virtually non-existent prior to the mid-1960s. Following a period of unbridled development during the heyday of the Urban Renewal movement, the federal government issued a national mandate for historic preservation. The National Historic Preservation Act of 1966 established, among other things, the National Register of Historic Places (NRHP), a State Historic Preservation Officer (SHPO) for each state, as well as a process (Section 106) to ensure that significant historical sites are taken into account when subject to potential impacts from federal undertakings. Another federal law passed in 1966 – the Department of Transportation Act – contained a powerful preservationist mandate. Under Section 4(f) of that Act, impacts to significant historical resources from federally-sponsored transportation projects must be prevented unless no feasible and prudent avoidance alternatives are identified.

The City and County of Denver has adopted historic preservation as a key element in its planning process. The preservation of historic architecture is a fundamental part of Blueprint Denver's guiding principles. Preserving historic buildings helps maintain the distinctive character and identity of "Areas of Stability" in the city, while in "Areas of Change" historic buildings can be used as references for appropriate architectural design.

The State of Colorado broadened its historic preservation role by passage of the Historical, Prehistorical, and Archaeological Resources Act of 1973, and by establishment of a State Register of Historic Properties in 1975. A more potent approach was embodied by the Colorado Limited-Stakes Gaming Act of 1991, which established the State Historical Fund. A State Historical Fund grant was used to complete a reconnaissance survey and historical context document in 2002 for the West Washington Park area, on behalf of the West Washington Park Neighborhood Association.

During the 1980s, Section 106 compliance studies resulted in official determinations of NRHP-eligibility for two historical resources in the project vicinity, including the Gates Rubber Company plant, recorded in 1980, and the Bureau of Roads (USPS Vehicle Maintenance Facility), recorded in 1983. In 1985, the vast Baker Historic District, bounded by W. 5th Ave., Broadway, W. Alameda Avenue & Fox Street and containing a wealth of late 19<sup>th</sup> and early 20<sup>th</sup> Century architecture, was placed on the National Register of Historic Places.

Adaptive re-use of historical structures has gained popularity over time and is encouraged by CCD as well as financial incentives offered by the Colorado SHPO as well as the National Park Service (which administers the NRHP program). In many cases the re-use of existing building stock makes sound financial sense. An early example of adaptive re-use in the project area involves the USPS Vehicle Maintenance Facility at 915 South Logan Street. The sprawling complex was originally built for the Bureau of Roads as a warehouse and garage for its fleet of vehicles and road-building equipment. In 1960 it was taken over by the U.S. Postal Service, and was used thereafter to maintain a large fleet of postal delivery vehicles.

Industrial properties provide greater challenges for re-use than residential or commercial structures. One such historical property, the General Chemical Company plant located along the west side of I-25, is undergoing major cleanup operations for hazardous waste; its future is uncertain. The vast, 50-acre Gates Rubber Company plant located on the south side of the Broadway Viaduct, has ceased manufacturing operations and is planned for redevelopment to convert the site into a relatively high-density mixed use development with access to an RTD light-rail station and park-n-Ride as well as I-25. Most of the specialized industrial buildings cannot be adapted to the planned development and will reportedly be demolished.

The Preferred Alternative would not adversely affect any historic properties, as described in **Section 4.7 Historic Preservation** and **Chapter 5 Section 4(f) Evaluation**.

As shown in **Table 4.20-5**, the following other current or future projects are likely to impact historic sites within the cumulative impact study area:

- T-REX (LRT piers and retaining walls with former Gates Rubber Company site [NRHP-Eligible District])
- Cherokee Transit Oriented Development (former Gates Rubber Company site west of Broadway)
- Gates Transit Oriented Development (former Gates Rubber Company site east of Broadway)

The redevelopment of the Gates site is likely to present the greatest historic preservation challenge within the Cumulative Impacts Study Area. With the exception of the Gates redevelopment project, future land use will likely remain unchanged in the Valley Highway project area for quite some time. Long-established residential areas are considered "Areas of Stability" which embody distinctive historical character and identity, while the light industrial/commercial areas are located in marginal areas not well-suited to residential or retail development. With strong historic preservation controls and incentives in place, it appears likely that historical resources will be increasingly recognized and preserved in areas adjacent to the Valley Highway.

## Water Resources, Floodplains, and Wetlands

As Denver has undergone development, South Platte River drainage has been altered substantially. The river was channelized, drainage systems added, flood control undertaken, and wetlands reduced. This has been an evolving process, which was well underway before construction of the original Valley Highway.

The South Platte River is a vital water resource to the Denver Metropolitan Area. The river provides an important beneficial use for recreation, visual aesthetics, domestic drinking water, aquatic life, and stormwater management. Historically, the South Platte River has experienced alterations that have impacted the nature and quality of the water resource. Industrialization and rapid growth in the 1800s and 1900s caused excessive domestic and industrial pollution to be discharged into the river, causing serious human health problems and stream habitat destruction.

