

**US 6/Wadsworth**



**Environmental  
Assessment**

# **US 6 and Wadsworth Environmental Assessment and Draft Section 4(f) Evaluation**

CDOT Project No. STU 0062-019 (15215)

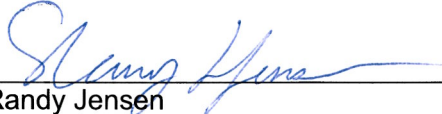


June 2009

STU 0062-019  
**US 6 and Wadsworth Environmental Assessment  
and Draft Section 4(f) Evaluation**  
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by the  
U.S. Department of Transportation  
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and the  
Colorado Department of Transportation

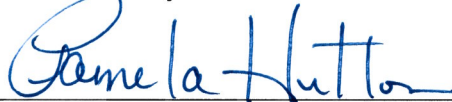
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## Environmental Assessment and Draft Section 4(f) Evaluation Availability

Copies of the Environmental Assessment and Draft Section 4(f) Evaluation are available in hard copy format for public review at the following locations and/or by request from CDOT Region 6. The document also is available on the project website at <http://us6wadsworth.com>.

Jefferson County Public Library – Belmar  
555 S. Allison Pkwy  
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# Acronyms and Abbreviations

|        |  |                |  |
|--------|--|----------------|--|
| AASHTO | American Association of State Highway and Transportation Officials | HABS           | Historic American Building Survey                  |
| ADA    | Americans with Disabilities Act                                    | HUD            | U.S. Department of Housing and Urban Development   |
| ADT    | average daily traffic  | ITS            | Intelligent Transportation System                  |
| AM     | ante meridiem (before noon)  | Lakewood       | City of Lakewood                                   |
| APE    | area of potential effect   | Ln.            | Lane   |
| ASTM   | American Society for Testing and Materials                         | LOMR           | Letter of Map Revision                             |
| Ave.   | Avenue   | LOS            | level(s) of service                                |
| Blvd.  | Boulevard  | LRT            | light rail transit                                 |
| BMP    | best management practice   | MBO            | Minority Business Office                           |
| CDOT   | Colorado Department of Transportation                              | MESA           | Modified Environmental Site Assessment             |
| CDPHE  | Colorado Department of Public Health and Environment               | MOA            | Memorandum of Agreement                            |
| CFR    | Code of Federal Regulations  | mph            | miles per hour                                     |
| CLOMR  | Conditional Letter of Map Revision                                 | MSAT           | mobile source air toxics                           |
| CO     | carbon monoxide  | NAAQS          | National Ambient Air Quality Standards             |
| dB     | decibel(s)   | NEPA           | National Environmental Policy Act                  |
| dBA    | A-weighted decibel(s)  | NRCS           | Natural Resources Conservation Service             |
| Dr.    | Drive  | NRHP           | National Register of Historic Places               |
| DRCOG  | Denver Regional Council of Governments                             | NWP            | Nationwide Permit                                  |
| EA     | Environmental Assessment   | O <sub>3</sub> | ozone  |
| EB     | Eastbound  | OAHP           | Office of Archaeology and Historic Preservation    |
| EPA    | U.S. Environmental Protection Agency                               | OSHA           | U.S. Occupational Safety and Health Administration |
| ESA    | Environmental Site Assessment                                      | PCN            | Pre-Construction Notification                      |
| FEMA   | Federal Emergency Management Agency                                | PI.            | Place  |
| FHWA   | Federal Highway Administration                                     | PLT            | Project Leadership Team                            |
|        |  | PM             | post meridiem (after noon)                         |

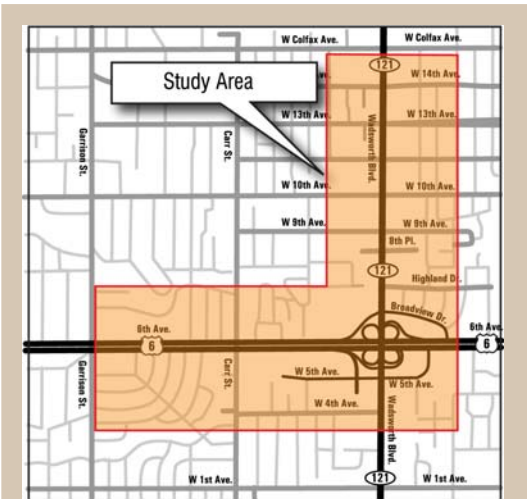


|                  |   |             |  |
|------------------|---|-------------|--|
| PM <sub>10</sub> | particulate matter less than 10 microns in diameter           | Uniform Act | Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 |
| RIRO             | right-in/right-out  | USACE       | U.S. Army Corps of Engineers   |
| ROW              | right-of-way  | USFWS       | U.S. Fish and Wildlife Service   |
| RTD              | Regional Transportation District                              | VMT         | vehicle miles traveled   |
| Section 106      | Section 106 of the National Historic Preservation Act of 1966 | Wadsworth   | Wadsworth Boulevard  |
| Section 4(f)     | Section 4(f) of the Department of Transportation Act of 1966  | WB          | Westbound  |
| SHPO             | State Historic Preservation Office                            | WQCD        | Water Quality Control Division   |
| SPUI             | single-point urban interchange                                | WQCV        | water quality capture volume   |
| St.              | Street  | WUS         | waters of the United States  |
| T&E              | threatened and endangered                                     |             |  |
| TCLP             | Toxicity Characteristic Leaching Procedure                    |             |  |
| TLT              | Technical Leadership Team                                     |             |  |
| U.S.C.           | United States Code  |             |  |
| UDFCD            | Urban Drainage and Flood Control District                     |             |  |

# Executive Summary

1 The US 6/Wadsworth Environmental Assessment (EA) analyzes the impacts of the  
2 Colorado Department of Transportation's (CDOT) proposal for roadway improvements at  
3 the US 6 (also known as 6th Avenue) and Wadsworth Boulevard (Wadsworth)  
4 interchange and along Wadsworth between 4th and 14th Avenues. Chapter 1 describes  
5 the purpose and need for the action. The alternatives for implementing the action  
6 considered and evaluated in the EA are described in Chapter 2. Chapter 3 presents the  
7 social and environmental consequences of the alternatives. An evaluation of effects to  
8 historic and park resources protected by Section 4(f) of the Department of Transportation  
9 Act is presented in Chapter 4. Comments and coordination with the public and other  
10 agencies is described in Chapter 5. Chapter 6 is a list of references. Other supporting  
11 materials are included in appendices.

## WHERE IS THE PROPOSED PROJECT LOCATED?



*The US 6/Wadsworth project study area is located in central Lakewood.*

12 The proposed US 6/Wadsworth project centers around the US 6 and  
13 Wadsworth interchange in the heart of the City of Lakewood. The study  
14 area includes both US 6 and Wadsworth. Both roadways serve a broad  
15 cross section of local and regional travelers. The east-west limits along  
16 US 6 are from the eastern interchange ramps with Wadsworth west to  
17 Garrison Street. On Wadsworth, the project limits are 4th Avenue to  
18 14th Avenue.

19 Wadsworth is a regionally important highway and is the longest  
20 continuous roadway connecting communities across the western Denver  
21 metropolitan area. Wadsworth links northern Lakewood with Lakewood's  
22 City Commons at Alameda Avenue south of the project area, provides  
23 regional access to large commercial developments at Wadsworth and  
24 Colfax Avenue, and will soon provide access to the large West Corridor  
25 light rail station at Wadsworth and 13th Avenue, currently being  
26 constructed by the Regional Transportation District.

## WHY DID CDOT PREPARE THIS EA?

27 The National Environmental Policy Act requires that the environmental effects of federally  
28 funded roadway projects be considered before deciding on a course of action. The  
29 process provides an opportunity for CDOT to develop project alternatives that meet  
30 transportation needs while minimizing social, environmental, and community impacts. In  
31 the case of the proposed US 6/Wadsworth project, CDOT made numerous changes to  
32 the conceptual design plans to respond to community input and minimize impacts.

33 Regulatory agencies, affected municipalities, and interested members of the public are  
34 afforded the opportunity to comment on the project before a decision is made about  
35 whether to design and construct the proposed roadway improvements.

## WHY DO WE NEED THIS PROJECT?

1 The proposed US 6/Wadsworth project is needed to meet existing and future  
 2 transportation needs for CDOT and Lakewood. The proposed project would provide  
 3 additional roadway capacity, improve operational efficiency, improve safety, and provide  
 4 additional travel options for pedestrians and bicyclists. It would also replace a structurally  
 5 deficient bridge and address neighborhood concerns about cut-through traffic. These  
 6 needs are described in more detail in Chapter 1.

## HOW DID CDOT COME UP WITH A PLAN FOR THE ROADWAY IMPROVEMENTS?

7 CDOT, the Federal Highway Administration (FHWA), Lakewood, area  
 8 residents, businesses, and commuters have prioritized making improvements  
 9 to fix the transportation problems in the study area through previous planning  
 10 efforts. The US 6 and Wadsworth project is included in the Denver Regional  
 11 Council of Governments' fiscally constrained regional long-range transportation  
 12 plan.

13 CDOT began working with FHWA, Lakewood, the Regional Transportation  
 14 District, and other stakeholders in 2007 to develop alternatives for possible  
 15 roadway improvements. After two levels of screening and evaluation, and  
 16 consideration of more than 20 detailed criteria, an alternative was identified that  
 17 could meet the purpose and need for the project and would best balance  
 18 transportation benefits with environmental and community impacts. This  
 19 alternative is called the Build Alternative in the EA. Public input was sought and  
 20 received throughout the alternatives development process.



*Hundreds of people attended open houses and other briefings to learn about the US 6/Wadsworth study and provide input.*

## WHAT IS CDOT PROPOSING TO BUILD?

21 CDOT proposes to replace the existing US 6/Wadsworth interchange and widen  
 22 Wadsworth between 4th and 14th Avenues. Associated with these roadway changes,  
 23 CDOT also proposes to improve drainage flows of McIntyre, Lakewood, and Dry Gulches,  
 24 and realign and widen these gulches; extend noise walls along US 6 to approximately  
 25 Garrison Street; and construct and maintain water quality ponds to filter roadway  
 26 pollutants from stormwater runoff.

27 The interchange design, referred to as a tight diamond with loop, would be a diamond  
 28 interchange with a loop ramp in the northwest quadrant of the interchange. The loop ramp  
 29 would allow evening rush-hour traffic traveling west on US 6 to exit to southbound  
 30 Wadsworth without stopping at a signal or yielding to through traffic. All of the interchange  
 31 acceleration and deceleration lanes would be lengthened, all weave sections would be  
 32 eliminated, and the structurally deficient bridge would be replaced. The operation of the  
 33 interchange is illustrated on the following page.

34 Along Wadsworth, the Build Alternative would add a travel lane in each direction and a  
 35 multi-use sidewalk on both sides of Wadsworth. A raised median would be added to the  
 36 center of the roadway to direct left turns and U-turns.

### Northwest Quadrant

**Interchange**

- 1 Reconstructed loop off-ramp from westbound US 6 to southbound Wadsworth.
- 2 A grade-separated or at-grade pedestrian crossing at on-ramp and loop ramp will be determined at final design.
- 3 New longer on-ramp from northbound and southbound Wadsworth to westbound US 6 provides adequate acceleration and merge distances for vehicles entering US 6.
- 4 Continuous lane on US 6 between on-ramp and Carr St. off-ramp provides safer merging conditions.

**Frontage Road**

- 5 Frontage road access is shifted north and changed to two-way traffic between the 6th Ave. Business Center and Wadsworth.
- 6 Channel improvements to Lakewood Gulch to reduce floodplain.

### Northeast Quadrant

**Interchange**

- 10 New longer off-ramp from westbound US 6 to northbound Wadsworth provides adequate deceleration and vehicle queue distances for vehicles accessing Wadsworth. Free flow movement onto Wadsworth.

**Frontage Road**

- 11 Frontage road is reconfigured to provide access directly to Wadsworth. Provides two-way operation that reduces neighborhood cut-through traffic.
- 12 New noise walls next to the frontage road.



### Southwest Quadrant

**Interchange**

- 7 Continuous lane on US 6 between Carr St. on-ramp and Wadsworth off-ramp provides safer merging conditions.
- 8 New longer off-ramp from eastbound US 6 to northbound and southbound Wadsworth feeds into a multi-lane intersection that accommodates expected vehicle queues. Exiting vehicles wanting to travel east at the 5th Ave. intersection utilize the signalized intersection to make a hard right and vehicles destined farther south can use the adjacent right-turn yield lane to merge onto southbound Wadsworth.

**Frontage Road**

- 9 Frontage road remains one-way and continues to connect to 5th Ave. at Yukon St.

### Southeast Quadrant

**Interchange**

- 13 New longer on-ramp from northbound and southbound Wadsworth to eastbound US 6 provides adequate acceleration and merge distance for vehicles entering US 6.

**Frontage Road**

- 14 Frontage road remains two-way and connects to 5th Ave. on Vance St. instead of Webster St.

**Project Wide**

- 15 New noise walls between the frontage roads and US 6, west of Wadsworth.
- 16 Detached multi-use sidewalk along both sides of Wadsworth.

*The reconstructed interchange would operate more efficiently, reduce congestion, and eliminate safety concerns.*

## WHAT ARE THE SOCIAL AND ENVIRONMENTAL CONSEQUENCES OF THE PROPOSAL?



*The proposed US 6/Wadsworth project would have mostly beneficial effects to social and natural resources in the study area.*

1 This EA evaluates the potential environmental consequences of  
 2 implementing the proposed project (or Build Alternative). All  
 3 environmental resources were reviewed for presence in the study area  
 4 and assessed for potential impacts. Some resources are not evaluated  
 5 in detail in this EA because they were not present in the study area,  
 6 would not be impacted by the Build Alternative, or standard construction  
 7 precautions would protect the resources from significant damage.  
 8 Environmental issues or resources evaluated in detail include  
 9 transportation, pedestrian and bicycle facilities, noise, right-of-way and  
 10 relocations, socioeconomic, environmental justice, land use, historic  
 11 properties, hazardous substances, floodplains, water resources, and  
 12 wetlands. Table ES-1 summarizes impacts to these resources.

13 The majority of impacts of the Build Alternative would be beneficial.  
 14 Congestion would be reduced and general safety would improve for  
 15 local and regional travelers, access to and from the numerous  
 16 businesses along Wadsworth would be safer to navigate, and the safety  
 17 and convenience of travel for pedestrians and bicyclists would be greatly  
 18 improved. Improving drainage channels within the study area would  
 19 reduce flooding hazards, enhance riparian habitat and wildlife migration,  
 20 and provide an opportunity for wetlands to establish naturally. Water  
 21 quality would be improved because stormwater runoff would be filtered  
 22 to reduce pollutants being discharged into the South Platte River basin.  
 23 Noise walls included in the Build Alternative would decrease noise levels  
 24 dramatically at residences near US 6. Improved capacity on the major  
 25 roadway network and reconfiguring the frontage roads surrounding the  
 26 interchange would reduce neighborhood cut-through traffic, improve  
 27 business and neighborhood access, and improve air quality around

28 intersections. Right-of-way needs would require acquisition of property and  
 29 displacement of businesses and residences. Four historic properties would be  
 30 adversely affected, and three small wetlands totaling 0.02 acre would be lost.

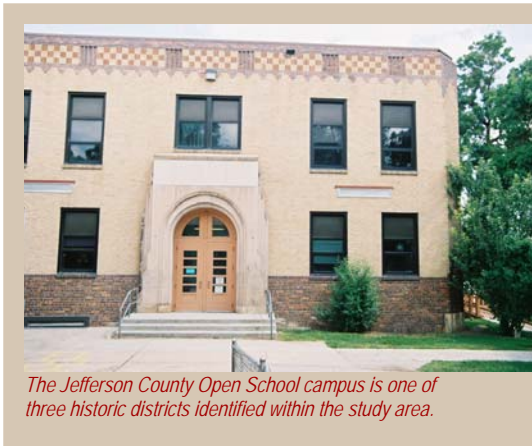
## HOW MUCH PROPERTY DO YOU NEED TO ACQUIRE, AND HOW HAVE YOU COORDINATED WITH AFFECTED PROPERTY OWNERS?

31 Approximately 31.1 acres of property would need to be acquired from 96 property  
 32 owners through 114 acquisition parcels, including 45 residential, 65 commercial, and  
 33 4 publicly owned parcels. Property acquisitions would range from small slivers to  
 34 entire parcels. A total of 14 residences and 28 businesses would need to be  
 35 relocated. All acquisitions and relocations will comply fully with the Uniform  
 36 Relocation Assistance and Real Property Acquisition Policies Act of 1970.

37 CDOT is committed to maintaining open communication with property owners and  
 38 stakeholders affected by the proposed project. The study team has held four public

1 meetings to present the progress and preliminary findings of the study, conducted  
 2 one-on-one meetings with numerous property and business owners, and attended  
 3 more than 20 meetings with neighborhood and business groups since the summer of  
 4 2007. Team members have contacted all owners of potentially affected properties  
 5 and have met with many of these owners to explain the proposed action, understand  
 6 its effect on owners' properties, and explain CDOT's right-of-way acquisition process  
 7 and the rights owners and tenants have under the Uniform Act. CDOT continues to  
 8 respond to owners and stakeholders who contact the study team with questions or  
 9 comments, with the intent of maintaining open lines of communication and providing  
 10 as much information as is known at the time.

### WHAT HISTORIC PROPERTIES ARE IN THE STUDY AREA, AND HOW WOULD THEY BE AFFECTED?



*The Jefferson County Open School campus is one of three historic districts identified within the study area.*

11 There are nine commercial and residential properties within the study  
 12 area that are individually eligible for the National Register of Historic  
 13 Places. In addition, three historic districts (a school complex and two  
 14 residential neighborhoods) are located in or partially within the study  
 15 area. None of the historic districts would be adversely affected by the  
 16 Build Alternative, and adverse effects to five of the nine individual  
 17 historic properties would be avoided.

18 Four historic homes located along the frontage road in the northeast  
 19 quadrant of the interchange would need to be acquired. Despite  
 20 extensive efforts to redesign or modify the interchange design, CDOT  
 21 determined that avoiding these impacts would not be prudent and  
 22 feasible. To mitigate for these losses, CDOT is working with the  
 23 Colorado State Historic Preservation Office and local preservation  
 24 groups to implement one or more historic preservation projects that would add to the  
 25 local historical record.

### WHERE ARE THE WETLANDS IN THE STUDY AREA, AND WHY COULDN'T YOU DESIGN AROUND THEM?



*Drainages in the study area have been heavily modified by past development. While the US 6/Wadsworth project would destroy several small wetlands, proposed widening of gulches would improve conditions for new wetlands and natural riparian areas to establish.*

26 Three small, low quality, palustrine emergent wetlands comprising a  
 27 total of 0.02 acre are located within the study area along the edges of  
 28 McIntyre, Lakewood, and Dry Gulches. These wetlands would be  
 29 destroyed by the realignment of the gulches. Mitigation would include  
 30 replacement of at least 0.02 acre of wetlands.

31 Impacts to these wetlands could not be avoided because substantial  
 32 realignment and widening of the drainage channels of the three  
 33 gulches are needed. The channels have been highly modified. They  
 34 support little riparian habitat or wetlands because they are narrow,  
 35 have high flows, and are subject to scour. The drainages are also  
 36 considerably undersized to carry a 100-year flood. The proposed  
 37 channel improvements would provide greater opportunity for wetlands  
 38 to establish than under existing conditions.

## WHAT HAPPENS IF CDOT DOES NOTHING?



*Traffic congestion, inefficient roadway operations, and poor pedestrian and bicycle facilities characterize the US 6/Wadsworth project area.*

1 This EA provides an analysis of the impacts of doing nothing  
 2 (the No Build Alternative). Without a significant investment in  
 3 roadway improvements, the existing transportation problems  
 4 in the study area would worsen. Traffic would become  
 5 increasingly congested, particularly in the morning and  
 6 evening peak rush hours. Bus and pedestrian activity  
 7 associated with the new Wadsworth light rail station at 13th  
 8 Avenue will increase, but the surrounding roadway and  
 9 sidewalk network would not support this demand.  
 10 Flooding during large storm events would continue, and the  
 11 benefits of channel and culvert improvements would not be  
 12 realized. No systems would be constructed to filter stormwater  
 13 runoff. Noise walls would not be constructed, and severe noise  
 14 would persist for residences adjacent to US 6 west of  
 15 Wadsworth.

16 The No Build Alternative would not require a large capital expenditure or require any  
 17 property acquisition, and it would not affect historic properties or wetlands.

## WHAT HAPPENS NEXT?

18 FHWA and CDOT are providing this EA for agency and public comment. A public  
 19 hearing will be scheduled in Lakewood at Lakewood City Council Chambers (480 S.  
 20 Allison Parkway, Lakewood, CO 80226). Newsletters announcing the public hearing  
 21 will be sent to all individuals on the mailing list. The public hearing also will be  
 22 advertised in newspapers, websites, neighborhood newsletters, and flyers distributed  
 23 throughout the study area. Interested individuals can attend the public hearing to  
 24 provide comments or learn more about the EA study and its recommendations.  
 25 Written comments can be provided in person at the public hearing, on the project  
 26 website at <http://us6wadsworth.com/>, or via mail, fax, or email to:

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27 After consideration of public comments, CDOT and FHWA will determine whether to  
 28 issue a Finding of No Significant Impact (FONSI), revise the EA, or prepare an  
 29 Environmental Impact Statement to further analyze environmental impacts. If CDOT  
 30 and FHWA determine that a FONSI is appropriate, CDOT would proceed with final  
 31 design. Right-of-way acquisition and construction are dependent on funding and, if  
 32 additional funds are not secured, these activities may be delayed.