Channelization in 1921 and the construction of the Chatfield Reservoir in 1970 dramatically changed the shape, flow regime, and function of the river. Enactment of the Clean Water Act and establishment of numerical water quality standards were a turning point for river water quality. Industrial discharge permitting and the construction of municipal wastewater treatment plants also led to a dramatic water quality improvement in the South Platte River.

The South Platte River is still impaired with regard to fecal coliform and nitrate. EPA and the Colorado Department of Public Health and Environment are conducting a total maximum daily load (TMDL) study in an effort to reduce pollutant loading into the South Platte River. Discharge of collected and passively treated stormwater from the system alternatives is not expected to impact water quality standards or designated use of the river. Fecal coliform and nitrate are not related highway operations.

Under the system alternatives, (System Alternatives 1, 2, 3, and the Preferred Alternative) the water quality of stormwater discharging from I-25 would be improved compared to the No Action Alternative and would represent a positive water quality benefit that would be realized in the river. Stormwater from the system alternatives would not adversely impact water quality in combination with other reasonably foreseeable projects. The amount of I-25 right-of-way area collecting and discharging stormwater into the South Platte River is minor compared to the overall residential and commercial area and to stormwater managed by the City and County of Denver. As shown in **Table 4.20-5**, several other projects are anticipated to provide improvements to stormwater drainage and water quality in the vicinity, including:

- T-REX
- West Corridor LRT
- Denver Storm Drainage Master Plan
- Denver Stormwater Quality Master Plan
- South Platte River Channel Improvements – 8<sup>th</sup> Avenue north
- General Chemical Site Remediation

The floodplain along the South Platte River has been greatly reduced in size by channelization and fill in the first half of the 20<sup>th</sup> century. However, flood potential has been greatly reduced through construction of Chatfield Reservoir. Due to past modifications and land reclamation, the floodplain is currently constrained to a fairly limited area along the South Platte River; therefore, only a limited number of projects have the potential to impact the floodplain. Activities within the floodplain are currently well regulated, and potential future impacts could be expected to be controlled by the current regulatory framework.

Wetlands associated with the South Platte River and other drainages have been greatly reduced as a result of urbanization. Much of this loss of wetlands predated the original Valley Highway project, but continued largely unabated until the last couple of decades. Jurisdictional wetlands are now protected under regulations administered by the USACE. The Valley Highway Project and future projects would be expected to comply with these regulations, thus limiting future loss of wetlands. The system alternatives, including the Preferred Alternative, would impact a limited area of wetland, as described in detail in **Section 4.11 Wetlands, Waters of the US, and Open Water**. Mitigation would be provided for these impacts. The No Action Alternative would not impact wetlands.

Future projects that could impact wetlands are primarily those that involve bridging of rivers or streams. Because most wetlands in the area are located adjacent to rivers, streams, or lakes, development projects have a more limited potential to impact wetlands in the area. As shown in **Table 4.20-5**, the following current and future projects may also impact wetlands:

- Mississippi Avenue/ Santa Fe Drive Intersection
- Federal Boulevard at Lakewood Gulch
- South Platte River Channel Improvements – 8<sup>th</sup> Avenue north

As described previously, the river corridor has been the subject of a recent planning effort aimed at developing a long-range management framework. The success of this effort will depend on the ability of various agencies to put in place the steps identified in the *Long Term Management Framework* (CCD, 2000a) as necessary for continued improvements in the river corridor.

## **Construction**

Construction projects can cause disruptions and impacts to both the community and the environment. These may range from very short-term inconveniences to longer-term impacts affecting many people. Some of the primary types of impacts include access, noise, dust, and traffic delays. Construction impacts are limited and regulated by a variety of federal, state, and local controls. The construction impacts of the system alternatives were discussed in **Section 4.18 Construction Impacts**.

As shown in **Table 4.20-5**, many other projects will have construction impacts within the Cumulative Impact Study Area. These projects have the potential to cause cumulative impacts with the Valley Highway Project during construction, depending on timing. While the timing of many projects is unknown, cumulative impacts during construction are more likely with major projects which overlap or are in close proximity and are constructed during the same timeframe. These may include:



- Federal Boulevard from Alameda to 6th Avenue
- West Corridor Light Rail Transit
- Broadway/Lincoln Street Improvements Near I-25
- Cherokee Transit Oriented Development
- Gates Transit Oriented Development
- Former RTD Bus Barn Redevelopment

When several construction projects proceed contemporaneously, the cumulative impact of the projects on residents and the environment may be compounded, requiring additional coordination. This should be undertaken throughout the planning, design, and construction process, with the City and County of Denver taking the lead in coordination between projects.

#### **4.20.3.3 CONCLUSIONS REGARDING CUMULATIVE IMPACTS**

The areas surrounding the Valley Highway Project have been largely developed for more than 100 years. Current projects in the area include redeveloping several former industrial sites to provide residential and commercial space. This process of change has been going on in a number of areas of Denver, and has been the focus of several parallel planning efforts, most notably the recent *Blueprint Denver* and individual site rezoning and development plan reviews.

Within the project area, established residential areas are expected to remain the same. Commercial and industrial areas are anticipated to have a greater amount of change, but industrial use is expected to continue in the central project area for many years. In addition to redevelopment projects, a number of other transportation projects are anticipated. These projects focus on providing needed improvements on a local and regional basis, as well as expanding multi-modal choices and access.