## EXHIBIT ES-1: SUMMARY OF IMPACTS AND MITIGATION, US 6/WADSWORTH ENVIRONMENTAL ASSESSMENT

| Impacts of the No Build Alternative   | Impacts of the Build Alternative   | Mitigation Measures for the Build Alternative  |
|---|--|--|
| <b>Transportation</b>   |  |  |
| <ul style="list-style-type: none"> <li>◆ Safety, capacity, and operational issues of the existing transportation network would not be addressed</li> </ul>  | <ul style="list-style-type: none"> <li>◆ Capacity, safety, and operational efficiency would be enhanced for all modes of travel</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Roadway improvements will be coordinated with transit and other development needs</li> <li>◆ Lane closures during construction will comply with CDOT's Lane Closure Strategy</li> </ul>                                   |
| <b>Pedestrian and Bicycle Facilities</b>  |  |  |
| <ul style="list-style-type: none"> <li>◆ Narrow, missing, or obstructed sidewalks, uncontrolled access, and traffic congestion create unsafe conditions for pedestrians and bicyclists</li> </ul>   | <ul style="list-style-type: none"> <li>◆ New sidewalks and improved roadway crossings would enhance mobility and safety for pedestrians and bicyclists</li> <li>◆ Several free-flow interchange ramp crossings would remain; pedestrians and bicycles would have difficulty crossing at these locations, particularly during rush hours</li> <li>◆ Pedestrian and bicycle routes could be disrupted during construction</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Final design will consider other measures to enhance safety of interchange ramp crossings</li> <li>◆ Signage and access to pedestrian and bicycle routes will be provided during construction</li> </ul>                  |
| <b>Noise</b>  |  |  |
| <ul style="list-style-type: none"> <li>◆ High noise levels would persist for residences near US 6 west of Wadsworth where no noise walls are present</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Without noise mitigation, projected noise for residences along US 6 would increase 2 to 7 decibels</li> <li>◆ Construction equipment and activities would intermittently generate loud noise</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Noise walls will be constructed to reduce noise noticeably at approximately 380 residences</li> <li>◆ Measures to reduce construction noise disturbance will be included in specifications</li> </ul>                     |
| <b>Right-of-Way and Relocations</b>   |  |  |
| <ul style="list-style-type: none"> <li>◆ No right-of-way (ROW) acquisition would be required, and no residential or business displacements would occur</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Approximately 31.1 acres of property would be required from 96 ownerships; acquisitions would range from small slivers of property to entire parcels</li> <li>◆ 14 residences and 28 businesses would be displaced</li> </ul>   | <ul style="list-style-type: none"> <li>◆ All acquisitions and relocations will comply fully with federal and state requirements, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended</li> </ul>             |
| <b>Socioeconomics</b>   |  |  |
| <ul style="list-style-type: none"> <li>◆ Residences and businesses along Wadsworth would continue to be affected by cut-through traffic, limited pedestrian and bicycle connections, traffic noise, and indirect neighborhood access</li> </ul> | <ul style="list-style-type: none"> <li>◆ Community cohesion would be enhanced by better north-south and east-west pedestrian connections, improved pedestrian and vehicular access to neighborhoods and businesses, improved neighborhood traffic conditions, and reduced noise levels more compatible with residential areas</li> <li>◆ Construction could disrupt access and travel through the project area for residents, businesses, and emergency service providers</li> </ul> | <ul style="list-style-type: none"> <li>◆ CDOT will provide advance notice of construction activities that are likely to result in traffic disruption</li> <li>◆ CDOT will coordinate with emergency service providers to minimize disruption of service</li> </ul> |
| <b>Environmental Justice</b>  |  |  |
| <ul style="list-style-type: none"> <li>◆ No disproportionately high and adverse impacts would occur in areas of minority or low-income populations</li> </ul>   | <ul style="list-style-type: none"> <li>◆ No disproportionately high and adverse impacts would occur in areas of minority or low-income populations</li> </ul>  | <ul style="list-style-type: none"> <li>◆ No mitigation measures are necessary</li> </ul>   |



1

## EXHIBIT ES-1: SUMMARY OF IMPACTS AND MITIGATION, US 6/WADSWORTH ENVIRONMENTAL ASSESSMENT (CONT.)

| Impacts of the No Build Alternative   | Impacts of the Build Alternative   | Mitigation Measures for the Build Alternative  |
|---|--|--|
| <b>Land Use</b>   |  |  |
| <ul style="list-style-type: none"> <li>◆ Traffic and pedestrian safety and mobility goals presented in adopted land use and neighborhood plans would not be advanced</li> </ul>         | <ul style="list-style-type: none"> <li>◆ Improvements would support land use goals for traffic management and safety, landscaping, recreational amenities, noise mitigation, multimodal connections and safety, and drainage improvements</li> </ul> | <ul style="list-style-type: none"> <li>◆ Final design and ROW negotiations by CDOT will coordinate with Lakewood to address compatibility with land use plans and potential allowances for non-conforming properties that may result from ROW acquisition</li> </ul> |
| <ul style="list-style-type: none"> <li>◆ Future growth and implementation of planned land uses could be hampered by traffic congestion and limited sidewalk facilities</li> </ul>       | <ul style="list-style-type: none"> <li>◆ ROW acquisition would affect land use for some individual parcels but roadway changes would not influence regional land use patterns or induce growth</li> </ul>  |  |
| <b>Historic Properties</b>  |  |  |
| <ul style="list-style-type: none"> <li>◆ No historic properties would be affected</li> </ul>  | <ul style="list-style-type: none"> <li>◆ Reconstruction of the interchange would require acquisition (and demolition) of four historic properties</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Mitigation measures identified in a Memorandum of Agreement among CDOT, FHWA, the Colorado SHPO, and other interested parties will be implemented</li> </ul>  |
| <b>Hazardous Materials</b>  |  |  |
| <ul style="list-style-type: none"> <li>◆ No effect on known sites of concern for hazardous materials</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Construction would affect seventeen sites of concern for environmental (petroleum-related) contamination</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Further testing and survey of potentially contaminated properties will be conducted</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>◆ Lead-based paint, asbestos, or other hazardous materials could be encountered during demolition activities</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Project specifications for hazardous materials will be prepared and implemented during construction</li> </ul>  |
| <b>Floodplains</b>  |  |  |
| <ul style="list-style-type: none"> <li>◆ Flood waters would continue to overtop Wadsworth during large storms</li> </ul>  | <ul style="list-style-type: none"> <li>◆ CDOT roadways would be removed from the 100-year floodplain, and overtopping would not occur</li> </ul>   | <ul style="list-style-type: none"> <li>◆ During final design, CDOT will refine the drainage design and coordinate with the appropriate local and federal agencies to conduct hydraulic analysis and obtain necessary floodplain permits</li> </ul>                   |
|   | <ul style="list-style-type: none"> <li>◆ Wider and more natural channels would improve the natural values of floodplains</li> </ul>  |  |
| <b>Water Resources/Quality</b>  |  |  |
| <ul style="list-style-type: none"> <li>◆ Water from roadways that may contain petroleum, sediment, or other pollutants would continue to flow into streams/gulches untreated</li> </ul> | <ul style="list-style-type: none"> <li>◆ An increase of approximately 3 acres of impervious (paved) surfaces would, without water quality treatment, increase pollutant runoff and erosion into receiving waterways</li> </ul>                       | <ul style="list-style-type: none"> <li>◆ Permanent water quality treatment features will be constructed and maintained to treat roadway runoff and improve water quality</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>◆ Construction activities would expose soils and could cause erosion or sedimentation of gulches</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Required plans and permits will be prepared and followed during construction to minimize impacts to surface waters from erosion and sedimentation</li> </ul>  |
| <b>Wetlands and Waters of the United States</b>   |  |  |
| <ul style="list-style-type: none"> <li>◆ No wetlands or waters of the United States would be affected</li> </ul>  | <ul style="list-style-type: none"> <li>◆ Channel widening and realignment would disturb 0.02 acre of wetland areas in gulches</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Wetlands will be replaced at a 1:1 ratio, and a Section 404 permit will be obtained</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>◆ Wider channels would provide an opportunity for wetlands and riparian habitat to establish</li> </ul>   |  |
| <b>Cumulative Impacts</b>   |  |  |
| <ul style="list-style-type: none"> <li>◆ The No Build Alternative would not take any action that could combine with other projects to create cumulative effects</li> </ul>              | <ul style="list-style-type: none"> <li>◆ Beneficial cumulative effects would occur to a variety of environmental and community resources as redevelopment projects in the area comply with current development requirements</li> </ul>               | <ul style="list-style-type: none"> <li>◆ No mitigation required</li> </ul>   |



# CHAPTER 1

## Purpose and Need

1 The Colorado Department of Transportation (CDOT),  
2 in cooperation with the Federal Highway  
3 Administration (FHWA) and other stakeholders, has  
4 prepared this Environmental Assessment (EA) to  
5 identify and assess potential transportation  
6 improvements at the interchange of US 6 (also  
7 referred to as 6th Avenue) and Wadsworth Boulevard  
8 (referred to as Wadsworth throughout this EA) and to  
9 Wadsworth north of the interchange. Additional  
10 supporting documentation for the study is included  
11 in Appendix C. The *Traffic Study Report* (CH2M HILL,  
12 2009a), also contained in Appendix C, provides more  
13 detail on the needs for the proposed action.

14 The project study limits, which are shown in Exhibit 1-  
15 1, includes US 6 from the eastern limit of the  
16 Wadsworth interchange ramps west to Garrison  
17 Street. On Wadsworth, the project limits are 4th  
18 Avenue to 14th Avenue. This area is a vital regional  
19 hub of the western Denver metropolitan area and the  
20 heart of the City of Lakewood (Lakewood).

### 21 **1.1 PURPOSE OF THE PROPOSED ACTION**

---

22 The purpose of the US 6/Wadsworth project is to  
23 improve traffic flow and safety, accommodate high  
24 traffic volumes, and increase multi-modal travel  
25 options and connections at the US 6 and Wadsworth  
26 interchange and along Wadsworth between 4th  
27 Avenue and 14th Avenue.

### 28 **1.2 NEED FOR THE PROPOSED ACTION**

---

29 The existing design and configuration of the  
30 interchange and roadway within the project limits have  
31 not kept pace with traffic and multi-modal travel  
32 demands. Improvements are needed to:

- 33 ♦ Improve safety for motorists, pedestrians, and  
34 bicyclists
- 35 ♦ Improve operational efficiency of the interchange  
36 and on Wadsworth

- 37 ♦ Meet current and future traffic demands
  - 38 ♦ Support multi-modal connections
- 39 Exhibit 1-1 shows locations where these  
40 improvements are needed.

### 41 **1.2.1 SAFETY**

42 The proposed action is needed to improve traffic,  
43 pedestrian, and bicycle safety.

#### 44 **1.2.1.1 Traffic Safety**

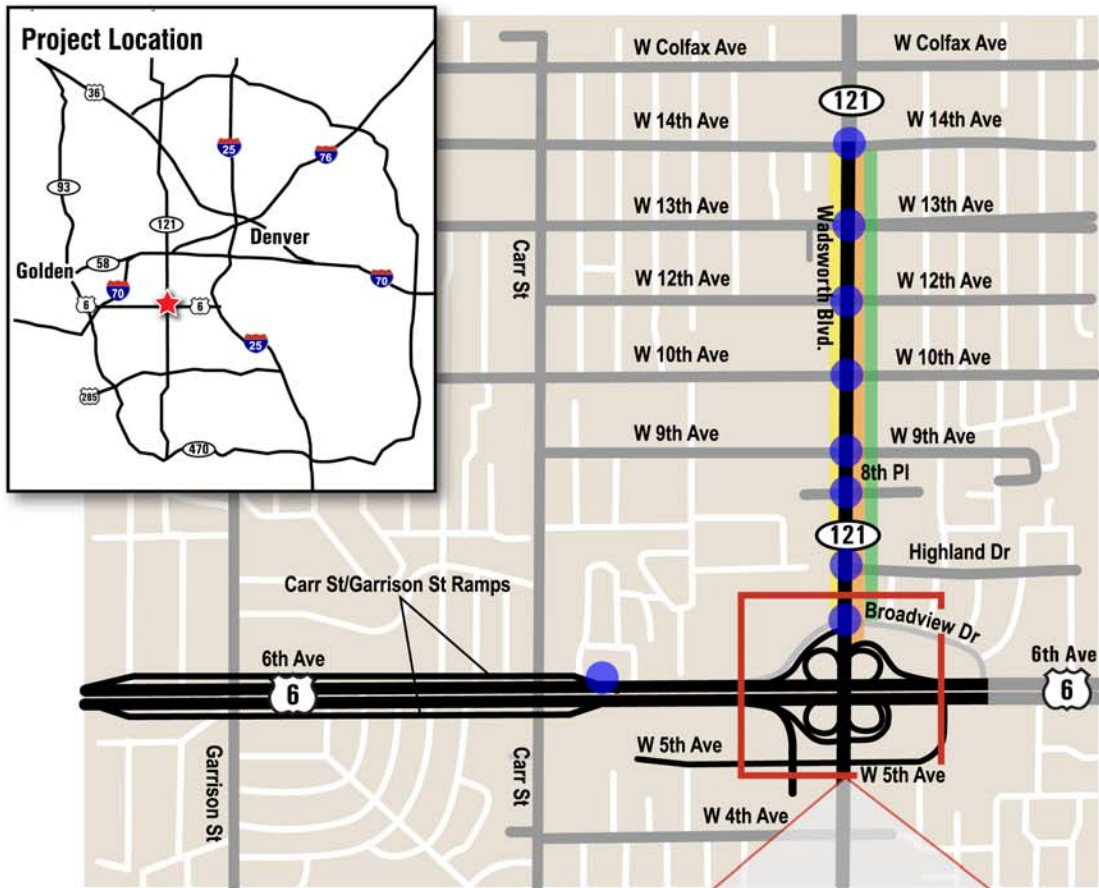
45 The US 6 and Wadsworth interchange is one of the  
46 highest accident locations in Lakewood. The  
47 interchange has been included on Lakewood's critical  
48 intersection list (for intersections with high potential for  
49 accidents) for every year between 2000 and 2006. In  
50 2001 and 2003, the interchange topped Lakewood's  
51 list for most frequent accidents and was second for  
52 most severe accidents. Severe accidents include  
53 accidents with injuries or fatalities. The 13th Avenue  
54 intersection with Wadsworth also appeared on  
55 Lakewood's 2001 and 2003 critical intersection list.

56 Accidents along Wadsworth between 4th and 14th  
57 Avenues also are frequent. Unrestricted access and  
58 uncontrolled center turn lanes increase the probability  
59 of accidents.

60 As discussed in the Traffic Study Report (CH2M HILL,  
61 2009a), many of the accidents in the study area occur  
62 because of congestion and substandard roadway  
63 design features. The following list describes the most  
64 common accident types in the study area and their  
65 likely cause(s):

- 66 ♦ Rear-end accidents – related to congestion and  
67 multiple access points
- 68 ♦ Crashes with fixed objects – related to ramp  
69 curvature
- 70 ♦ Sideswipes when both vehicles are moving in the  
71 same direction – related to short weaving and  
72 lane-changing zone maneuvers

EXHIBIT 1-1: PROJECT LOCATION AND AREAS NEEDING IMPROVEMENTS



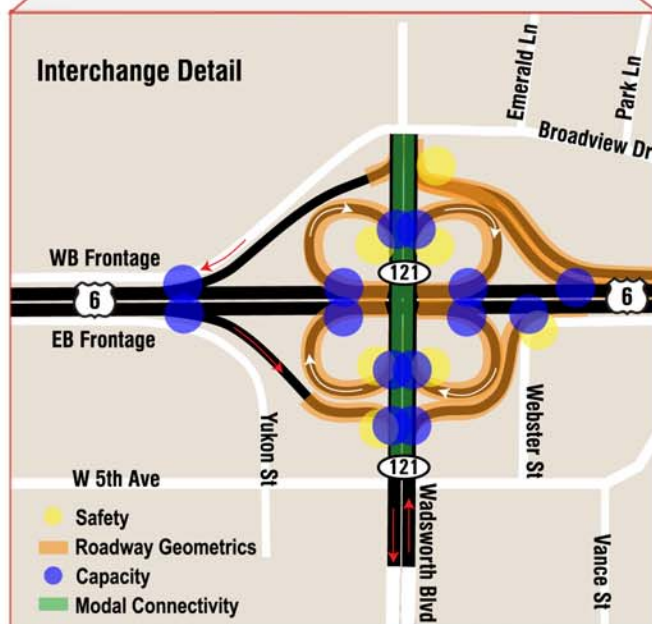
**Safety**  
 This symbol represents documented or high-potential crash locations. Roadway deficiencies contribute to unsafe conditions. Locations where bicycle and pedestrian facilities are inadequate (shown with Modal Connectivity symbol) also are safety concerns.

**Operational Inefficiencies**  
 This symbol indicates a location where roadway or structural conditions cause operational inefficiencies, which exacerbate capacity and safety concerns. Insufficient acceleration or deceleration lengths, intersections too closely spaced, and conflicts between travel lanes and shoulders or medians are types of issues included in this category. Inefficient traffic operations from uncontrolled center turn lanes and unrestricted driveway access are also included.

**Capacity**  
 Capacity issues include locations where existing and/or future travel demand exceeds the physical limitations of the existing system.

**Modal Connectivity**  
 This symbol indicates locations where pedestrian and bicycle facilities are limited or nonexistent. Barriers to pedestrian and bicycle travel are also shown with this symbol. Bus service is affected by poor sidewalk conditions and insufficient roadway capacity.

**Project Limits**



Source: CH2M HILL, 2009a

- 1 ♦ Rollover accidents – related to ramp curvature
- 2 ♦ Left-turn accidents – related to multiple access
- 3 points and ineffective or insufficient traffic control
- 4 ♦ Head-on collisions and sideswipes when vehicles
- 5 are traveling in opposite directions – related to
- 6 side-by-side left-turn lanes and multiple access
- 7 points

8 **1.2.1.2 Pedestrian and Bicycle Safety**

9 High traffic volumes, deficient sidewalks, and limited  
 10 crossing locations create safety concerns for  
 11 pedestrians and bicyclists traveling through the study  
 12 area. The interchange area presents a particular  
 13 challenge. Crossing of US 6 is limited to the east side  
 14 of Wadsworth because no sidewalk or path is present  
 15 on the west side. Even where there is a sidewalk on  
 16 the east side of Wadsworth, pedestrians and bicycles  
 17 must cross four high-volume, free-flow on- and off-  
 18 ramps. In these locations, drivers do not expect to  
 19 encounter pedestrians or bicyclists and do not have  
 20 time to react when they are present. The high volumes  
 21 of traffic, especially during peak periods, do not provide  
 22 adequate gaps in traffic for pedestrians and bicyclists  
 23 to cross the ramps.

24 The lack of access control along Wadsworth  
 25 contributes to pedestrian and bicycle safety concerns.  
 26 Along Wadsworth, pedestrians and bicyclists must  
 27 cross many driveways, and drivers turning into and out  
 28 of these driveways are often focused on entering or  
 29 exiting Wadsworth traffic and are not attentive to  
 30 potential pedestrian conflicts.

31 Many pedestrians make unsafe mid-block crossings  
 32 because there are no signalized pedestrian crossings  
 33 between 5th and 10th Avenues. These mid-block  
 34 crossings are particularly hazardous because  
 35 pedestrians often must cross one direction of traffic  
 36 and wait in between side-by-side turn lanes for an  
 37 adequate gap in traffic from the opposite direction.

38 Along Wadsworth, discontinuous and narrow sidewalks  
 39 result in dangerous situations for pedestrians and  
 40 bicyclists, sometimes even forcing them into the travel

41 lanes. Sidewalk facilities are discussed in more detail  
 42 in Section 1.2.3.1.

43 **1.2.2 CAPACITY AND OPERATIONS**

44 US 6 carries approximately 122,000 vehicles daily as  
 45 measured by traffic counts taken in 2007 (see  
 46 Exhibit 1-2). Existing average daily traffic (ADT) south  
 47 of US 6 on Wadsworth is approximately 65,700  
 48 vehicles, while north of US 6 the ADT is about 50,800  
 49 vehicles. Existing traffic operations in the study area  
 50 were evaluated to determine the level of congestion  
 51 during the morning and evening hours of peak traffic  
 52 use (called peak hours). By 2035, the ADT on US 6 is  
 53 projected to climb to approximately 153,000 vehicles.

EXHIBIT 1-2: EXISTING AND FORECAST DAILY TRAFFIC VOLUMES

| Location                       | 2007 ADT | Projected 2035 ADT |
|--------------------------------|----------|--------------------|
| Wadsworth south of 10th Avenue | 50,800   | 62,600             |
| Wadsworth south of 5th Avenue  | 65,700   | 80,900             |
| US 6 east of Wadsworth         | 123,000  | 153,900            |
| US 6 west of Wadsworth         | 122,300  | 153,000            |

Source: CH2M HILL, 2009a

54 Congestion is measured by level of service (LOS)  
 55 ratings. The highest level (LOS A) describes free-flow  
 56 conditions in which vehicles experience minimal delay.  
 57 The lowest level (LOS F) describes stop-and-go  
 58 conditions in which long delays are experienced by  
 59 most vehicles in the traffic stream.

60 **1.2.2.1 Interchange Area**

61 Most of the interchange ramps currently operate at  
 62 unacceptable levels (LOS E or F) during peak hours.  
 63 Vehicles do not have adequate distance to accelerate  
 64 or decelerate when entering or exiting US 6, which  
 65 causes slowing in the through lanes on US 6. The  
 66 proximity of the Carr/Garrison Street on/off-ramps and  
 67 the on/off-ramps to the Wadsworth interchange does  
 68 not allow adequate acceleration or deceleration at  
 69 either location.

70 The US 6 and Wadsworth interchange was constructed  
 71 in the early 1960s. Although it served the development

1 and traffic conditions when it was constructed, its tight  
2 cloverleaf configuration can no longer effectively  
3 handle current or future traffic demands. In addition to  
4 a structurally deficient bridge deck that needs to be  
5 repaired, the interchange does not operate effectively  
6 because traffic volumes exceed its original design  
7 function.

8 The lengths of auxiliary lanes that allow vehicles to  
9 accelerate and decelerate when entering or exiting the  
10 highway (referred to as acceleration and deceleration  
11 lanes) for all exits and entrances to US 6 and  
12 Wadsworth are too short to allow cars to efficiently  
13 enter or exit high-speed traffic on US 6. Weaving  
14 conflicts (areas where two traffic streams must cross  
15 one another to enter or exit the road) between the loop  
16 ramps are an inherent problem with cloverleaf-type  
17 interchanges. This conflict zone is more pronounced in  
18 the US 6/Wadsworth interchange because of the high  
19 volume of traffic trying to make weaving maneuvers  
20 coupled with the very short distance (the length of the  
21 bridge) drivers have in which to make them.

22 The off-ramps do not provide adequate distance for  
23 cars to decelerate, and alignments limit visibility of  
24 queued cars (backup of stopped vehicles), which lead  
25 to increased probability for rear-end collisions. The  
26 ramp intersections do not provide adequate turning  
27 radii for buses or large trucks, which in certain cases  
28 cause the back wheels to “hop” the curb and encroach  
29 into sidewalk areas.

30 Close spacing between frontage road intersections and  
31 interchange ramps does not provide adequate distance  
32 or gaps for vehicles to merge or cross traffic on  
33 Wadsworth. Negotiating these conditions requires  
34 drivers to slow their speeds through the interchange  
35 area, which further limits the capacity of the  
36 interchange and adversely affects through traffic on  
37 both US 6 and Wadsworth.

### 38 1.2.2.2 Wadsworth

39 A lane imbalance exists on Wadsworth within the study  
40 area where there are four through lanes between 4th  
41 and 14th Avenues, compared to the six travel lanes  
42 provided immediately north and south. Lane imbalance

43 contributes to congestion in through lanes and poses  
44 safety concerns from lane changes.

45 The four-lane cross section on Wadsworth north of  
46 US 6 operates at an unacceptable service level  
47 (LOS E). Cross streets at most intersections also  
48 operate at poor LOS. Due to the heavy through traffic  
49 and poor operations on Wadsworth, vehicles on cross  
50 streets and driveways are forced to wait long periods  
51 and are often forced to pull into small gaps in traffic.

52 North of US 6, the large number of driveways and  
53 unrestricted medians encourage uncontrolled turns  
54 across Wadsworth that both increase potential for  
55 conflicts (and accidents) and disrupt traffic flow. Side-  
56 by-side opposing left-turn lanes introduce multiple  
57 conflict points and create confusion because of the  
58 uncertainty of when and where drivers will enter the  
59 median lane(s). In addition, vehicles stopped in the  
60 turn lanes block the view of traffic in the through lanes,  
61 resulting in drivers making unsafe turns across through  
62 traffic. All of these conditions contribute to turbulence  
63 in the mainline Wadsworth traffic flow and reduce its  
64 capacity.

65 Residents have voiced concern about traffic flow  
66 through neighborhoods and desire lower speeds and  
67 less traffic. Although traffic counts taken on  
68 surrounding neighborhood streets do not indicate a  
69 speeding problem or unduly high volumes, reducing  
70 neighborhood cut-through traffic is an important  
71 community value supported by the project. The  
72 configuration of the one-way frontage roads near the  
73 interchange limits access to commercial properties  
74 along the frontage roads and may contribute to cut-  
75 through and higher-speed traffic on neighborhood  
76 streets.

## 77 1.2.3 MODAL CONNECTIVITY

78 Automobiles, trucks, pedestrians, bicyclists, and buses  
79 travel along Wadsworth, and Wadsworth lacks  
80 adequate facilities to accommodate safe and efficient  
81 travel.

### 82 1.2.3.1 Pedestrian and Bicycle Facilities

83 Local and regional plans identify the need for  
84 pedestrian and bicycle improvements to Wadsworth

1 and its crossing of US 6. (Local plans are discussed in  
 2 Section 3.7, Land Use). These needs will become  
 3 more critical as the volume of pedestrian and bicycle  
 4 travel increases after the opening of the West Corridor  
 5 light rail transit (LRT) station. The need to improve  
 6 pedestrian and bicycle conditions within the study area  
 7 was one of the most frequently identified public  
 8 concerns during the EA process.

9 Within the study area along Wadsworth, approximately  
 10 50 percent of the sidewalk on the east side and  
 11 85 percent of the sidewalk on the west side are  
 12 nonexistent or in substandard condition. Substandard  
 13 conditions include sidewalks that are too narrow, not  
 14 buffered adequately from travel lanes, and contain  
 15 obstacles such as curbs, signs, or utility poles in the  
 16 traveled way. Some of the sidewalk conditions are  
 17 illustrated in Exhibits 1-3 and 1-4.



EXHIBIT 1-3: MISSING SIDEWALKS AND OBSTRUCTIONS NEAR 5TH AVENUE



EXHIBIT 1-4: MISSING SIDEWALK SEGMENT SOUTH OF 12TH AVENUE

18 The existing sidewalks in general are often too narrow  
 19 to accommodate both pedestrian and bicycle use.  
 20 Vehicular lanes are not conducive to bicycle travel  
 21 because of the high traffic volumes and speeds, and  
 22 lack of shoulders or bike paths. In spite of these  
 23 deficiencies, Wadsworth is an important component of  
 24 bicycle mobility in Lakewood because it offers the only  
 25 opportunity for bicycles to cross US 6 in the 2.5-mile  
 26 stretch between Sheridan Boulevard and Garrison  
 27 Street.

28 The only pedestrian and bicycle crossing of US 6 is  
 29 located on the east side of Wadsworth. There is no  
 30 sidewalk on the west side.

31 **1.2.3.2 Transit Operations**

32 Existing transit service on US 6 and Wadsworth in the  
 33 study area includes local, limited, and express bus  
 34 routes operated by the Regional Transportation District  
 35 (RTD). RTD also plans to implement light rail transit  
 36 through residential neighborhoods along 13th Avenue  
 37 as part of the West Corridor project. A large park-n-  
 38 Ride is also planned at Wadsworth and 13th Avenue.  
 39 Construction of the West Corridor began in Spring of  
 40 2007 and is anticipated to be completed in early 2013.  
 41 Once light rail is implemented, bus frequency on  
 42 Wadsworth is expected to increase four-fold, from four  
 43 buses per hour today to 16 buses hourly.

44 Buses, like other vehicles, will experience increased  
 45 delays traveling through the study area as traffic  
 46 volumes increase. Buses also contribute to congestion  
 47 by regularly stopping in the outside through-traffic lane,  
 48 causing a temporary reduction in roadway capacity.

**Public Comments Support Project Needs**

*"Improve traffic flow onto and off of 6th Avenue. Avoid the circles to get onto 6th Avenue. That is pretty scary going west from Wadsworth at 7:15 [a.m]."*

*"Improv[ing] bicycle/pedestrian access under 6th Avenue is of the utmost importance. A sidewalk adjacent to Wadsworth is inadequate – there needs to be a buffer zone between Wadsworth and the bike/pedestrian path."*

*"Left turns [across Wadsworth] are dangerous, and traffic sometimes prevents even right turns."*

*"Double yellow lines do not work to control illegal turns into multiple driveways."*



# CHAPTER 2

## Alternatives Considered

1 This chapter describes the alternatives evaluated in  
2 this EA and explains how the Build Alternative was  
3 developed to address the purpose and need for the  
4 US 6/Wadsworth project. Additional information is  
5 presented in the *Alternatives Development and*  
6 *Screening Technical Memorandum* (CH2M HILL,  
7 2008c) included in Appendix C.

8 Public and agency input has helped shape the Build  
9 Alternative. In addition to scoping, three open houses  
10 were held to solicit input and present details of the  
11 alternatives development, screening, and evaluation  
12 process, including the alternatives evaluation criteria,  
13 initial design concepts, refined design concepts, and  
14 the selection of the Build Alternative. Summary  
15 reports from these meetings (CH2M HILL, 2008a;  
16 CH2M HILL, 2008b) provide additional reference and  
17 are included in Appendix C.

### 18 **2.1 PROCESS FOR DEVELOPING AND** 19 **EVALUATING ALTERNATIVES**

---

20 The Project Leadership Team (PLT), composed of  
21 CDOT, their consultant CH2M HILL, and FHWA,  
22 developed initial design alternatives for the  
23 interchange and Wadsworth after gathering  
24 background data and seeking input from Lakewood,  
25 RTD, other federal and state agencies, and the  
26 general public. The alternatives development and  
27 evaluation process was initiated in September 2007  
28 after considering the input received from the public  
29 and agencies during the scoping period. The process  
30 comprised the following stages: establishing criteria  
31 by which to evaluate the alternatives (evaluation  
32 criteria); developing a range of alternatives for  
33 improvements to the interchange and Wadsworth;  
34 evaluating alternatives in a two-step process of initial  
35 screening and detailed evaluation; and refinement of  
36 the Build Alternative.



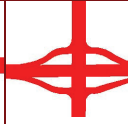

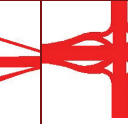
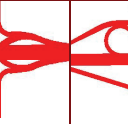
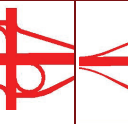
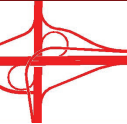

37 Evaluation criteria were established initially based on  
38 review of transportation problems and existing  
39 environmental conditions, as well as input received  
40 from the public and agencies during the scoping  
41 period. Evaluation criteria were established for Level 1  
42 screening and Level 2 evaluation. For both levels of  
43 screening, the alternatives were judged on six broad  
44 categories: safety/design, mobility/traffic operations,  
45 local impacts, environmental impacts, cost feasibility,  
46 and implementation. Separate screening criteria were  
47 developed for the interchange and for Wadsworth  
48 because the transportation goals and problems are  
49 distinctly different in these two areas.

#### 50 **2.1.1 LEVEL 1 SCREENING**

51 The Level 1 screening provided an initial review of  
52 conceptual designs to eliminate options with “fatal  
53 flaws.” Designs identified for Level 1 screening  
54 included concepts that project staff, based on  
55 experience with similar projects, felt could meet  
56 transportation needs, along with concepts suggested  
57 by public or non-transportation agency stakeholders.  
58 Level 1 screening used available data and  
59 engineering judgment and was conducted by  
60 professionals with expertise in the applicable  
61 evaluation areas, such as roadway design, traffic,  
62 environmental resources, and cost estimating.

63 The Level 1 screening process considered eight  
64 interchange replacement concepts and the No Build  
65 Alternative, as presented in Exhibit 2-1. Four of these  
66 concepts were eliminated because they did not meet  
67 the project purpose and need, could not be  
68 implemented at a reasonable cost, or would result in  
69 unacceptable environmental or community impacts.  
70 The reasons that these concepts were eliminated are  
71 summarized in Exhibit 2-1. Although the No Build  
72 Alternative would not meet the project purpose and  
73 need, it was retained for baseline comparison.

EXHIBIT 2-1: US 6/WADSWORTH INTERCHANGE LEVEL 1 SCREENING RESULTS

| Category                    | Level 1 Interchange Screening Criteria   | No Build  | Traditional Diamond   | Tight Diamond  | Tight Diamond with Loop (Build Alternative)   | Single Point Urban Interchange  | Partial Cloverleaf  | Partial Cloverleaf with Directional Ramp   | Full Cloverleaf with Collector/Distributor Roads   | Diverging Diamond   |
|-----------------------------|--|---|---|--|---|---|---|--|--|---|
|                             |  |  |    |  |  |  |  |   |   |    |
| Safety/Design               | Is the alternative feasible from an engineering perspective?                                     | N/A   | YES   | YES  | YES   | YES   | YES   | YES  | YES  | YES   |
|                             | Can this alternative provide for safer bicycle and pedestrian travel conditions?                 | NO  | YES   | YES  | YES   | YES   | YES   | YES  | NO   | YES   |
|                             | Does the alternative improve weaving/merge conditions?   | NO  | YES   | YES  | YES   | YES   | YES   | YES  | YES  | YES   |
| Mobility/Traffic Operations | Can the alternative meet current and future traffic needs?                                       | NO  | YES   | YES  | YES   | YES   | YES   | YES  | YES  | YES   |
|                             | Does the alternative address the interaction of the interchange with Carr/Garrison Street ramps? | NO  | YES   | YES  | YES   | YES   | YES   | YES  | YES  | YES   |
| Local Impacts               | Does the alternative provide residential and business access?                                    | YES   | YES   | YES  | YES   | YES   | YES   | YES  | YES  | YES   |
| Environmental Impacts       | Can environmental impacts be reasonably mitigated?   | N/A   | NO  | YES  | YES   | YES   | YES   | NO   | NO   | NO  |
| Cost Feasibility            | Can the alternative be constructed within 150 percent of estimated costs?                        | N/A   | YES   | YES  | YES   | YES   | YES   | NO   | NO   | YES   |
| Implementation              | Is the alternative compatible with established local plans and visions?                          | NO  | YES   | YES  | YES   | YES   | YES   | YES  | NO   | NO  |
| <b>SUMMARY OF RESULTS</b>   |  | <b>Carried Forward:</b><br>Baseline Comparison                                    | <b>Eliminated:</b><br>Larger ROW impacts in all quadrants of the interchange and additional relocations required compared to tight diamond. | <b>Carried Forward:</b><br>Level 2 Evaluation                                      | <b>Carried Forward:</b><br>Level 2 Evaluation                                       | <b>Carried Forward:</b><br>Level 2 Evaluation                                       | <b>Carried Forward:</b><br>Level 2 Evaluation                                       | <b>Eliminated:</b><br>Flyover ramp requires significant additional ROW; elevated ramp increases noise impacts; and costs are 20 percent higher than other alternatives retained for evaluation | <b>Eliminated:</b><br>Largest footprint interchange requires significantly more ROW and higher cost; does not address bicyclist and pedestrian conflicts | <b>Eliminated:</b><br>Rare interchange type that may not meet driver expectations; slower speeds through interchange area affect Wadsworth LOS thus does not meet purpose and need. |



1 Additional details on the Level 1 screening process  
 2 and results for the interchange can be found in the  
 3 *Alternatives Development and Screening Technical*  
 4 *Memorandum* (CH2M HILL, 2008c) and *Open House*  
 5 *#2 Summary Report* (CH2M HILL, 2008a) included in  
 6 Appendix C.

7 Level 1 screening also considered eleven concepts for  
 8 the configuration of Wadsworth, which ranged from  
 9 traffic management options to varying degrees of  
 10 roadway reconstruction. Level 1 screening identified  
 11 three travel lanes, sidewalks, and a raised median as  
 12 features critical to meeting the project's purpose and  
 13 need, and thus, only one concept was advanced to  
 14 Level 2 evaluation. Details on the concepts eliminated  
 15 in the Level 1 screening are included in the  
 16 *Alternatives Development and Screening Technical*  
 17 *Memorandum* (CH2M HILL, 2008c) and *Open House*  
 18 *#2 Summary Report* (CH2M HILL, 2008a) included in  
 19 Appendix C.

## 20 2.1.2 LEVEL 2 EVALUATION

21 The Level 2 evaluation studied the remaining four  
 22 interchange design concepts. The purpose of the  
 23 Level 2 evaluation was to establish a means for  
 24 estimating and comparing how well design concepts  
 25 performed in meeting transportation needs in a cost-  
 26 effective and least environmentally harmful manner.  
 27 The Level 2 evaluation established quantitative  
 28 performance measures for each of the six broad  
 29 categories from Level 1 screening and provided a  
 30 method for comparing concepts to support the  
 31 selection of build alternative(s) to be evaluated in the  
 32 EA. Performance measures were established to rate  
 33 each alternative as "good," "fair," or "poor" for 20  
 34 criteria related to design and safety features, mobility  
 35 and traffic operations, local impacts, environmental  
 36 impacts, costs, and implementation elements.

37 The four interchange concepts performed similarly on  
 38 many of the criteria (for instance, all eliminated  
 39 weaving conflicts and improved ramp entrances and  
 40 exits). To distinguish the comparison of design  
 41 concepts, the project team determined which criteria  
 42 were measurably different among the concepts, and  
 43 of those, which were the highest priority, based on the  
 44 purpose and need of the project and priorities

45 identified by the public at Open House #2 (see  
 46 CH2M HILL, 2008a). In order of importance, the top  
 47 priority distinguishing criteria were: interchange  
 48 capacity, pedestrian and bicycle crossings, corridor  
 49 travel time, and cost.



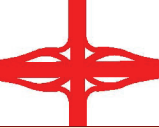

50 During the Level 2 evaluation, the partial cloverleaf  
 51 was removed from consideration because it ranked  
 52 poorly for conflicts with pedestrian and bicycle  
 53 crossings, resulted in the greatest environmental and  
 54 right-of-way impacts, and was the most costly. The  
 55 other three alternatives remained under consideration.

56 The tight diamond with loop was identified as the Build  
 57 Alternative primarily because it would provide  
 58 measurably better interchange capacity than the tight  
 59 diamond and SPUI concepts. The loop ramp would  
 60 allow the highest volume traffic movement (from  
 61 westbound US 6 to southbound Wadsworth) to  
 62 bypass traffic signals and keep traffic more free-  
 63 flowing. Additionally, this concept performed better in  
 64 off-peak conditions. The loop option also had a  
 65 greater level of support from Lakewood because of  
 66 the measurably better interchange capacity, and it  
 67 performed relatively well in the other priority criteria.

68 The tight diamond was the worst performing of the  
 69 three remaining alternatives with regard to capacity,  
 70 both at the interchange and on Wadsworth. Although  
 71 the least expensive option, it was not identified as the  
 72 Build Alternative because of its relatively poor  
 73 capacity, which is a critical project purpose. The SPUI  
 74 performed equally poorly for interchange capacity.  
 75 Although it performed better for Wadsworth through  
 76 traffic during peak hours, the SPUI was not selected  
 77 as the Build Alternative primarily because it did not  
 78 meet the capacity needs at the interchange as well as  
 79 the tight diamond with loop.

80 The results of the Level 2 screening are summarized  
 81 in Exhibit 2-2. The distinguishing criteria are shaded  
 82 in this exhibit. Full details of the Level 2 evaluation  
 83 and selection of the Build Alternative are contained in  
 84 the *Alternatives Development and Screening*  
 85 *Technical Memorandum* (CH2M HILL, 2008c)  
 86 included in Appendix C.