The City and County of Denver has played and, is likely to continue to play, a very active role in planning for changes that impact the communities and environment in this area. These efforts are aided by the work of many other federal, state, and local agencies. Through this coordinated process, the quality of life can be maintained and the environment protected.

The Preferred Alternative has been identified by CDOT and FHWA as providing a balance between transportation improvements and environmental impacts. The environmental consequences of the system alternatives would not result in significant cumulative impacts to the key resources discussed above, provided that ongoing coordination continues and other future projects are reviewed appropriately. This conclusion is based on the following for each key resource:

- **Traffic / Transportation** – The system alternatives, including the Preferred Alternative, were developed as part of the on-going regional and local transportation planning process. When considered with other current and planned future transportation projects, the Preferred Alternative and the other system alternatives would provide a net benefit in terms of reduced congestion, increased safety, and increased pedestrian bicycle mobility in the local and regional area compared to the No Action Alternative.

- **Socio-Economics and Community** – The Preferred Alternative and the other system alternatives are generally consistent with recent land use and community planning by the City and County of Denver. There are a number of current and future transportation and redevelopment efforts in the area. These projects in concert with the Valley Highway Project would generally be expected to benefit the community, consistent with the planning vision articulated in *Blueprint Denver*. On-going coordination between agencies is expected to reduce disruptions and provide a measure of continuity between projects.
- **Parks and Recreation** – Section 4(f) provides strong protection of public parks that may be affected by the system alternatives. With this protection and appropriate planning, the incremental effect of the Valley Highway Project on parks and recreation would be minor. The City and County of Denver also has strong statutory and planning procedures in place to protect and improve its public parks. The Preferred Alternative and the other system alternatives include mitigation measures for park impacts. These measures together will protect Denver's parks from degradation of function by the system alternatives and/or other projects. The Valley Highway project is not expected to trigger other negative impacts to parks, and the impacts of this project are being mitigated in a comprehensive manner. Park impacts and mitigation for the project are discussed in detail in **Section 4.3 Parks and Recreation** and **Chapter 5 Section 4(f) Evaluation**.
- **Air Quality** – The reduction in congestion provided by the system alternatives will provide some localized reduction in emissions, compared to the No Action Alternative. In addition, national programs will continue to reduce vehicle emissions over time. Regional programs are in place to protect and improve metro Denver area air quality. The regional air quality conformity process would be expected to ensure that significant cumulative impacts do not occur.
- **Noise** – Noise impact analysis and mitigation evaluation performed for the system alternatives included the cumulative impacts of multiple traffic noise sources. This analysis indicated that the system alternatives, including the Preferred Alternative, would have little or no incremental effect on noise levels, compared to the No Action Alternative. This same type of analysis would be conducted for future highway projects, ensuring that cumulative impacts are fully evaluated. The City and County of Denver has a noise ordinance and on-going enforcement program directed at a variety of noise sources that could impact the community. As a result, significant cumulative impacts would not be expected.
- **Historic Resources** – Each of the system alternatives impact one or more historic transportation structures; however, no other historic structures are impacted by any of the system alternatives. The Preferred Alternative would not adversely affect any historic properties. Section 4(f) affords strong protection for historic sites that may be impacted by federal transportation projects, and an ongoing evaluation and consultation process will ensure that historic sites are not impacted unless no feasible and prudent alternative exists. Protection of historic sites is voluntary for non-federal projects; however, in recent years Denver has shown a strong trend in reuse of historic buildings for a variety of uses. It is expected that this trend will continue, but some historic structures (such as some structures on the former Gates Rubber Company site) may be lost if the owners are not able or choose not to reuse the structures.

- **Water Resources, Floodplains, and Wetlands** – Historically, a number of individual actions since the founding of Denver led to a degradation of water quality, encroachment to floodplains, and reduction in the amount and quality of wetlands. However, over recent decades, increasing public concern and regulation has resulted in a great measure of protection of these resources. The system alternatives, including the Preferred Alternative, would greatly improve the quality of stormwater discharge from highway facilities, any minor floodplain encroachments would be reviewed and approved, and relatively minor impacts to wetlands would be mitigated by replacement through the use of wetland banking. Overall, the incremental effect of the Valley Highway Project would be positive compared with the No Action Alternative. These resources would be subject to the same protections for other projects; therefore, no significant cumulative impacts would result.
- **Construction** – Over the past few years, the neighborhoods surrounding the project area have experienced a number of major construction projects. This is expected to continue with several additional transportation and redevelopment projects planned for the area. If these projects were to proceed in an uncoordinated manner, there could be a number of conflicts and complications that could impact the neighborhoods. However, there currently exists and will continue to be on-going coordination and regulatory processes to identify and mitigate construction impacts from multiple projects. The City and County of Denver plays a key role in this process, as do other agencies such as CDOT and RTD. Coordination with residents, business owner and service providers is also very important, and through continuation of this process, significant cumulative impacts related to construction will be avoided.

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