EXHIBIT 2-2: LEVEL 2 INTERCHANGE EVALUATION RESULTS

| Category                           | Level 2 Interchange Evaluation Criteria <sup>1</sup>   | No Build                             | Tight Diamond   | Tight Diamond with Loop (Build Alternative)  | Single Point Urban Interchange  | Partial Cloverleaf  |
|------------------------------------|--|--------------------------------------|---|--|---|---|
|                                    |  | Full Cloverleaf                      |  |  |  |  |
| Safety/Design                      | Pedestrian and bicycle safety (controlled crossings)   | Poor<br>8 uncontrolled               | Poor<br>2 uncontrolled, 6 controlled  | Poor<br>3 uncontrolled, 5 controlled   | Poor<br>3 uncontrolled, 5 controlled  | Poor<br>4 uncontrolled, 4 controlled  |
|                                    | Ramp entrance design (parallel/tapered entrances)  | Poor                                 | Good  | Good   | Good  | Good  |
|                                    | Design exceptions (# required)   | N/A                                  | Good  | Poor   | Good  | Poor  |
| Mobility/Traffic Operations        | Weave sections (# of weave sections)   | Poor                                 | Good  | Good   | Good  | Good  |
|                                    | Ramp operations (LOS on US 6 ramps)  | Fair                                 | Good  | Good   | Good  | Good  |
|                                    | Wadsworth corridor travel time (# signalized intersections)  | N/A                                  | Poor<br>2 new signals   | Fair / Poor<br>1.5 new signals   | Fair<br>1 new signal  | Poor<br>2 new signals   |
|                                    | Interchange capacity (peak hour volume-to-capacity ratio <sup>2</sup> )  | Good<br>NB/EB=0.80<br>WB/SB=0.85     | Fair<br>NB/EB=0.80<br>WB/SB=1.0   | Good<br>NB/EB=0.80<br>WB/SB=0.85   | Fair<br>NB/EB=0.80<br>WB/SB=1.0   | Good<br>NB/EB=0.80<br>WB/SB=0.85  |
|                                    | Spacing between frontage roads and ramps (feet)  | Poor<br>North=175 ft<br>South=225 ft | Fair<br>North=375 ft<br>South=415 ft  | Fair<br>North=125 ft<br>South=415 ft   | Fair<br>North=425 ft<br>South=425 ft  | Poor<br>North=125 ft<br>South=175 ft  |
| Local Impacts                      | Local access to/from US 6 (travel distance)  | Good                                 | Poor  | Poor   | Poor  | Poor  |
|                                    | Effects to local businesses (access, parking, visibility)  | N/A                                  | Poor  | Poor   | Poor  | Poor  |
| Environmental Impacts <sup>3</sup> | # relocations (residences and businesses)  | N/A                                  | Poor<br>9 businesses;<br>17 residences  | Poor<br>20 businesses;<br>13 residences  | Poor<br>9 businesses;<br>17 residences  | Poor<br>21 businesses;<br>31 residences   |
|                                    | # properties affected by ROW acquisition (# required)  | N/A                                  | Poor<br>76 properties   | Poor<br>78 properties  | Poor<br>76 properties   | Poor<br>78 properties   |
|                                    | # residences within 66 dBA noise contour (# of residences)   | Fair<br>137 residences               | Fair<br>137 residences  | Poor<br>138 residences   | Good<br>133 residences  | Poor<br>141 residences  |
|                                    | Wetlands affected (type of permit required)  | N/A                                  | Fair<br>(<0.25 acre)  | Fair<br>(<0.25 acre)   | Fair<br>(<0.25 acre)  | Fair<br>(<0.25 acre)  |
|                                    | Section 4(f) uses (# and type)   | N/A                                  | Poor<br>4 uses  | Poor<br>4 uses   | Poor<br>4 uses  | Poor<br>4 uses  |
| Cost Feasibility                   | Cost (\$ 2010) <sup>3</sup> (interchange only)   | N/A                                  | Poor<br>\$61.5M   | Poor<br>\$74.4M  | Poor<br>\$76.4M   | Poor<br>\$80.7M   |
|                                    | Right-of-way costs (percentage of total costs)   | N/A                                  | Good<br>20%   | Fair<br>23%  | Good<br>15%   | Fair<br>26%   |
| Implementation                     | Emergency response (emergency response goals)  | Fair                                 | Good  | Good   | Good  | Good  |
|                                    | Construction staging (compliance with CDOT lane closure policy)  | N/A                                  | Fair<br>some variance   | Fair<br>some variance  | Poor<br>would not comply  | Fair<br>some variance   |
|                                    | Expandability (reconstruction required for future expansion)   | Poor                                 | Fair<br>partial intersection reconstruction                                       | Poor<br>loop ramp reconstruction   | Fair<br>partial intersection reconstruction   | Poor<br>reconstruction of both loop ramps   |
| <b>SUMMARY OF RESULTS</b>          |  |                                      |   |  |   |   |
| No Build                           | Does not meet purpose and need. Carried forward for baseline comparison.   |                                      |   |  |   |   |
| Tight Diamond                      | Worst performance for traffic at the interchange and along Wadsworth; interchange would operate at capacity in design year; least expensive option; best pedestrian and bicycle crossings through the interchange.   |                                      |   |  |   |   |
| Tight Diamond with Loop            | Best interchange capacity after partial cloverleaf (measurably better than tight diamond or SPU); relatively good performance for Wadsworth corridor travel time and project cost; some bicycle/pedestrian conflicts but could be mitigated in design; relatively easy construction staging. |                                      |   |  |   |   |
| SPUI                               | Best performance for through traffic on Wadsworth; lower capacity for interchange; bicycle and pedestrian crossings at signals help remove conflicts but large intersection difficult for pedestrians to maneuver; high cost; most complicated to construct due to large bridge span.        |                                      |   |  |   |   |
| Partial Cloverleaf                 | Good performance for interchange capacity. Poor performance for bicycle and pedestrian conflicts through the interchange; would require most noise mitigation; most expensive option; highest right-of-way costs and impacts.  |                                      |   |  |   |   |

2 Notes: <sup>1</sup> Shaded cells represent criteria that helped differentiate the concepts. <sup>2</sup> Volume to capacity ratio or V/C ratio compares flow rate to capacity (1.0 indicates a road is at capacity). See definition in Appendix A. <sup>3</sup> Indicates preliminary estimates that were refined during final analysis of the Build Alternative.

1 Elements of the Wadsworth alternative, such as the  
2 widths of travel lanes and sidewalks, were evaluated  
3 during Level 2 evaluation to identify mitigation  
4 opportunities and finalize the basic cross section of  
5 the Wadsworth Build Alternative.

6 CDOT held public open houses in April and May  
7 2008, and attended several neighborhood and  
8 business group meetings to present and obtain input  
9 on the results of the Level 2 evaluation and selection  
10 of the Build Alternative. Comments received at these  
11 meetings indicated concurrence with the results, and  
12 public support for the Build Alternative. Public input  
13 and environmental mitigation measures shaped  
14 additional refinements to the Build Alternative  
15 discussed in Section 2.2.3.

## 16 **2.2 DESCRIPTION OF ALTERNATIVES**

17 Terminology used to describe the alternatives is  
18 defined in the Glossary in Appendix A.

### 19 **2.2.1 NO BUILD ALTERNATIVE**

20 The No Build Alternative does not meet the purpose  
21 and need, but is carried forward as a baseline against  
22 which the Build Alternative is compared. Like the Build  
23 Alternative, the No Build Alternative is evaluated  
24 under 2035 traffic conditions.

25 The No Build Alternative would not meet the project  
26 needs described in Chapter 1. CDOT would continue  
27 to maintain the existing transportation facilities, but no  
28 capital improvements or expansion of facilities would  
29 occur for the interchange, US 6, or Wadsworth.

### 30 **2.2.2 BUILD ALTERNATIVE**

31 The Build Alternative would replace the existing  
32 US 6/Wadsworth interchange, including the bridge  
33 and all entrance and exit ramps, and widen  
34 Wadsworth between 4th and 14th Avenues. The  
35 proposed interchange design, referred to as the tight  
36 diamond with loop, is shown in Exhibit 2-3.

37 The proposed design would address the project  
38 purpose and needs described in Chapter 1. It would  
39 be a diamond interchange with a loop ramp in the  
40 northwest quadrant of the interchange. The loop ramp  
41 was chosen for the northwest quadrant of the  
42 interchange to accommodate peak evening traffic  
43 moving from westbound US 6 to southbound  
44 Wadsworth. The loop would be constructed to  
45 improve speed transitions from US 6 to Wadsworth. A  
46 longer deceleration lane would be provided to allow  
47 vehicles to maintain a higher speed while exiting  
48 US 6, reducing the amount of deceleration required in  
49 the through lanes of US 6.

50 The auxiliary lane from the loop onto Wadsworth  
51 would extend through to 5th Avenue to allow a longer  
52 distance to merge with Wadsworth traffic. The  
53 remaining ramps would be constructed in a diamond  
54 configuration. All of the ramp tapers in the interchange  
55 area would be lengthened to provide adequate  
56 acceleration and deceleration distances for vehicles  
57 entering and exiting US 6.

58 US 6 would remain a six-lane freeway corridor. The  
59 existing on/off ramps at Carr and Garrison Streets  
60 would remain, but the new interchange configuration  
61 would add auxiliary lanes between those ramps and  
62 the west Wadsworth on/off ramps to provide safer  
63 weaving distances between the two sets of ramps.  
64 The US 6 bridge over Wadsworth would be replaced,  
65 addressing the structural deficiency of the bridge  
66 deck.

EXHIBIT 2-3: PROPOSED INTERCHANGE DESIGN

**Northwest Quadrant**

**Interchange**

- 1 Reconstructed loop off-ramp from westbound US 6 to southbound Wadsworth.
- 2 A grade-separated or at-grade pedestrian crossing at on-ramp and loop ramp will be determined at final design.
- 3 New longer on-ramp from northbound and southbound Wadsworth to westbound US 6 provides adequate acceleration and merge distances for vehicles entering US 6.
- 4 Continuous lane on US 6 between on-ramp and Carr St. off-ramp provides safer merging conditions.

**Frontage Road**

- 5 Frontage road access is shifted north and changed to two-way traffic between the 6th Ave. Business Center and Wadsworth.
- 6 Channel improvements to Lakewood Gulch to reduce floodplain.

**Northeast Quadrant**

**Interchange**

- 10 New longer off-ramp from westbound US 6 to northbound Wadsworth provides adequate deceleration and vehicle queue distances for vehicles accessing Wadsworth. Free flow movement onto Wadsworth.

**Frontage Road**

- 11 Frontage road is reconfigured to provide access directly to Wadsworth. Provides two-way operation that reduces neighborhood cut-through traffic.
- 12 New noise walls next to the frontage road.



**Southwest Quadrant**

**Interchange**

- 7 Continuous lane on US 6 between Carr St. on-ramp and Wadsworth off-ramp provides safer merging conditions.
- 8 New longer off-ramp from eastbound US 6 to northbound and southbound Wadsworth feeds into a multi-lane intersection that accommodates expected vehicle queues. Exiting vehicles wanting to travel east at the 5th Ave. intersection utilize the signalized intersection to make a hard right and vehicles destined farther south can use the adjacent right-turn yield lane to merge onto southbound Wadsworth.

**Frontage Road**

- 9 Frontage road remains one-way and continues to connect to 5th Ave. at Yukon St.

**Southeast Quadrant**

**Interchange**

- 13 New longer on-ramp from northbound and southbound Wadsworth to eastbound US 6 provides adequate acceleration and merge distance for vehicles entering US 6.

**Frontage Road**

- 14 Frontage road remains two-way and connects to 5th Ave. on Vance St. instead of Webster St.

**Project Wide**

- 15 New noise walls between the frontage roads and US 6, west of Wadsworth.
- 16 Detached multi-use sidewalk along both sides of Wadsworth.

1 The Wadsworth cross section, shown in Exhibit 2-4,  
 2 would feature an additional travel lane in each  
 3 direction, a raised median, and a multi-use sidewalk.  
 4 The additional travel lanes would reduce congestion  
 5 for vehicles traveling through the study area. The  
 6 median would direct left turns and U-turns to  
 7 intersections with cross streets and prevent mid-block  
 8 turns. Exhibit 2-5 shows where left turns and U-turns  
 9 would be allowed. By limiting left turns from cross  
 10 streets, there would be fewer locations along  
 11 Wadsworth where left-turning vehicles would conflict  
 12 with through-traffic or pedestrians/bicyclists. In  
 13 addition, an Access Management Plan would be  
 14 developed and implemented to consolidate driveways  
 15 and limit the number of locations where cars enter  
 16 Wadsworth traffic.

17 An 8-foot multi-use sidewalk, which would be  
 18 detached or offset from the roadway in most locations,  
 19 would be provided on both sides of Wadsworth,  
 20 including through the interchange area. Separating  
 21 pedestrians and bicyclists from vehicular traffic would  
 22 provide a higher level of safety. The sidewalk would  
 23 also improve access to and convenience of bus stops.

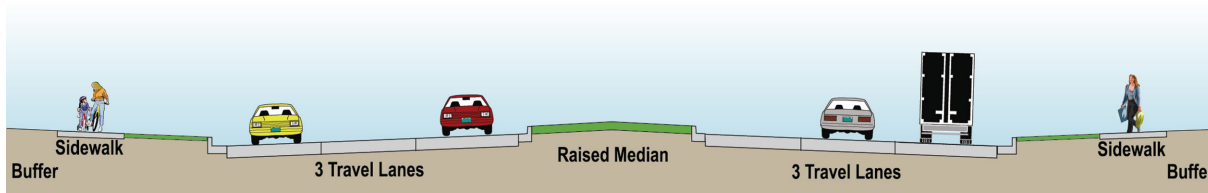
24 McIntyre, Lakewood, and Dry Gulches would be  
 25 widened and realigned to remove US 6 and  
 26 Wadsworth from the floodplains, improve drainage

27 flow, and reduce flooding in locations where the  
 28 roadways cross the drainages. Riparian values along  
 29 the banks would be enhanced.

30 The Build Alternative would also include water quality  
 31 ponds to treat stormwater runoff and comply with  
 32 federal and state water quality permitting  
 33 requirements. As shown in Exhibit 3-21, seven ponds  
 34 would be located in the study area. Locations, sizes,  
 35 and configurations of planned ponds were designed to  
 36 minimize property acquisition and take advantage of  
 37 property remnants that would have no other  
 38 economical function. The ponds would be adequately  
 39 sized to filter roadway runoff from existing and  
 40 expanded paved areas. In some cases, the water  
 41 quality ponds would also treat stormwater from non-  
 42 roadway development that enters the roadways. The  
 43 ponds would typically be dry except during and after  
 44 storm events.

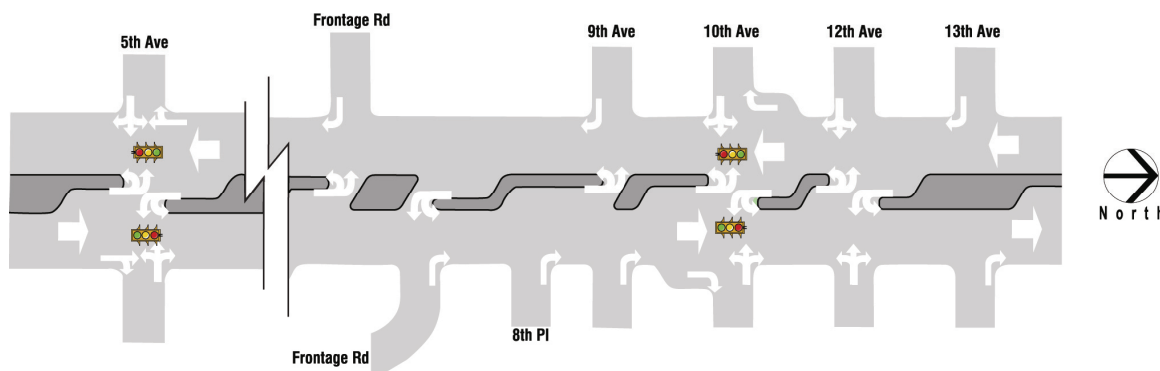
45 Finally, noise walls would be installed between US 6  
 46 and its frontage roads from the interchange west to  
 47 near Garrison Street. Existing walls east of  
 48 Wadsworth, and within the limits of the proposed  
 49 improvements, would be reconstructed and extended  
 50 farther west toward Wadsworth to improve noise  
 51 mitigation for residents in the interchange area.

EXHIBIT 2-4: WADSWORTH BUILD ALTERNATIVE CROSS SECTION



52

EXHIBIT 2-5: PROPOSED TURNING MOVEMENTS ON WADSWORTH



## 2.2.3 REFINEMENTS TO THE BUILD ALTERNATIVE

The Build Alternative was refined after the Level 2 evaluation to minimize property acquisitions and other environmental impacts. Changes to the Build Alternative were discussed with, and often initiated by, the public. Some of the refinements include:

◆ The sidewalk buffer area next to Wadsworth was removed, attaching the sidewalk to the roadway in some locations, if doing so allowed a property to remain (avoided a total acquisition).

◆ The width of the inside travel lanes (two in each direction) was reduced to 11 feet, rather than 12 feet, to minimize right-of-way (ROW) requirements.

◆ The 25-mile-per-hour (mph) design speed of the northwest loop ramp was maintained to reduce the radius of the ramp and minimize impacts to surrounding businesses.

◆ Nonconforming land uses, such as encroachments into setback requirements, that could otherwise turn partial property acquisitions into total acquisitions were identified; allowance of these nonconforming uses was discussed with Lakewood.

◆ The frontage road alignment and configuration on the north side of US 6 was changed to two-way near residences and businesses to improve business access and reduce neighborhood cut-through traffic.

◆ Water quality features were sited to be compatible with surrounding land use and provide productive use of “remnant” ROW parcels.

Other mitigation measures and design refinements incorporated to avoid or minimize impacts to community and environmental resources are discussed in Chapter 3 of this EA.

## 2.2.4 RTD WEST CORRIDOR

Unassociated with the US 6/Wadsworth project, RTD and/or private developers may construct some sidewalk and intersection improvements on the north end of the project area associated with the West Corridor light rail project and recent transit mixed-use zoning. Changes in traffic patterns associated with these improvements have been accounted for in both the No Build and Build Alternatives. The cumulative effects of these potential projects with the Build Alternative are factored into the cumulative impact analysis (Section 3.13).

## 2.2.5 COST

Costs associated with the No Build Alternative would be limited to general maintenance because no capital improvements would be initiated. Maintenance of the US 6 bridge over Wadsworth would become more frequent and, therefore, costly as the condition of the bridge deck continues to worsen.

The Build Alternative (including both the interchange and Wadsworth improvements) is estimated to cost approximately \$100 million to implement (in 2010 dollars). Costs, which include materials, labor, and ROW acquisition, would likely increase if construction is delayed.

## 2.2.6 FUNDING

The US 6/Wadsworth project is included in the Denver Regional Council of Governments (DRCOG) *Fiscally Constrained 2035 Regional Transportation Plan* (DRCOG, 2007). Like many projects in the current plan, funding for this project has been subject to declining tax revenue and volatile construction costs.

The funds in the current budget forecast are expected to fall short of the full funding required to construct the Build Alternative. US 6/Wadsworth improvements remain a high priority for the region and the state, and CDOT and FHWA continue to work to secure full funding. The City of Lakewood also is actively seeking additional local funding opportunities.



# CHAPTER 3

## Affected Environment and Environmental Consequences

1 An important goal of the US 6/Wadsworth EA is to  
2 create an EA document that follows the intent of the  
3 National Environmental Policy Act (NEPA) by  
4 concentrating on the issues that are truly significant to  
5 the proposed action, rather than “amassing needless  
6 detail” [Title 40 of the Code of Federal Regulations  
7 (CFR) Part 1500.1(b)]. To help define the appropriate  
8 scope for environmental analysis, the project team  
9 prepared an overview of existing environmental  
10 conditions in the study area (CH2M HILL, 2007a). For  
11 each environmental resource typically included in a  
12 CDOT NEPA study, the team collected and evaluated  
13 environmental data, and provided a discussion of the  
14 presence/absence of each resource, its distribution,  
15 the relative importance of the resource in the study  
16 area, and, if applicable, recommendations for future  
17 activities to characterize the resource. The  
18 assessment of environmental issues consisted of a  
19 team of resource specialists conducting field  
20 reconnaissance site visits, discussion with  
21 knowledgeable individuals, and/or review of  
22 secondary data (for instance, U.S. Census Bureau  
23 data). These data were presented at agency and  
24 public scoping meetings to validate that the level of  
25 analysis was appropriate and to determine if any  
26 issues important to the public or resource agencies  
27 had been omitted or not given adequate  
28 consideration.

29 The analysis presented in this chapter is organized to  
30 focus on important issues identified through the  
31 scoping process. Transportation and pedestrian and  
32 bicycle facilities are analyzed first, as follow-on to the  
33 discussion of the project purpose and alternatives,  
34 with resources then discussed in descending order of  
35 expected degree of environmental effect. In some  
36 cases, complementary resources, such as floodplains,

37 water resources, and wetlands, are grouped together  
38 for readability. Each section evaluates the potential for  
39 both direct and indirect effects to environmental  
40 resources. Direct effects are those effects that are  
41 immediately experienced by implementing an  
42 alternative, while indirect effects are caused by an  
43 action and occur later in time or are farther removed in  
44 distance, but are still reasonably foreseeable.

### 3.1 TRANSPORTATION RESOURCES

---

45 US 6 is a primary east-west six-lane freeway through  
46 the Denver metropolitan area. Its interchange with  
47 Wadsworth is a full cloverleaf configuration that  
48 serves Lakewood. As described in Chapter 1, the  
49 interchange does not operate efficiently to handle  
50 traffic volumes, and the design presents inherent  
51 safety concerns with inadequate acceleration and  
52 deceleration lanes, weaving conflicts, and small radius  
53 curves.  
54

55 Wadsworth is a major regional arterial that connects  
56 C-470 with the City and County of Broomfield. Within  
57 the study area, Wadsworth has four through lanes  
58 between 4th and 14th Avenues and six travel lanes  
59 immediately north of 14th Avenue and south of 4th  
60 Avenue. As explained in Chapter 1, the four-lane  
61 section is congested during peak travel hours;  
62 congestion is primarily related to high traffic volumes  
63 but lane imbalance (narrowing from six to four lanes in  
64 the study area) and lack of access control contribute  
65 to traffic turbulence and reduced capacity. North of  
66 US 6, access is uncontrolled with numerous  
67 intersection crossings and driveways. The median is  
68 striped to provide two side-by-side continuous left-turn  
69 lanes, one in each direction, serving major  
70 intersections and driveway accesses. Because turning  
71 movements are unlimited and unpredictable, through

1 traffic frequently stops or has to move around turning  
2 vehicles, creating an inconsistent travel pattern. The  
3 inconsistency of traffic operations contributes to  
4 congestion and further reduces the gaps in traffic for  
5 cars to enter Wadsworth.

6 Traffic conditions in the year 2035 were forecast using  
7 the DRCOG regional travel demand model. This  
8 regional model is a robust database of future land use  
9 characteristics, expected future roadway network  
10 improvements, planned transit expansion, and travel  
11 behavior. DRCOG uses data from local municipalities  
12 and agencies to help create the model. The model  
13 considers anticipated land use changes and takes into  
14 account travel patterns likely to result from planned  
15 projects in the study area, such as opening of the  
16 West Corridor LRT line, associated bus service  
17 expansion, and Lakewood's new higher-density  
18 zoning around the 13th Avenue LRT station.

19 A detailed inventory of transportation conditions and  
20 local and regional traffic analyses are documented in  
21 the *Traffic Study Report* (CH2M HILL, 2009a) included  
22 in Appendix C..

### 23 **3.1.1 ENVIRONMENTAL CONSEQUENCES OF** 24 **THE NO BUILD ALTERNATIVE**

25 Impacts of the No Build Alternative on traffic capacity  
26 and operations, safety, and transit operations are  
27 discussed below.

#### 28 **3.1.1.1 Traffic Capacity and Operations**

29 The existing configuration of the interchange and  
30 Wadsworth cannot accommodate existing traffic  
31 volumes. Unacceptable traffic operations would  
32 continue to deteriorate in the future as traffic volumes  
33 in the study area are forecast to increase 25 percent  
34 over existing conditions by 2035. This increase  
35 equates to approximately 1 percent annual growth,  
36 which is typical for an urban area. As a result of  
37 increased traffic volumes, unacceptable levels of  
38 service (LOS) would continue and further deteriorate,  
39 with most locations in the study area operating at  
40 LOS F in one or both of the peak travel hours, as  
41 shown in red in Exhibit 3-1.

#### 42 **Interchange Area**

43 The significant travel demand on US 6 would cause  
44 the highway to operate at unacceptable LOS in the  
45 area surrounding the interchange during peak hours.  
46 Due to the congestion on US 6 and operational  
47 inefficiencies of the cloverleaf interchange, the  
48 Wadsworth interchange ramps would also operate at  
49 unacceptable LOS.

#### 50 **Wadsworth**

51 Existing poor traffic conditions along Wadsworth and  
52 at intersections would degrade further as traffic  
53 volumes increase by 2035. As shown in Exhibit 3-1,  
54 nearly all portions of Wadsworth and its intersections  
55 would operate at unacceptable LOS during peak  
56 hours, except for the intersection at 13th Avenue that  
57 will be modified by RTD as part of the West Corridor  
58 LRT project to allow only right-in, right-out turning  
59 movements. Fourth Avenue was improved recently by  
60 Lakewood and also would operate at acceptable LOS.

#### 61 **3.1.1.2 Safety**

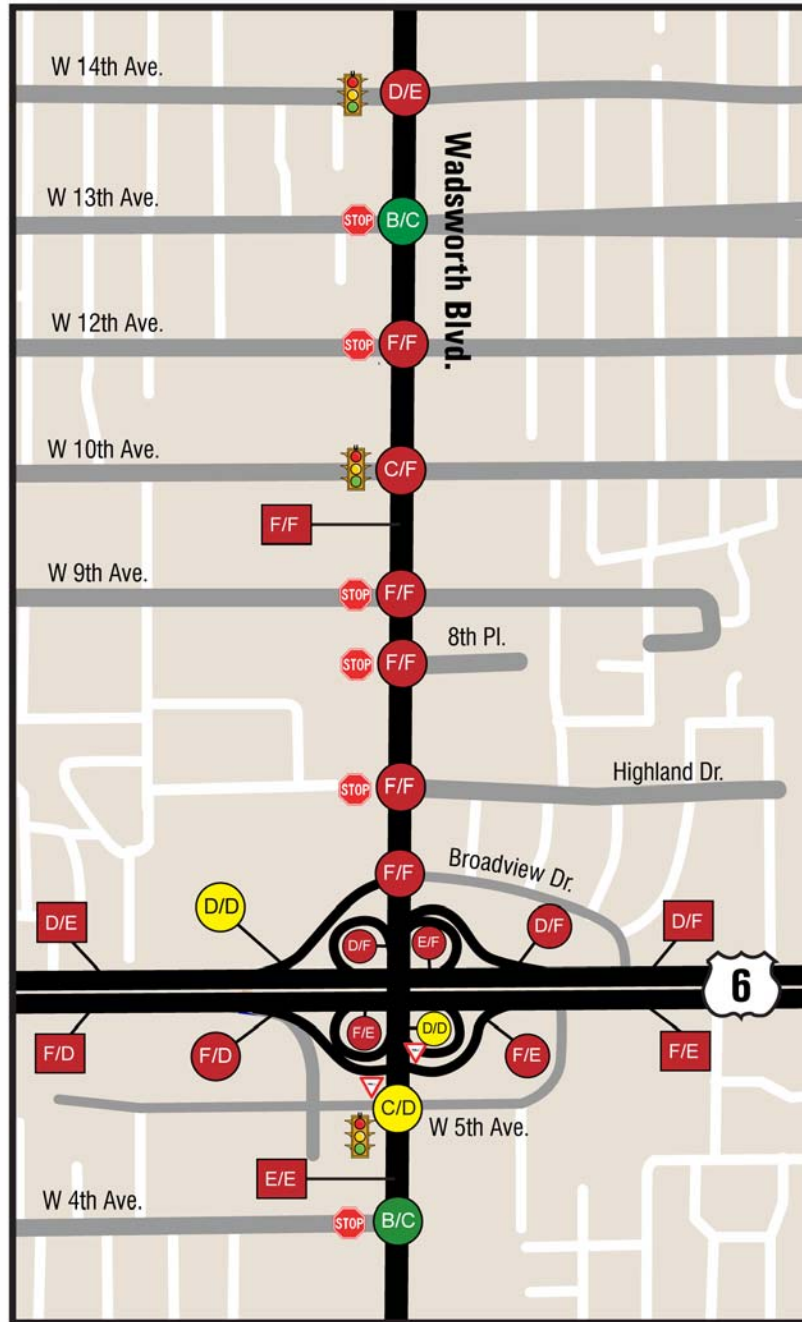
62 Under the No Build Alternative, accidents related to  
63 congestion and inefficient operations would continue  
64 to occur. The interchange would likely continue  
65 appearing on Lakewood's critical location list for both  
66 accident frequency and severity. As Wadsworth  
67 becomes more congested, drivers may take greater  
68 risks entering gaps or making turns across travel  
69 lanes, particularly at non-signalized intersections and  
70 driveways.

#### 71 **3.1.1.3 Transit Operations**

72 As noted in Chapter 1, bus service along Wadsworth  
73 is projected to increase four fold by 2035. Continued  
74 congestion on Wadsworth would affect the timeliness  
75 of bus service and could affect timely transfers  
76 between buses and LRT. Increased local and regional  
77 bus service to and from the 13th Avenue LRT station  
78 would contribute to congestion on Wadsworth.  
79 Pedestrian and bicycle facilities would not be  
80 improved, and pedestrian connections to bus service  
81 on Wadsworth would remain difficult.



EXHIBIT 3-1: YEAR 2035 NO BUILD ALTERNATIVE TRAFFIC CONDITIONS



LEGEND

- Signal
- Stop
- Yield

= Through Traffic Level of Service During Peak Hours (AM/PM)

= Intersection, Ramp, or Weave Level of Service During Peak Hours (AM/PM)\*

\*Note: Intersection LOS applies to traffic on cross streets, not through traffic on Wadsworth

= Good    = Fair    = Poor



Source: CH2M HILL, 2009a.

## 3.1.2 ENVIRONMENTAL CONSEQUENCES OF THE BUILD ALTERNATIVE

Impacts of the Build Alternative on traffic capacity and operations, safety, and transit operations are discussed below. Construction impacts are also discussed.

### 3.1.2.1 Traffic Capacity and Operations

In 2035, traffic volumes in the study area are forecast to increase 25 percent over existing conditions, and the Build Alternative would increase volumes an additional 10 percent beyond that as a result of latent demand. Latent demand represents travel that is desired but unrealized because of constraints. Cars wishing to travel on Wadsworth but currently traveling on adjacent corridors, such as Kipling and Sheridan, would shift back to traveling along Wadsworth under the Build Alternative because of its increased capacity and improved traveling conditions. The Build Alternative would not induce additional travel but instead should help operations on those other parallel facilities.

Under the Build Alternative, traffic operations would be improved over No Build conditions for nearly all elements of the study area. Acceptable LOS during peak hours are shown in green and yellow in Exhibit 3-2.

#### Interchange Area

Reconstructing the interchange to a tight diamond with loop would eliminate the low speeds and tight curves of the existing cloverleaf design, and remove all of the weave sections. Ramp acceleration and deceleration lengths would be increased to meet current design standards, reducing the potential for slowdowns in through lanes on US 6. The on- and off-ramps between Wadsworth and Garrison Street would be connected to form continuous auxiliary lanes between the two interchanges, improving traffic operations in these areas. The interchange ramps would continue to operate poorly because of congestion on US 6. If US 6 operated at an acceptable LOS, the ramps would have adequate capacity to also operate at an acceptable LOS. CDOT has no immediate plans to add capacity to US 6.

#### Wadsworth

The Build Alternative would increase capacity on Wadsworth by providing a consistent six-lane cross section that would match the cross section south of the interchange. Access control measures would allow left-turn movements only at intersections with cross streets and would consolidate driveway accesses. Together, the added capacity and access control would improve traffic operations over No Build conditions for Wadsworth and its intersections within the study area. One notable exception is the intersection of Wadsworth and 12th Avenue.

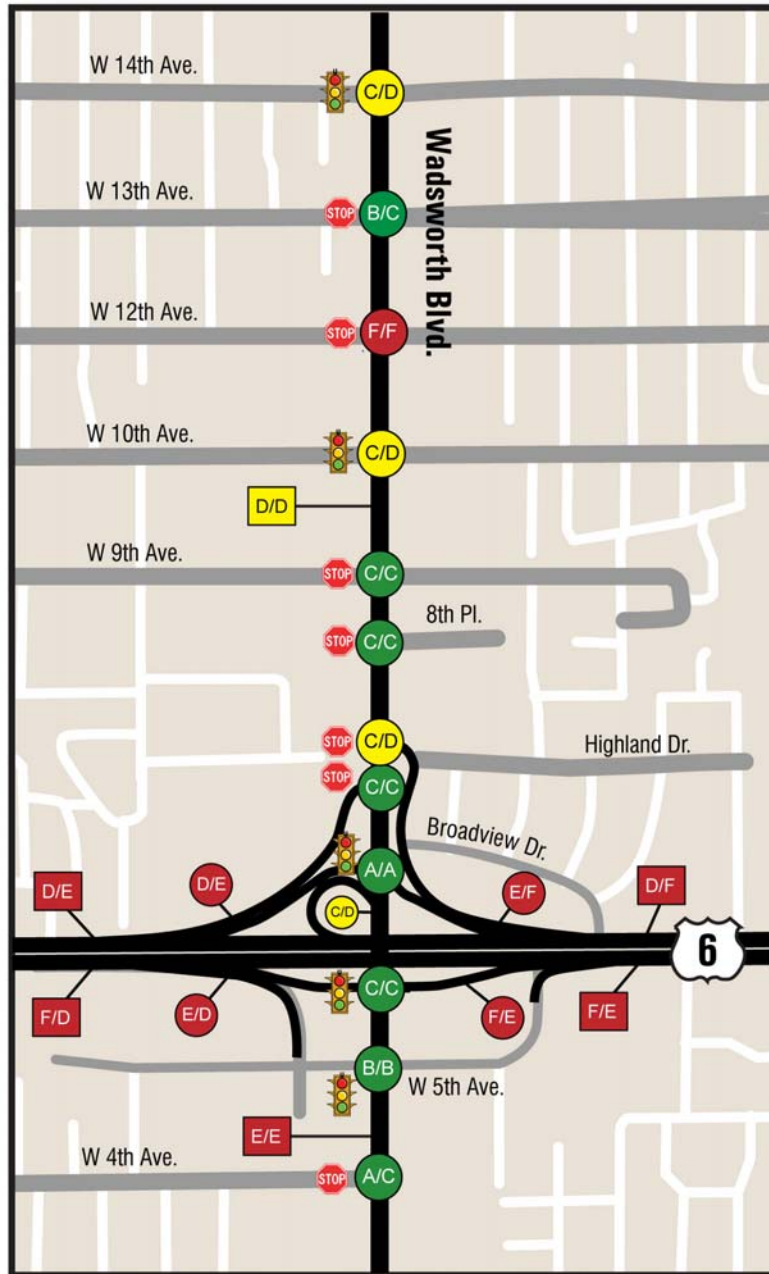
The 12th Avenue intersection would remain unsignalized and would continue to allow turns in all directions, which results in LOS F performance today and in the future. Because of the uncertainty of future development around the 13th Avenue LRT station and potential redevelopment plans for the Jefferson County Open School at 10th Avenue and Wadsworth, future travel demands at this intersection are difficult to predict. If traffic volumes warrant it, the intersection may be improved in conjunction with future redevelopment.

Neighborhood traffic patterns may change northwest and northeast of the interchange. The frontage road northwest of the interchange would become a two-way road between the 6th Avenue Business Center and Wadsworth, allowing business customers to return to Wadsworth without traveling through local residential streets to do so. The frontage road northeast of the interchange would allow access to and from Wadsworth in both the eastbound and westbound directions, eliminating the need for traffic to cut through the Green Acres neighborhood to access the eastbound frontage road.

### 3.1.2.2 Safety

The Build Alternative would reduce congestion and improve inefficient roadway operations that cause many of the accidents in the study area.

EXHIBIT 3-2: YEAR 2035 BUILD ALTERNATIVE TRAFFIC CONDITIONS



LEGEND

- Signal
- Stop
- Yield

- = Through Traffic Level of Service During Peak Hours (AM/PM)
- = Intersection, Ramp, or Weave Level of Service During Peak Hours (AM/PM)\*

\*Note: Intersection LOS applies to traffic on non-signalized cross streets, not through traffic on Wadsworth

- = Good
- = Fair
- = Poor



1 Adequate acceleration and deceleration lengths for  
2 vehicles entering and exiting the interchange would  
3 decrease the potential for rear-end accidents.  
4 Eliminating the weaving sections in the interchange  
5 would address sideswipe accidents, and improving  
6 the curvature of ramps would reduce the number of  
7 crashes into fixed objects and rollovers.

8 The additional capacity on Wadsworth would reduce  
9 congestion and decrease the potential for rear-end  
10 accidents. The existing side-by-side left-turn lanes  
11 that can lead to head on collisions, sideswipes, and  
12 left-turn accidents would be replaced with a raised  
13 median. The raised median would reduce the potential  
14 for these types of accidents by separating southbound  
15 and northbound traffic, and eliminating mid-block left  
16 turns. The elimination of some turning movements  
17 from cross streets would also reduce the potential for  
18 left-turn and rear-end accidents.

### 19 **3.1.2.3 Transit Operations**

20 The Build Alternative would facilitate multimodal travel  
21 and connections in the study area. Continuous 8-foot  
22 sidewalks that are set back approximately 10 feet  
23 from the road would enhance both safety and mobility  
24 for pedestrians and bicycles, as discussed in  
25 Section 3.2, Pedestrian and Bicycle Facilities. Access  
26 to and the condition of bus stops would also be  
27 improved as a result of the new sidewalks, improving  
28 connections to bus service on Wadsworth.

29 Increased capacity on Wadsworth would provide  
30 better capacity for bus operations on Wadsworth by  
31 accommodating the increase in bus frequency,  
32 improving the timeliness of bus service, and  
33 facilitating timely transfers between buses and LRT.  
34 The bridge on US 6 over Wadsworth would be long  
35 enough to accommodate future transit options on  
36 Wadsworth without the need for reconstruction.

### 37 **3.1.2.4 Construction**

38 Construction phasing has not yet been finalized, and it  
39 is not certain whether the existing number of through  
40 travel lanes can be maintained at all times. If lanes  
41 are closed on Wadsworth or US 6 during construction,  
42 congestion in and surrounding the construction area

43 would increase during times of lane closures.  
44 Increased congestion on Wadsworth or US 6 could  
45 lead to temporarily increased traffic volumes on  
46 parallel facilities, such as Colfax or Alameda and  
47 Kipling or Sheridan, as drivers find other travel routes  
48 to avoid construction congestion.

49 If road closures are required on any facilities, detours  
50 would be implemented that would temporarily  
51 increase traffic volumes on adjacent neighborhood  
52 streets and parallel facilities.

53 Lane closures, detours, and increased congestion  
54 during construction would all cause delays for the  
55 traveling public and inconvenience to residents in the  
56 area. Increased congestion in the study area could  
57 also delay buses and affect timely transfers between  
58 buses and light rail.

### 59 **3.1.3 MITIGATION**

60 CDOT will continue to work with RTD and Lakewood  
61 regarding development plans at and around the 13th  
62 Avenue LRT station to coordinate the design of the  
63 Build Alternative with the design of the LRT project.

64 CDOT will work with Lakewood to consider future  
65 improvements to the 12th Avenue intersection as the  
66 transit mixed use zoning is implemented and the  
67 surrounding area redevelops around the LRT station.

68 CDOT will coordinate with RTD and Lakewood on the  
69 placement and aesthetics of bus stops and shelters.  
70 Bus shelters will be provided by others. CDOT will  
71 work with RTD to ensure access to bus stops during  
72 construction.

73 Construction phasing and other activities will be  
74 planned to minimize the impact to the traveling public  
75 and area residents and businesses. Any lane closures  
76 during construction will comply with CDOT's Lane  
77 Closure Strategy. Advance notice will be provided for  
78 extended lane closures. Detours will be identified with  
79 adequate signing to minimize out-of-direction travel.

## 3.2 PEDESTRIAN AND BICYCLE FACILITIES

As noted in Chapter 1, pedestrian and bicycle facilities are limited within the study area but the need for them is great. Additional information on pedestrian and bicycle conditions is presented in the *Traffic Study Report* (CH2M HILL, 2009a) included in Appendix C.

### 3.2.1 ENVIRONMENTAL CONSEQUENCES OF THE NO BUILD ALTERNATIVE

The No Build Alternative would not change pedestrian and bicycle facilities within the study area. The existing sidewalk system would remain in place, perpetuating a discontinuous facility that contains obstructions and does not conform to recommended safety standards. Sidewalks north of 10th Avenue, where the highest portion of missing or substandard sections occurs, would be inadequate to support increased pedestrian and bicycle activity around the new 13th Avenue LRT station.

US 6 would remain a barrier to north-south travel through the study area. Uncontrolled crossings of high-volume, free-flow loop ramps would persist on the east side of Wadsworth, and no crossings would be provided on the west side. Safety conditions of these crossings would continue to deteriorate as traffic volumes increase and resulting gaps for crossing get smaller.

Wadsworth would continue to be a barrier to east-west pedestrian and bicycle crossings, particularly between 5th and 10th Avenues where there are no signalized intersections. Uncontrolled access and traffic congestion on Wadsworth would continue to create unsafe conditions.

### 3.2.2 ENVIRONMENTAL CONSEQUENCES OF THE BUILD ALTERNATIVE

The Build Alternative would provide a continuous 8-foot-wide multi-use path on both sides of Wadsworth. The path would be separated from the road in most places by a 10-foot buffer. The path would comply with the Americans with Disabilities Act requirements and would meet or exceed mobility and safety standards for multi-use paths.

The construction of a continuous pedestrian and bicycle path on both sides of Wadsworth between 4th and 14th Avenues would fulfill the project need for improved pedestrian and bicycle safety and would address community needs identified in adopted plans.

Safety of pedestrian and bicycle travel on Wadsworth would be improved by access control in the form of raised medians and driveway consolidation, as well as reduced traffic congestion on Wadsworth. No new signalized at-grade pedestrian crossings would be added on Wadsworth between 5th and 10th Avenues, which would continue to create out-of-direction travel or encourage unsafe mid-block crossings by pedestrians. The Lakewood Gulch box culvert at 8th Avenue would be reconstructed and replaced with a wider structure. The new box culvert also would include accommodations for a pedestrian/bicycle crossing. This provides an opportunity for a future east-west pedestrian and bicycle crossing between 5th and 10th Avenues. Connections between the box culvert and the paths along Wadsworth would need to be constructed by others.

Crossings of US 6 would be available on both sides of Wadsworth where new sidewalks would be provided. Safety concerns for pedestrian/bicycle traffic associated with crossings of loop ramps (due to curvature and poor visibility) would be removed.

One loop ramp crossing would remain on the west side of Wadsworth, and several unsignalized crossings of free-flow on- and off-ramps would remain on the east side of Wadsworth. In each of these instances, high volumes of traffic would provide few gaps for crossings during peak hours. Visibility between vehicles and pedestrians/bicyclists would be improved slightly by changes to the ramp curvature but would remain poor, especially on the loop ramp where the curvature of the ramp limits sight distance from vehicles on the ramp. Several measures will be considered during final design to improve the visibility and safety of these free flow ramp crossings, as described in the Section 3.2.3 below.

During construction, closure or rerouting of existing sidewalks may cause out-of-direction pedestrian and

1 bicycle travel. It is likely that the existing crossing of  
2 US 6 would be obstructed for short durations to  
3 accommodate the reconstruction of the US 6 bridge  
4 over Wadsworth.

### 5 3.2.3 MITIGATION

6 During final design, CDOT will examine the feasibility  
7 of including a grade-separated pedestrian and bicycle  
8 crossing of the loop ramp in the northwest quadrant of  
9 the interchange. CDOT also will consider additional  
10 options, such as signing, lighting, and pavement  
11 treatments, to improve safety and visibility at the US 6  
12 crossings of free-flow ramps on the east side of  
13 Wadsworth.

14 Temporary detour routes, pedestrian walkway  
15 structures, and advance signing will be provided  
16 during construction to ensure safe pedestrian and  
17 bicycle travel during construction.

### 18 3.3 NOISE CONDITIONS

19 Traffic noise has long been an important issue to  
20 residents living near US 6 because the highway  
21 carries large volumes of high-speed traffic and is  
22 bordered primarily by residences. Noise walls are  
23 present along both sides of US 6 between Federal  
24 Boulevard and Wadsworth. Although noise walls west  
25 of Wadsworth are warranted, funding to construct  
26 them has not been available. Noise levels in  
27 neighborhoods along US 6 west of Wadsworth are  
28 extremely high, and public interest in noise issues  
29 associated with the US 6/Wadsworth project has been  
30 great.

31 Noise is measured in decibels (dB), and can range  
32 from 0 dB (threshold of human hearing) to 140 dB  
33 (where sound causes pain). An "A-weighted decibel,"  
34 or dBA, is used for impact assessment because it  
35 mimics humans' varying sensitivity to sounds at  
36 different frequencies. Noise levels of 40 to 50 dBA are  
37 typical of a quiet neighborhood, while 70 to 80 dBA  
38 might be heard adjacent to a busy urban street or  
39 highway. An increase or decrease in noise by 5 dBA  
40 is readily noticeable by most people. The human ear  
41 perceives an increase or decrease in noise by 10 dBA  
42 as twice or half as loud, respectively.

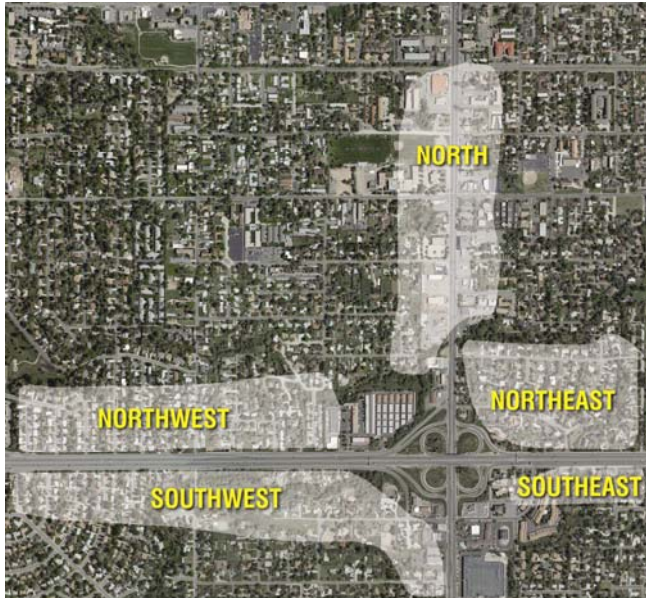
43 Under CDOT's Noise Abatement Criteria, noise-  
44 sensitive receptors such as residences, parks, or  
45 schools are considered impacted if noise levels during  
46 the loudest hour of the day equal or exceed 66 dBA,  
47 or if future noise levels are predicted to exceed  
48 existing levels by 10 dBA or more. Noise mitigation  
49 measures, such as noise walls, are then evaluated for  
50 impacted receptors.

51 Traffic noise is loudest when there is a large volume  
52 of traffic traveling at relatively high speeds. When  
53 more traffic is added to the flow, noise levels will  
54 increase as long as there is no decrease in speed.  
55 Therefore, the loudest hour occurs during major  
56 commute times when the traffic flow is at a maximum.  
57 At some point, the capacity of the highway will be  
58 exceeded, resulting in a decrease in speeds and  
59 noise levels.

60 A detailed noise analysis was conducted for the US  
61 6/Wadsworth project. That analysis is summarized  
62 here. The complete noise analysis, *Noise Technical*  
63 *Memorandum* (Hankard Environmental, 2008), is  
64 available in Appendix C.

65 The noise analysis divided the study area into five  
66 subareas, representing the residences that could be  
67 affected by the Build Alternative in all quadrants of the  
68 interchange and the area along Wadsworth to the  
69 north, as illustrated in Exhibit 3-3. Noise monitors  
70 were placed at several locations within the study area  
71 for one week to measure existing noise levels. From  
72 these measurements, a noise model was constructed,  
73 calibrated, and used to approximate existing and  
74 future noise levels at residences located within  
75 approximately 700 feet of US 6 and Wadsworth.

EXHIBIT 3-3: NOISE STUDY SUBAREAS



Source: Hankard Environmental, 2008

1 Measured noise levels illustrated a daily pattern for  
 2 traffic noise, with maximum levels occurring during the  
 3 morning and evening rush hours, relatively high levels  
 4 during the day, and lower levels at night. This pattern  
 5 is expected given the heavy volume of traffic on US 6  
 6 and the frontage roads, the proximity of residences to  
 7 roadways, and the speed of traffic on US 6.

8 As detailed in Exhibit 3-4, the noise model showed  
 9 that the first row of homes adjacent to US 6 between  
 10 Wadsworth and Garrison Street (northwest and  
 11 southwest areas) – where no noise walls currently  
 12 exist – experiences average noise levels of 77 dBA  
 13 during the loudest hour of the day. In contrast, the  
 14 model results showed that noise levels at the first row  
 15 of homes adjacent to US 6 east of Wadsworth  
 16 (northeast and southeast) – where there are existing  
 17 noise walls – are about 10 dBA lower, or  
 18 approximately half as loud, confirming that the existing  
 19 noise walls substantially reduce noise levels at homes  
 20 adjacent to US 6. Throughout the study area, more  
 21 than 100 residences experience noise at 66 dBA or  
 22 greater.

EXHIBIT 3-4: EXISTING NOISE CONDITIONS

| Area      | Row | Average <sup>1</sup> Loudest Hour Noise Level (dBA) | Number of Impacted Residences <sup>2</sup> |
|-----------|-----|---|--|
| North     | All | 57  | 1  |
|           | 1st | 67  |  |
| Northeast | 2nd | 62  | 8  |
|           | 3rd | 58  |  |
| Southeast | 1st | 68  |  |
|           | 2nd | 60  | 7  |
|           | 3rd | 58  |  |
| Northwest | 1st | 77  |  |
|           | 2nd | 72  | 54   |
|           | 3rd | 64  |  |
| Southwest | 1st | 77  |  |
|           | 2nd | 72  | 45   |
|           | 3rd | 62  |  |

Notes:

<sup>1</sup> Average of residences in each row.

<sup>2</sup> Impacted residences are those where noise levels exceed 66 dBA; number includes receptors throughout study area and is not correlated to rows (although houses closer to the roadway are generally noisier).

Source: Hankard Environmental, 2008.

### 23 3.3.1 ENVIRONMENTAL CONSEQUENCES OF 24 THE NO BUILD ALTERNATIVE

25 Loudest-hour noise levels along US 6 and Wadsworth  
 26 will not change appreciably in 2035 under the No  
 27 Build Alternative because the highway is already at  
 28 capacity during at least part of the typical day, and no  
 29 additional capacity would be added to either roadway.

30 West of Wadsworth, where no noise walls are  
 31 present, high noise levels at residences would persist.  
 32 The No Build Alternative would not provide noise walls  
 33 along US 6 west of Wadsworth because no  
 34 construction would take place.

### 35 3.3.2 ENVIRONMENTAL CONSEQUENCES OF 36 THE BUILD ALTERNATIVE

37 Without noise mitigation, projected loudest-hour noise  
 38 levels under the Build Alternative in 2035 would  
 39 increase slightly near ramps, as shown in Exhibit 3-5.  
 40 Modeling for future noise takes into account the layout  
 41 of the Build Alternative, including any acquired parcels  
 42 that would expose second-row homes that were  
 43 previously buffered by first-row homes. As with the No

1 Build Alternative, noise would not increase  
 2 significantly because the Build Alternative would not  
 3 add capacity to US 6, which is the predominant noise  
 4 source. As discussed in Section 3.3.3 and noted in  
 5 Exhibit 3-5, walls would mitigate traffic noise  
 6 substantially for affected residences.

EXHIBIT 3-5: FUTURE NOISE CONDITIONS

| Area      | Row | Average Loudest Hour Noise Level (dBA) |                   |                 |
|-----------|-----|--|-------------------|-----------------|
|           |     | Existing Condition                     | Build Alternative |                 |
|           |     |  | Without Walls     | With Walls      |
| North     | All | 57                                     | 59                | NA <sup>1</sup> |
|           | 1st | 67                                     | 72                | 63              |
| Northeast | 2nd | 62                                     | 64                | 59              |
|           | 3rd | 58                                     | 61                | 54              |
| Southeast | 1st | 68                                     | 75                | 63              |
|           | 2nd | 60                                     | 67                | 57              |
|           | 3rd | 58                                     | 64                | 57              |
| Northwest | 1st | 77                                     | 77                | 66              |
|           | 2nd | 72                                     | 72                | 60              |
|           | 3rd | 64                                     | 64                | 54              |
| Southwest | 1st | 77                                     | 77                | 66              |
|           | 2nd | 72                                     | 72                | 60              |
|           | 3rd | 62                                     | 62                | 55              |

Notes:

<sup>1</sup> Walls were not warranted or desirable along Wadsworth. Residences are not impacted by noise above 66 dBA. Commercial businesses front the roadway and would be negatively affected by losing visibility behind a wall.  
 Source: Hankard Environmental, 2008.

7 Wadsworth traffic does not result in noise impacts  
 8 because traffic volumes and speeds are lower and  
 9 most residences are buffered from the road by a row  
 10 of commercial businesses on each side of  
 11 Wadsworth.  
 12 During construction, noise from diesel-powered  
 13 equipment would range from 80 to 95 dBA at a  
 14 distance of 50 feet. Impact equipment such as rock  
 15 drills and pile drivers can generate louder noise levels.  
 16 These levels of noise will be present at residences on  
 17 an intermittent basis as different phases of  
 18 construction begin and end.

### 19 3.3.3 MITIGATION

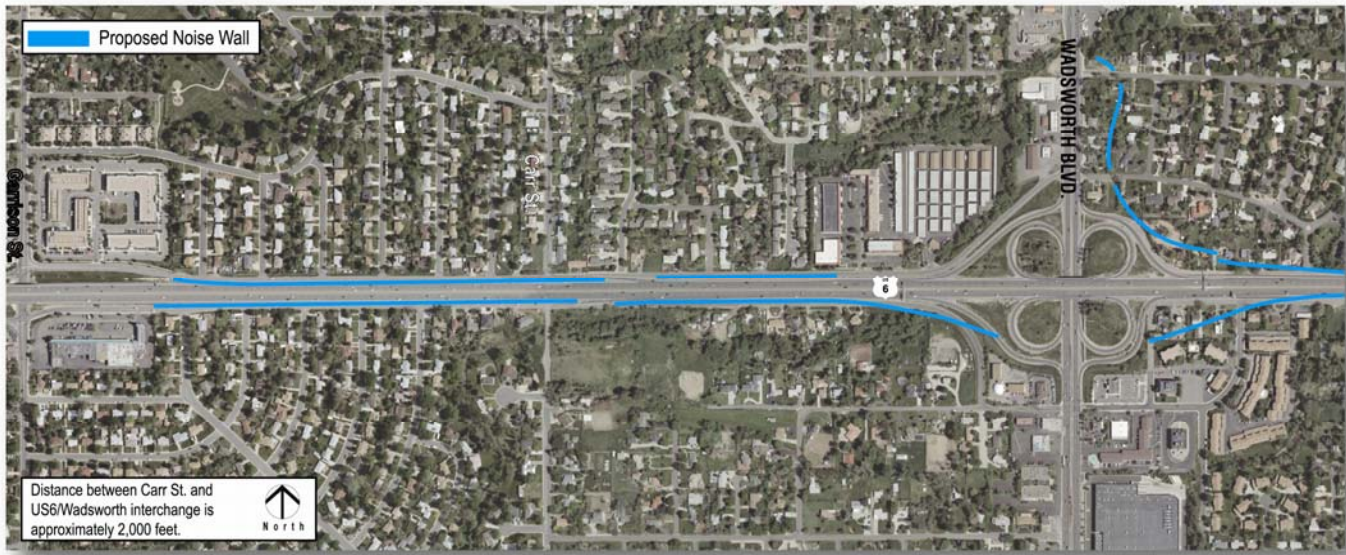
20 Because noise levels meet or exceed CDOT's Noise  
 21 Abatement Criterion of 66 dBA at residences adjacent  
 22 to US 6, mitigation was evaluated to determine if it  
 23 was feasible and reasonable. Noise mitigation is  
 24 considered **feasible** when it can be constructed  
 25 without major engineering issues and will provide  
 26 substantial noise reduction, and **reasonable** when it  
 27 can be constructed in a cost-effective manner and the  
 28 community supports it. The most effective and  
 29 commonly used noise abatement measures are noise  
 30 walls or earthen berms. The latter are usually not  
 31 practical in urban areas with constrained ROW  
 32 because of the large land area they require. Additional  
 33 details about mitigation measures are provided in the  
 34 *Noise Technical Memorandum* (Hankard  
 35 Environmental, 2008) included in Appendix C.

36 Noise walls have been determined to be reasonable  
 37 and feasible noise mitigation for the US 6/Wadsworth  
 38 interchange. The existing walls east of the  
 39 interchange will be extended closer to Wadsworth,  
 40 and approximately 15-foot-tall walls will be  
 41 constructed along both sides of US 6 out to Garrison  
 42 Street. In the northeast quadrant of the interchange,  
 43 an 8-foot-tall wall will be extended along the  
 44 reconfigured frontage road facing Wadsworth north to  
 45 Highland Drive to improve noise reduction for the  
 46 Green Acres neighborhood. In addition, 4-foot-tall  
 47 solid safety barriers will be placed along the US 6  
 48 bridge over Wadsworth. Heights of walls will be  
 49 confirmed during final design. The general alignment  
 50 of these walls is illustrated in Exhibit 3-6.

51 The walls will provide approximately 380 residences  
 52 with a noticeable reduction in traffic noise (3 dBA or  
 53 more). Traffic noise levels at residences up to three  
 54 rows from US 6 would decrease by an average of  
 55 approximately 10 dBA, or be about half as loud as  
 56 they are presently.



EXHIBIT 3-6: PROPOSED NOISE WALL LOCATIONS



- 1 Noise walls will be located between US 6 and its
- 2 frontage roads to maintain a continuous barrier to
- 3 traffic on US 6. Locating barriers nearest to the
- 4 receptors (that is, next to the house) is preferable for
- 5 noise mitigation but was not possible because of the
- 6 numerous driveways located off the frontage roads.
- 7 Locating a noise wall between homes and the frontage
- 8 road would require gaps in the wall at every driveway,
- 9 reducing its effectiveness.
- 10 During final design of the project, Lakewood and area
- 11 residents will have the opportunity to provide input on
- 12 design elements related to noise mitigation, including
- 13 grading, landscaping, and color and material of noise
- 14 walls, with the goal of constructing an aesthetically
- 15 pleasing and economically viable project.
- 16 Construction noise impacts will be mitigated by limiting
- 17 work to daytime hours (as described by CDOT and
- 18 Lakewood requirements) when possible and requiring
- 19 the contractor to use well-maintained equipment,
- 20 particularly with respect to mufflers.

### 21 3.4 RIGHT-OF-WAY

- 22 Right-of-Way (ROW) is the land used for transportation
- 23 facilities and their maintenance. The US 6/Wadsworth
- 24 project is located in a developed urban area, and
- 25 private property surrounds the state-owned ROW
- 26 along the highways. Aside from the area within the
- 27 existing cloverleaf loops, there is little area within
- 28 CDOT's present ROW to expand its facilities.
- 29 The current ROW width for US 6 east and west of the
- 30 interchange, including the frontage roads and all six
- 31 lanes of traffic, varies between 105 and 170 feet. The
- 32 average width of the US 6 ROW within the interchange
- 33 is 780 feet. Commercial and residential properties
- 34 surround the interchange. Most of the properties
- 35 adjacent to US 6 are residential.
- 36 As shown in Exhibit 3-7, ROW along Wadsworth
- 37 ranges from approximately 80 to 95 feet. Properties
- 38 adjacent to Wadsworth are primarily privately owned
- 39 businesses ranging from office buildings and national
- 40 chain retailers, to smaller independent retail and
- 41 service providers. Lakewood owns ROW adjacent to
- 42 Wadsworth where drainage features and local streets
- 43 cross the state highway. Jefferson County Public
- 44 Schools owns the Jefferson County Open School
- 45 property on the west side of Wadsworth between 10th
- 46 and 12th Avenues.

EXHIBIT 3-7: WADSWORTH EXISTING ROW WIDTH  
 (NORTH TO SOUTH)

| Segment                         | Average Width |
|---------------------------------|---------------|
| Colfax Avenue to 10th Avenue    | 80 feet       |
| 10th Avenue south quadrants     | 90 feet       |
| Below 10th Avenue to 8th Avenue | 80 feet       |
| 8th Avenue to 7th Avenue        | 95 feet       |
| 5th Avenue to 2nd Avenue        | 85 feet       |

Source: CH2M HILL, 2008e.

1 The public identified property acquisition as one of the  
 2 most important issues to be addressed in this EA.  
 3 Neighborhood groups, business associations, and  
 4 interest groups expressed concern that property and  
 5 business owners be informed of potential impacts to  
 6 their properties, have an opportunity to provide input,  
 7 and be treated fairly in evaluating property impacts. In  
 8 response to these concerns, business and property  
 9 owners were included on project mailings, and staff  
 10 met personally with many owners and tenants. A  
 11 survey of businesses was conducted to understand  
 12 business operations and potential effects of property  
 13 acquisitions and changes in roadway operations.  
 14 CDOT staff was available at each public open house to  
 15 answer questions about the ROW process. The *Right-  
 16 of-Way Report* (CH2M HILL, 2008e) contains  
 17 additional details on the ROW analysis, and Chapter 5  
 18 provides information on the outreach to property  
 19 owners.

### 20 3.4.1 ENVIRONMENTAL CONSEQUENCES OF 21 THE NO BUILD ALTERNATIVE

22 Under the No Build Alternative, CDOT would not  
 23 construct any new transportation facilities in the study  
 24 area, and would not need to acquire any additional  
 25 property.

### 26 3.4.2 ENVIRONMENTAL CONSEQUENCES OF 27 THE BUILD ALTERNATIVE

28 Estimates of ROW acquisitions are based on  
 29 preliminary design. Actual ROW acquisitions will be  
 30 determined during final design and the ROW  
 31 negotiation process.

32 For the purpose of the EA, properties are identified as  
 33 total acquisitions when the proposed construction limits  
 34 would directly impact the principal building on the  
 35 property, such as a home or business, and the  
 36 property would no longer be economically viable after  
 37 the building is removed. Properties are also identified  
 38 as total acquisitions if the existing use or operations  
 39 would be altered so greatly that the property would  
 40 become economically unviable.

41 Properties are typically identified as partial acquisitions  
 42 when only a portion of a property would be affected by  
 43 proposed construction but the remaining portion of the  
 44 parcel would still be functional. In some cases,  
 45 properties are identified as partial acquisitions even  
 46 though construction limits would impact an  
 47 improvement on the property, because the property  
 48 could remain economically viable after the building is  
 49 removed.

50 In some instances, more than one business or  
 51 residence occupies a single parcel, so the number of  
 52 entities displaced is not directly comparable to the  
 53 number of acquisitions.

54 Easements are required for CDOT to access properties  
 55 during construction and maintenance of facilities.  
 56 Temporary easements are needed during the  
 57 construction period, and permanent easements are  
 58 needed for ongoing maintenance.

59 The Build Alternative would require approximately 31.1  
 60 acres of property, including permanent easements,  
 61 from 96 ownerships through 114 acquisition parcels, as  
 62 shown in Exhibit 3-8.

1 EXHIBIT 3-8: ESTIMATED PROPERTY ACQUISITIONS BY  
 LAND USE CATEGORY

| Type                     | Land Use Category |                    |                 |
|--------------------------|-------------------|--------------------|-----------------|
|                          | Residential       | Commercial         | Public          |
| Total Acquisitions       | 17<br>(6.7 acres) | 18<br>(7.4 acres)  | 2<br>(0.6 acre) |
| Partial Acquisitions     | 28<br>(2.2 acres) | 47<br>(10.6 acres) | 2<br>(0.7 acre) |
| Permanent Easements      | 2.1 acres         | 0.6 acres          | 0.2 acres       |
| Ownerships (# all types) | 39                | 54                 | 3               |
| Displacements            | 14                | 28                 | None            |

Source: CH2M HILL, 2008e.

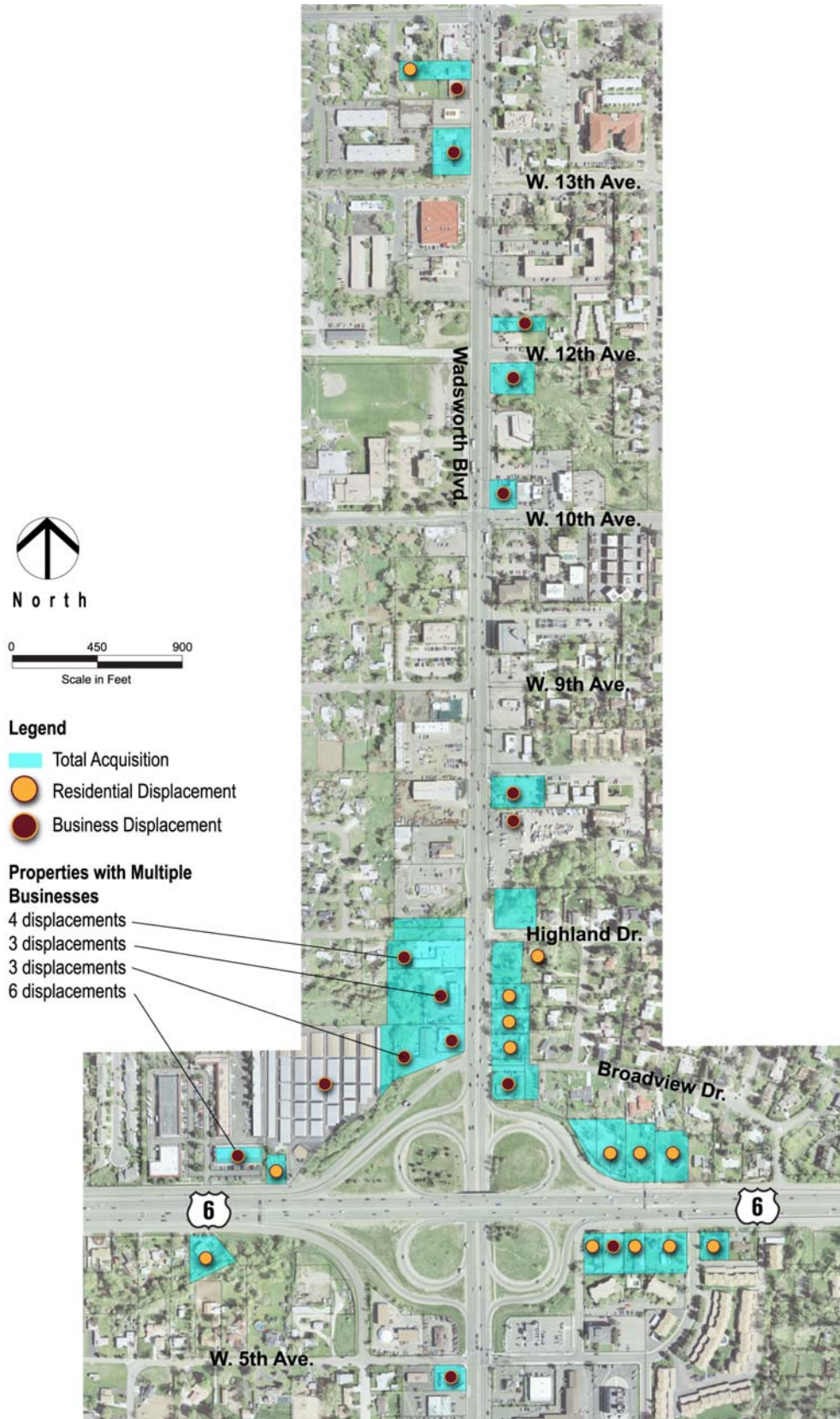
2 The property acquired for new ROW would be  
 3 maintained by CDOT and Lakewood. Acquisitions  
 4 would range from small slivers of properties to entire  
 5 parcels. Some would also involve the relocation of  
 6 personal property not permanently attached to the site.

7 The Build Alternative would result in the displacement  
 8 of 14 residences and 28 businesses, including one  
 9 non-profit organization. Most of the displacements  
 10 occur near the interchange, but displacements would  
 11 occur throughout the study area, as shown in  
 12 Exhibit 3-9.

13 In several cases, CDOT would likely need to acquire  
 14 temporary construction easements from properties not  
 15 affected by other ROW actions. Property owners would  
 16 retain ownership of these areas, but use of these areas  
 17 during construction would be restricted. Upon  
 18 completion of the roadway project, property owners  
 19 would have unrestricted use of these areas.

20 Impacts to private properties have been minimized  
 21 through design modifications to the Build Alternative.  
 22 For instance, the design team avoided displacement of  
 23 three businesses by modifying the sidewalk design to  
 24 remove the landscaped buffer between the sidewalk  
 25 and the roadway in specific locations. CDOT and  
 26 Lakewood also have discussed measures to avoid total  
 27 acquisitions and displacements that would otherwise  
 28 result from zoning nonconformance. In some cases,  
 29 the Build Alternative would impact a property such that  
 30 the property would no longer conform to Lakewood's  
 31 parking or setback requirements. To avoid business  
 32 displacements and maintain the economic viability of  
 33 the area, Lakewood may consider allowing some  
 34 nonconformance. Properties that would not be in  
 35 conformance with Lakewood requirements are  
 36 reported as partial (rather than total) acquisitions but  
 37 final details of variances would be discussed as design  
 38 progresses.

EXHIBIT 3-9: ANTICIPATED RESIDENTIAL AND BUSINESS DISPLACEMENTS RESULTING FROM THE BUILD ALTERNATIVE



Source: CH2M HILL, 2008e

### 3.4.3 MITIGATION

Actual ROW acquisitions will be determined during final design and the ROW negotiation process. Impacts to properties will be further minimized and avoided whenever feasible during final design.

All property acquisition and relocations will comply fully with federal and state requirements, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act). The Uniform Act is a federally mandated program that applies to all acquisitions of real property or displacements of persons resulting from federal or federally assisted programs or projects. It was created to provide for and ensure the fair and equitable treatment of all such persons. To further ensure that the provisions contained within this act are applied uniformly, CDOT requires Uniform Act compliance on any project for which it has oversight responsibility regardless of the funding source. Additionally, the Fifth Amendment of the U.S. Constitution provides that private property may not be taken for a public use without payment of just compensation. All impacted owners will be provided notification of the acquiring agency's intent to acquire an interest in their property including a written offer letter of just compensation specifically describing those property interests. A ROW specialist will be assigned to each property owner to assist them with this process (CDOT, 2008).

In certain situations, it may also be necessary to acquire improvements that are located within a proposed acquisition parcel. In those instances where improvements are occupied, it becomes necessary to relocate those individuals from the subject property (residential or business) to a replacement site. The Uniform Act provides for numerous benefits to these individuals to assist them both financially and with advisory services related to relocating their residence or business operation. Although the benefits available under the Uniform Act are too numerous and complex to discuss in detail in this document, they are available to both owner occupants and tenants of either residential or business properties. In some situations, only personal property must be moved from the real property and this is also covered under the relocation program. As soon as feasible, any person scheduled to be displaced will be furnished with a general written description of the displacing agency's relocation program that provides, at a minimum, detailed information related to eligibility requirements, advisory services and assistance, payments, and the appeal process. It will also provide notification that the displaced person(s) will not be required to move without at least 90 days advance written notice. For residential relocatees, this notice cannot be provided until a written offer to acquire the subject property has been presented, and at least one comparable replacement dwelling has been made available. Relocation benefits will be provided to all eligible persons regardless of race, color, religion, sex, or national origin. Benefits under the Uniform Act, to which each eligible owner or tenant may be entitled, will be determined on an individual basis and explained to them in detail by an assigned ROW Specialist (CDOT, 2008).

1 **3.5 SOCIOECONOMIC RESOURCES**

2 Socioeconomic resources are evaluated to determine  
 3 the effects of a transportation action on a community  
 4 and its quality of life. Because the study area is highly  
 5 developed and suburban neighborhoods surround the  
 6 US 6/Wadsworth interchange, socioeconomic  
 7 resources are a greater consideration for this project  
 8 than biological resources.

9 **3.5.1 DEMOGRAPHIC AND NEIGHBORHOOD**  
 10 **CHARACTERISTICS**

11 Demographic characteristics of the study area are  
 12 shown in Exhibit 3-10. Four neighborhoods surround  
 13 the US 6/Wadsworth interchange: Eiber, Molholm/Two  
 14 Creeks, North Alameda, and Creighton (Exhibit 3-11).  
 15 Collectively, these neighborhoods make up 20 percent  
 16 of Lakewood’s population. Population is relatively  
 17 stable and evenly distributed, except near the  
 18 Lakewood Country Club, where single-family  
 19 residential lots are larger and the population is slightly  
 20 less dense.

21 Lakewood’s population was 144,428 in 2006, and an  
 22 additional 7,882 residents are anticipated by 2020  
 23 (U.S. Census Bureau, 2006; Lakewood, 2008).

24 Because much of the city is already developed, future  
 25 growth will likely occur as infill development. Within the  
 26 study area, limited areas for development are available

27 but redevelopment at higher densities is projected due  
 28 to transit-oriented development around the West  
 29 Corridor LRT stations.

30 The proposed project is surrounded by a mix of  
 31 residences and businesses. Residential areas consist  
 32 primarily of single-family housing with some multi-  
 33 family housing in the northern portion of the project  
 34 area. Neighborhoods are well established with active  
 35 neighborhood associations, and all except Creighton  
 36 have adopted neighborhood area plans. Transportation  
 37 concerns identified by these groups include  
 38 neighborhood cut-through traffic, traffic congestion and  
 39 capacity along Wadsworth, increased growth and  
 40 density of development, traffic noise, and safety.

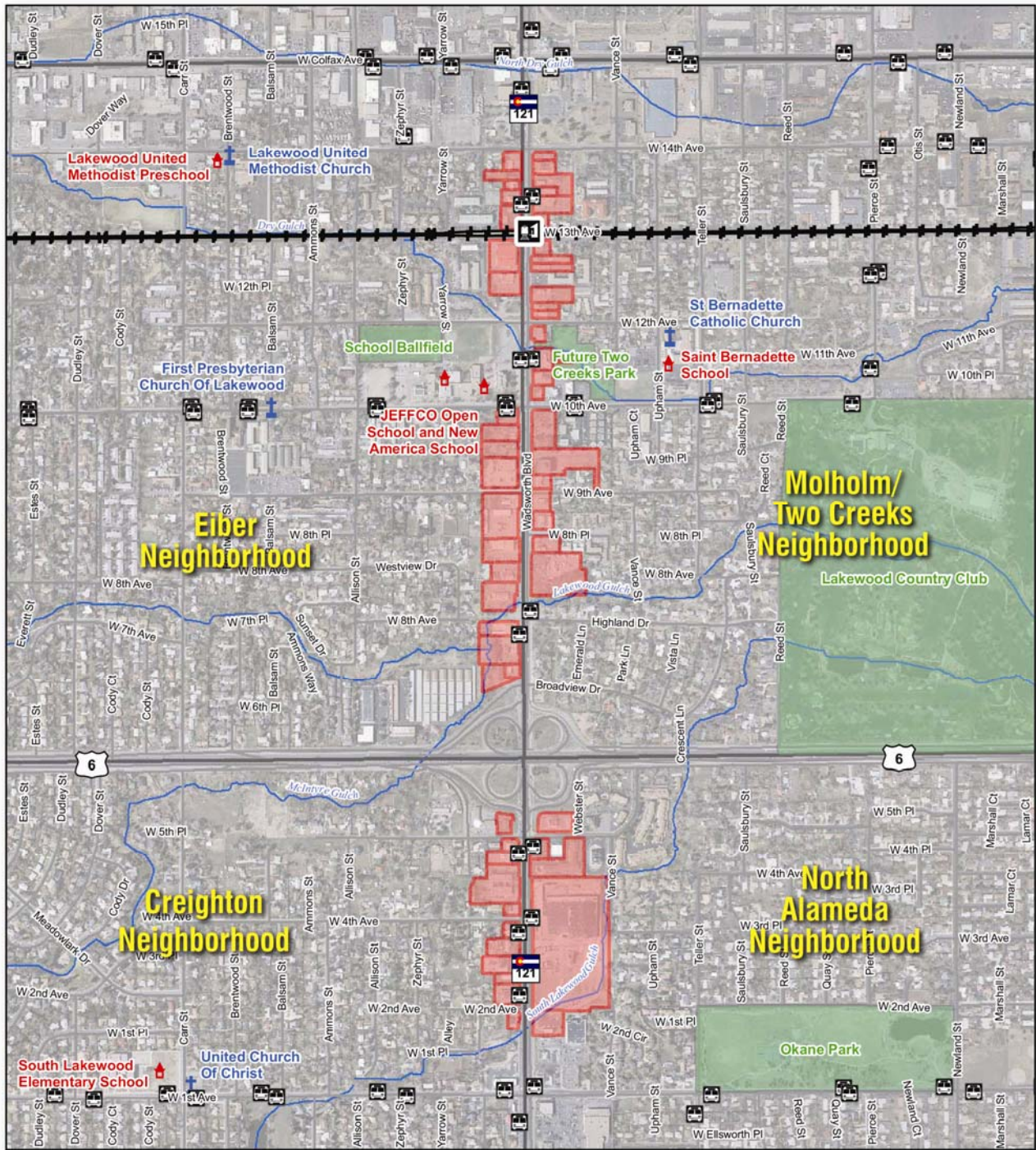
41 The community has identified two issues that affect  
 42 quality of life within the study area – severe noise  
 43 levels (75 dBA or greater) in the northwest and  
 44 southwest quadrants of the interchange and  
 45 discontinuous or missing sidewalks throughout the  
 46 study area. Noise is a community concern because it  
 47 can be annoying, negatively affect property values, and  
 48 interfere with sleep, work, and recreation. Residents  
 49 are concerned about sidewalks because of safety,  
 50 limited opportunities to connect with services along  
 51 either side of Wadsworth, and access to existing and  
 52 future transit.

EXHIBIT 3-10: DEMOGRAPHIC CHARACTERISTICS, 1990-2000

|                         | Lakewood |           |                    | Neighborhoods Surrounding the US 6/Wadsworth Interchange |           |                    |
|-------------------------|----------|-----------|--------------------|--|-----------|--------------------|
|                         | 1990     | 2000      | % Change 1990-2000 | 1990   | 2000      | % Change 1990-2000 |
| Population              | 126,481  | 144,089   | 14%                | 23,566   | 25,509    | 8%                 |
| Households              | 51,657   | 60,653    | 17%                | 9,672  | 10,399    | 8%                 |
| Median Household Income | \$34,054 | \$48,109  | 41%                | \$28,846   | \$43,651  | 51%                |
| Labor Force (civilian)  | 74,553   | 81,847    | 10%                | 12,597   | 13,863    | 10%                |
| Employment              | 70,987   | 79,034    | 11%                | 11,792   | 13,049    | 11%                |
| Unemployment            | 3,566    | 2,813     | -21%               | 805  | 814       | 1%                 |
| Median Home Value       | \$91,200 | \$174,900 | 92%                | \$87,100   | \$166,220 | 91%                |

Source: U.S. Census Bureau, Summary File 1 (SF 1) and Summary File 3 (SF 3), 1990 and 2000.

EXHIBIT 3-11: COMMUNITY RESOURCES WITHIN 0.5 MILE OF THE PROPOSED PROJECT



**Legend**

- |  |  |  |
|--|--|--|
|  |  |  |
|  |  |  |
|  |  |  |



North



Source: CH2M HILL, 2009b

### 3.5.2 ECONOMIC DEVELOPMENT

Wadsworth is a regionally important highway that connects communities throughout Jefferson and Broomfield Counties. It is a major north-south route through Lakewood and provides access to Lakewood's City Center and large commercial developments along Colfax Avenue and Wadsworth.

Over 150 businesses are located along Wadsworth between 1st and 14th Avenues (Exhibit 3-11). Economic activity is expected to increase over the next 20 years as a result of redevelopment associated with the West Corridor light rail and station planned at Wadsworth and 13th Avenue.

The project team conducted a survey of businesses in the study area and met with business owners throughout the development of this EA to understand concerns related to the project. Primary concerns about the US 6/Wadsworth project identified by local businesses include access, parking, property acquisition, and visibility.

### 3.5.3 COMMUNITY RESOURCES

Five schools and four religious institutions are located within 0.5 mile of the proposed project. As shown in Exhibit 3-11, the New America School and Jefferson County Open School campus is located on Wadsworth between 10th and 12th Avenues. Students of Jefferson County Open School rely on area businesses for internship opportunities. Public transportation is important to the community. Several bus routes serve the area, and transit use is expected to increase with the opening of the West Corridor LRT.

The Lakewood Police and West Metro Fire Rescue provide police, fire, and emergency medical services in the project area. The project team conducted interviews with emergency service providers serving the study area. Wadsworth is a main route for emergency responders through the study area.

### 3.5.4 PARKS AND RECREATION RESOURCES

As shown in Exhibit 3-11, three existing and one planned park and recreational resource are located within 0.5 mile of the proposed project. Existing

facilities include Lakewood Country Club, Okane Park, and the ball field associated with the Jefferson County Open School/New America School.

Two Creeks Park is a planned recreation facility located on the east side of Wadsworth between 10th and 12th Avenues, along the Dry Gulch drainage. Lakewood acquired the property in 2007 using Jefferson County Open Space funds. The property is not currently used for recreation or park purposes because it lacks infrastructure, and Lakewood does not have funds to develop the property in the next 5 years.

None of the parks or recreation facilities in the vicinity of the US 6 and Wadsworth project was constructed with grants from the Land and Water Conservation Fund. Therefore, a Section 6(f) evaluation is not required.

### 3.5.5 ENVIRONMENTAL CONSEQUENCES OF THE NO BUILD ALTERNATIVE

The No Build Alternative would not change socioeconomic conditions in the study area. No residential or business displacement would occur.

Severe noise levels (75 dBA or greater) would persist in the northwest and southwest quadrants of the interchange, disturbing local residents, making property less desirable, and diminishing quality of life. Discontinuous and missing sidewalks would persist, perpetuating safety and mobility problems for pedestrians and bicyclists, particularly as traffic volumes increase.

### 3.5.6 ENVIRONMENTAL CONSEQUENCES OF THE BUILD ALTERNATIVE

The Build Alternative would improve the local transportation network, strengthening neighborhood integrity and community interaction through the provision of improved north-south and east-west pedestrian and bicycle connections, better access to neighborhoods and businesses, reduced congestion on Wadsworth, and a reduction in neighborhood cut-through traffic (achieved by improving capacity on Wadsworth and reconfiguring frontage roads that encourage through traffic to travel on major arterials



1 and not on neighborhood streets). In addition, noise  
2 levels for neighborhoods and residences near US 6  
3 would be greatly reduced, resulting in levels more  
4 compatible with residential neighborhood character. An  
5 8-foot-wide multi-use sidewalk would be provided on  
6 both sides of Wadsworth. The sidewalk would be  
7 separated from the roadway by a landscaped buffer in  
8 most locations between US 6 and 14th Avenue,  
9 providing a higher level of safety for all users.  
10 Continuous sidewalks would improve quality of life for  
11 local residents and strengthen connections between  
12 neighborhoods and services. The raised median along  
13 Wadsworth would provide safer turning movements for  
14 traffic turning onto West 10th Avenue to access the  
15 New America School and Jefferson County Open  
16 School. The recreational value of the planned Two  
17 Creeks Park would be enhanced. Visibility of the  
18 planned park from Wadsworth would also be improved  
19 as a result of opening up the view by replacing a  
20 building and parking lot with a water quality pond at  
21 12th Avenue and Wadsworth. Landscaping and  
22 planted medians would improve corridor aesthetics.

23 Interchange improvements would provide better north-  
24 south and east-west connections for the community.  
25 Noise walls would benefit approximately 380  
26 residences and reduce noise to be more consistent  
27 with residential neighborhood character, particularly in  
28 the portions of the Eiber and Creighton neighborhoods  
29 nearest to US 6. Noise levels would be reduced even  
30 in the neighborhoods to the east where noise walls  
31 exist now because the walls would be taller and  
32 extended farther toward Wadsworth. The frontage road  
33 configuration in the northeast quadrant of the  
34 interchange would allow southbound Wadsworth traffic  
35 to turn onto the frontage road, reducing neighborhood  
36 cut-through traffic. Both Highland and Broadview  
37 Drives would connect to the frontage road, allowing  
38 residents and emergency services easier access to  
39 and from Wadsworth. These features were developed  
40 in response to concerns expressed by local residents.

41 The Build Alternative supports community development  
42 by accommodating higher population densities, traffic  
43 volumes, and changes in travel patterns anticipated  
44 from the 13th Avenue LRT station and associated  
45 transit-oriented development.

46 Relieving congestion on Wadsworth would improve  
47 emergency response times. Emergency service  
48 providers have some concerns about the effect raised  
49 medians could have on response times and requested  
50 that if raised medians are constructed, openings be  
51 provided at cross streets to eliminate the need for  
52 emergency vehicles to make U-turns.

53 The Build Alternative would require the relocation of 14  
54 residences and 28 businesses. Eighteen businesses  
55 would be affected by access revisions, four of which  
56 would lose access from Wadsworth, and 19  
57 businesses would lose some parking (ranging from one  
58 to nine parking spaces). The New America School  
59 would lose approximately 12 parking spaces along  
60 Wadsworth. Refer to the *Socioeconomic Conditions*  
61 *Technical Memorandum*, (CH2M HILL, 2009b) for  
62 details regarding property acquisition, access, and  
63 parking impacts.

64 During construction, temporary detours, out-of-  
65 direction travel, access revisions, and construction-  
66 related noise would affect local residents, businesses,  
67 regional commuters, and emergency providers.  
68 Impacts would be greatest for residents and  
69 businesses adjacent to the proposed project.

### 70 3.5.7 MITIGATION

71 CDOT will coordinate with emergency service  
72 providers to identify possible locations for emergency  
73 access breaks in the medians. During construction,  
74 CDOT will provide advance notice to emergency  
75 service providers, the community, and residents  
76 regarding road delays, access, and special  
77 construction activities.

78 Public access will be maintained for existing uses at all  
79 times. New access will be provided for properties  
80 where existing accesses are removed by the Build  
81 Alternative. To avoid disruption of business activities,  
82 the new access will be provided before the existing

1 access is removed. Lakewood will install, irrigate, and  
2 maintain any landscaping in medians or other areas.  
3 Landscaping will comply with clear zone requirements.  
4 CDOT will continue to maintain any non-irrigated areas  
5 in the interchange area.

6 Mitigation commitments for pedestrian and bicycle  
7 facilities and noise are detailed in Sections 3.2.3 and  
8 3.3.3, respectively.

### 9 **3.6 ENVIRONMENTAL JUSTICE**

10 Environmental justice is the fair treatment of people of  
11 all races, cultures, and incomes with respect to the  
12 development, adoption, implementation, and  
13 enforcement of environmental laws and policies.  
14 Information on outreach to minority and low-income  
15 populations is presented in Section 5.3.3, Specialized  
16 Outreach to Minority and Low-Income Populations.

17 The study area for environmental justice includes the  
18 communities adjacent to the proposed project and is  
19 bounded by 1st and Colfax Avenues from south to  
20 north and by Garrison and Pierce Streets from west to  
21 east. The study area was extended farther west than  
22 east to encompass effects of proposed noise walls  
23 adjacent to US 6 west of the interchange.

24 The analysis presented in Sections 3.6.3 and 3.6.4  
25 determines whether any disproportionately high and  
26 adverse effects on minority and low-income  
27 populations would occur. Adverse effects are  
28 considered disproportionate if, after accounting for  
29 impact avoidance and minimization efforts, mitigation  
30 measures, and offsetting benefits, the net adverse  
31 effects would be predominantly borne by a minority or  
32 low-income population, or would be appreciably more  
33 severe or greater in magnitude to minority or low-  
34 income populations compared to the effects on non-  
35 minority or non-low-income populations. For additional  
36 information, refer to the *Environmental Justice*  
37 *Technical Memorandum* (CH2M HILL, 2009c) in  
38 Appendix C.

### 39 **3.6.1 MINORITY AND LOW-INCOME** 40 **POPULATIONS**

41 Minority populations<sup>1</sup> were identified initially using  
42 Census 2000 data at the block level. For this analysis,  
43 the percentage of minorities in each census block  
44 within the study area was compared to the percentage  
45 of minorities in Lakewood (21 percent). Of the 241  
46 blocks in the study area, 81 contained minority  
47 populations higher than Lakewood's average. The  
48 distribution of these blocks is shown in Exhibit 3-12.

49 Low-income populations were initially identified using  
50 CDOT's recommended approach of deriving a low-  
51 income threshold from a combination of average  
52 household size (from Census data) and low-income  
53 household thresholds set annually by the U.S.  
54 Department of Housing and Urban Development  
55 (HUD).<sup>2</sup> The low-income threshold for this study is  
56 \$20,000. In Lakewood, 13 percent of households fall  
57 below this threshold. As shown in Exhibit 3-12, six of  
58 the 10 block groups in the study area contain a higher  
59 percentage of low-income households than Lakewood.

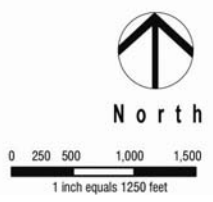
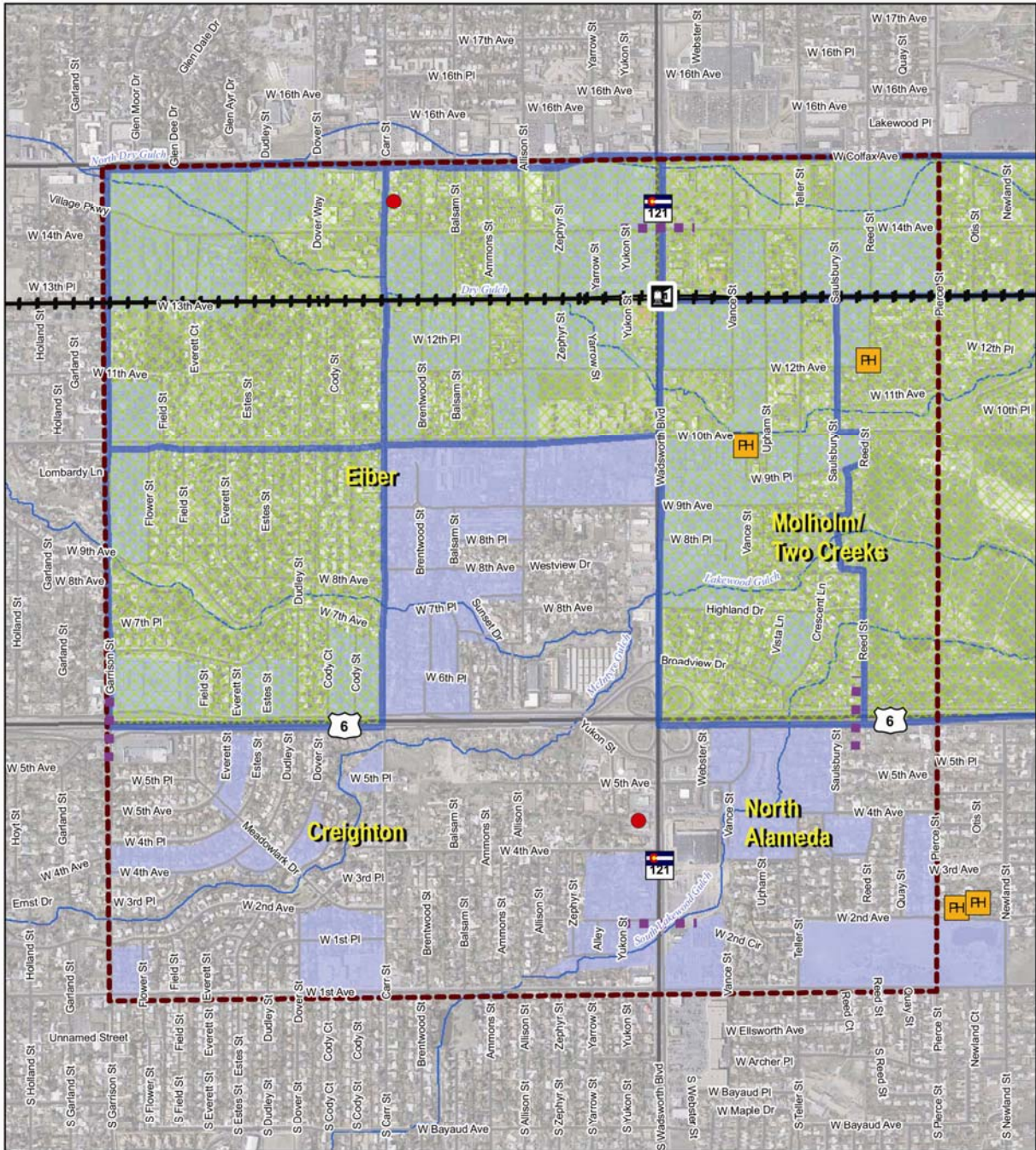
60 The location of low-income households in the  
61 interchange area was refined using data obtained  
62 through interviews with school principals and field  
63 observations. The data indicate that although the  
64 Census block group in the northeast quadrant is  
65 classified as low-income (using CDOT's methodology)  
66 and extends to US 6, low-income households are  
67 concentrated on the northern boundary of the block  
68 group. Households immediately adjacent to the  
69 northeast quadrant of the interchange are more similar  
70 to those in other quadrants of the interchange, which  
71 are predominantly single-family and are not considered  
72 low-income. Data obtained through interviews at  
73 Molholm Elementary School (located at West 9th  
74 Avenue and Harlan Street) confirmed that low-income  
75 households in the block group comprising the  
76 northeast quadrant are concentrated in apartment

---

<sup>1</sup> FHWA defines a minority as a person who is Black, Hispanic, Asian American, American Indian, or Alaska Native (FHWA Order 6640.23).

<sup>2</sup> These thresholds are based upon household income as a percentage of median household income (in this case, 30 percent of the Median Family Income).

EXHIBIT 3-12: MINORITY AND LOW-INCOME POPULATIONS IDENTIFIED USING CENSUS 2000 AND HUD 2008 DATA



Sources: US Census, 2000; US Department of Housing and Urban Development, 2008

1 complexes and subsidized housing units along  
2 12th Avenue, more than 0.5 mile from US 6.

3 Based on this additional information, households  
4 immediately adjacent to the northeast quadrant of the  
5 interchange do not fall within the definition of low-  
6 income and will not be considered as such in the  
7 analysis that follows. Households north of 12th Avenue  
8 are included in the environmental justice study area  
9 and could be affected by Wadsworth widening and  
10 changes in access, which are assessed in the impact  
11 analysis below.

12 Project newsletters, meeting invitations, and  
13 advertisements have been provided to the community  
14 in both English and Spanish. Although translation  
15 services have been offered at all public meetings, no  
16 requests for translation have been made.

### 17 3.6.2 MINORITY-OWNED BUSINESSES

18 The Colorado Minority Business Office (MBO)  
19 maintains a listing of minority-owned business  
20 enterprises that register with the office in Colorado.  
21 The state database identified two minority-owned  
22 businesses within 0.5 mile of US 6 and Wadsworth.  
23 Services provided by these businesses consist of real  
24 estate lending and video rental.

### 25 3.6.3 ENVIRONMENTAL CONSEQUENCES OF 26 THE NO BUILD ALTERNATIVE

27 Impacts associated with the No Build Alternative would  
28 be distributed across the community and would not  
29 result in disproportionately high and adverse impacts to  
30 minority and/or low-income populations. There would  
31 be no displacement of minority or low-income  
32 residents, businesses, or employees. Impacts from  
33 construction would not occur. The No Build Alternative  
34 does not address transportation problems in the  
35 corridor. Traffic congestion would worsen in the study  
36 area, hindering access to housing, businesses,  
37 community facilities, and the provision of emergency  
38 services for minority and low-income populations as  
39 well as for the overall community. Severe noise levels  
40 (75 dBA or higher) would persist in the northwest and  
41 southwest quadrants of the interchange.

### 42 3.6.4 ENVIRONMENTAL CONSEQUENCES OF 43 THE BUILD ALTERNATIVE

44 The Build Alternative would result in adverse impacts  
45 to resources that could also affect minority or low-  
46 income populations. These impacts are associated  
47 with land acquisition, the displacement of residential  
48 and business occupants, community impacts during  
49 construction, and the acquisition of cultural properties.  
50 The ways in which these impacts affect minority and  
51 low-income populations are examined below.

52 The Build Alternative would require the relocation of  
53 14 residences and 28 businesses. The majority of the  
54 residences (nine) are immediately adjacent to the  
55 interchange, where neither minority nor low-income  
56 populations are present in higher-than-average  
57 numbers. None of the affected businesses was  
58 identified as being minority-owned and there is no  
59 evidence to suggest that these businesses have any  
60 particular connection to a minority or low-income  
61 community or provide employment, goods, and/or  
62 services uniquely important to minority or low-income  
63 populations.

64 Neither minority nor low-income populations are  
65 present in higher-than-average numbers near four  
66 adversely affected historic properties immediately  
67 adjacent to the interchange. The affected properties  
68 include three residences and one business. These  
69 properties are located at the southern and western  
70 edges of the Green Acres neighborhood and are not  
71 associated with a minority or low-income community.  
72 Loss of these properties would not impact community  
73 cohesion.

74 Noise walls, recommended in all four quadrants of the  
75 interchange, would benefit approximately 380  
76 residences. The greatest benefit would be to  
77 households along US 6 between Carr and Garrison  
78 Streets, where there are currently no noise walls. Of  
79 the 90 benefited households in this area, 49 are in  
80 minority and/or low-income areas.

81 The Build Alternative would benefit minority and low-  
82 income residents as well as the overall community by  
83 improving mobility, safety, and access to businesses,  
84 residences, and community facilities and services. The

1 frontage road configuration in the northeast quadrant of  
2 the interchange would reduce neighborhood cut-  
3 through traffic and allow residents and emergency  
4 services easier access to and from Wadsworth.  
5 Sidewalks would provide a higher level of safety for  
6 minority and low-income residents as well as the  
7 overall community.

8 The Build Alternative would result in temporary impacts  
9 to the overall community (including minority and low-  
10 income residents) from increased dust, dirt, noise,  
11 traffic, and access disruptions during the construction  
12 process. Construction impacts would be greatest  
13 immediately adjacent to the interchange, where neither  
14 minority nor low-income populations are present in  
15 higher-than-average numbers. These impacts would  
16 be short term and would be mitigated with best  
17 management practices (BMPs) for construction such  
18 as limiting work to daytime hours, covering trucks when  
19 transporting materials, and providing the community  
20 with advanced notification for activities that are likely to  
21 result in traffic disruptions.

22 As described above, impacts associated with the Build  
23 Alternative would not be predominantly borne by  
24 minority and/or low-income populations. Therefore, the  
25 Build Alternative would not result in disproportionately  
26 high and adverse impacts to minority or low-income  
27 populations.

### 28 3.6.5 MITIGATION

29 No mitigation measures are necessary because no  
30 disproportionate adverse impacts to minority or low-  
31 income communities would result.

### 32 3.7 LAND USE

33 Wadsworth is a developed urban corridor, marked by  
34 commercial and industrial uses, producing both  
35 regional and neighborhood draw, and surrounded by  
36 residential uses. US 6 within the study area is abutted  
37 by primarily residential uses with some commercial and  
38 industrial development surrounding the interchange.

39 Parcels along Wadsworth consist of mostly commercial  
40 zone districts. Several parcels are zoned Office and  
41 Planned Development. Residential zoning extends

42 along US 6 east and west of Wadsworth, ranging from  
43 low-density, single-family zoning to higher-density  
44 multi-family zoning.

45 A Lakewood-initiated zoning amendment adopted in  
46 2007 created the new zoning district, encompassing  
47 the proposed RTD light rail station areas around  
48 Wadsworth and 13th Avenue. This zone district  
49 encourages higher-density development with  
50 complementary transit- and pedestrian-oriented uses.

51 The northern portion of the study area has been  
52 identified by Lakewood as an area that will undergo  
53 substantial changes in character and land use as a  
54 result of recent zoning changes and in anticipation of  
55 the West Corridor light rail line. This change will likely  
56 be assisted by redevelopment projects north and south  
57 of the study area, such as Creekside to the north and  
58 continued development of Belmar to the south, and the  
59 future transit station at 13th Avenue. Lakewood is also  
60 considering rezoning Colfax Avenue to promote  
61 pedestrian- and bicycle-oriented development, which  
62 may encourage redevelopment of properties along  
63 Wadsworth near Colfax.

64 Several adopted land use plans provide goals and  
65 action steps for land use, transportation, and other  
66 planning elements within the study area. Planning  
67 documents relevant to the study area are listed below:

- 68 ♦ *DRCOG 2035 Metro Vision Regional*  
69 *Transportation Plan* (DRCOG, 2007)
- 70 ♦ *City of Lakewood Comprehensive Plan* (Lakewood,  
71 2003)
- 72 ♦ *City of Lakewood Wadsworth Boulevard Strategic*  
73 *Plan* (Lakewood, 1997)
- 74 ♦ *City of Lakewood Wadsworth Boulevard Station*  
75 *Area Plan* (Lakewood, 2006)
- 76 ♦ *City of Lakewood Bicycle System Master Plan*  
77 (Lakewood, 2005)
- 78 ♦ *City of Lakewood Neighborhood Plans*
  - 79 – *North Alameda Area Plan* (Lakewood, 1998)
  - 80 – *Molholm Area Plan* (Lakewood, 1996)
  - 81 – *Eiber Neighborhood Plan* (Lakewood, 2001)

1 These planning documents are all supportive of  
2 transportation improvements, particularly around the  
3 interchange. They also support multi-modal  
4 improvements to transit and sidewalks. Copies of these  
5 documents can be obtained from Lakewood and  
6 DRCOG.

### 7 **3.7.1 ENVIRONMENTAL CONSEQUENCES OF** 8 **THE NO BUILD ALTERNATIVE**

9 Under the No Build Alternative, land uses are likely to  
10 remain unchanged. Existing residential and  
11 commercial uses would be unaffected by ROW  
12 acquisition or land conversion. The No Build  
13 Alternative does not address transportation needs in  
14 the corridor and would not accommodate the additional  
15 traffic associated with planned growth and  
16 development in the study area. This alternative would  
17 be inconsistent with many of the primary goals of the  
18 land use plans relevant to the study area. It would not  
19 provide any congestion relief or improve safety or  
20 mobility for automobiles, pedestrians, or bicyclists. The  
21 No Build Alternative would not support the vision for  
22 the study area as defined in land use plans but would  
23 not specifically preclude future improvements that  
24 could fulfill these plans' visions.

### 25 **3.7.2 ENVIRONMENTAL CONSEQUENCES OF** 26 **THE BUILD ALTERNATIVE**

27 The Build Alternative would result in the direct  
28 conversion of commercial and residential land to  
29 transportation uses. In areas of partial ROW  
30 acquisitions along Wadsworth, commercial buildings  
31 would be closer to the new edge of roadway due to the  
32 elimination of parking areas at some businesses along  
33 Wadsworth. Some of these properties would no longer  
34 conform to Lakewood's zoning regulations as a result  
35 of this change. However, Lakewood has indicated a  
36 willingness to work with CDOT and individual property  
37 owners during the ROW acquisition process to  
38 consider allowing non-conforming uses in cases where  
39 total property acquisitions would result in residential or  
40 business displacements.

41 Some of the businesses that currently buffer the  
42 residential neighborhoods from Wadsworth and the  
43 interchange would be removed, exposing previously

44 buffered homes to highway noise and traffic. (Exhibit 3-  
45 9 in Section 3.4 shows the location of displacements.)  
46 This would not be inconsistent with land use in the  
47 area because residences already front US 6  
48 throughout much of the study area and several  
49 locations along Wadsworth. The Build Alternative  
50 would be consistent with future planned land uses and  
51 likely would not serve as an impetus for change in  
52 overall land use patterns. The Build Alternative would,  
53 however, accommodate the additional traffic  
54 associated with forecasted growth and planned  
55 development in the study area by adding capacity to  
56 Wadsworth and the US 6/Wadsworth interchange, and  
57 facilitating connections between urban centers.

58 The Build Alternative would be consistent with the  
59 goals and objectives identified in adopted land use and  
60 neighborhood plans. It would specifically support goals  
61 for traffic management and safety, multimodal  
62 connections, landscaping, recreational amenities, and  
63 noise mitigation. The Build Alternative would also  
64 address some neighborhood concerns about flooding  
65 by widening the drainageways that cross under US 6  
66 and Wadsworth. (The Build Alternative would only  
67 address flooding around the roadways and would not  
68 alleviate flooding upstream and downstream of US 6  
69 and Wadsworth caused by other encroachments.)

70 Construction would temporarily affect access to the  
71 different land uses within the study area. Construction  
72 would not permanently change land uses or land use  
73 planning in the project area.

### 74 **3.7.3 MITIGATION**

75 As discussed under mitigation for ROW impacts,  
76 CDOT and Lakewood have discussed measures to  
77 avoid total acquisitions and displacements for zoning  
78 nonconformance. In cases where business  
79 displacements would occur as a result of  
80 nonconformance to zoning requirements, Lakewood  
81 will work with CDOT and property owners to consider  
82 allowing nonconformance on a case-by-case basis. If  
83 nonconforming properties are allowed but  
84 subsequently redeveloped, Lakewood would require  
85 the new site development plan to conform to current  
86 zoning requirements, such as setback and parking.

1 A combined noise and privacy wall in the northeast  
2 quadrant of the interchange will provide mitigation for  
3 the removal of the existing structures on Wadsworth for  
4 the newly exposed residences.

### 5 **3.8 HISTORIC PROPERTIES**

6 Historic properties are defined as any prehistoric or  
7 historic district, site, building, structure, or object  
8 included in, or eligible for inclusion in, the National  
9 Register of Historic Places (NRHP). A property is  
10 eligible for the NRHP if it possesses historic integrity  
11 (such as maintaining original materials and design) and  
12 meets one or more of the following four criteria:

13 Criterion A Is associated with important historical  
14 events or patterns

15 Criterion B Is associated with lives of persons  
16 significant in our past

17 Criterion C Embodies distinctive characteristics of an  
18 architectural type, period, or method of  
19 construction

20 Criterion D Has yielded or is likely to yield information  
21 important in prehistory or history

22 Section 106 of the National Historic Preservation Act of  
23 1966, as amended, requires projects proposed or  
24 funded by federal agencies to identify and assess  
25 effects to historic properties listed on or eligible for  
26 inclusion in the NRHP. Agencies must consult with the  
27 State Historic Preservation Office (SHPO). In addition  
28 to the SHPO, Jefferson County and the Lakewood  
29 Historical Society accepted invitations to be consulting  
30 parties to the Section 106 process for the  
31 US 6/Wadsworth study.

32 Field surveys identified nine historic architectural  
33 resources and three historic districts within or partially  
34 within the US 6/Wadsworth project area. Exhibit 3-13  
35 shows the location of properties individually eligible for  
36 the NRHP and NRHP-eligible historic districts.  
37 Additional information about all of the resources  
38 surveyed is available in the *Historic Resources Survey,*  
39 *US 6 and Wadsworth Boulevard, Lakewood, Colorado*  
40 *(TEC, 2008)*, included in Appendix C.

### 41 **3.8.1 ENVIRONMENTAL CONSEQUENCES OF** 42 **THE NO BUILD ALTERNATIVE**

43 Under the No Build Alternative, the US 6/Wadsworth  
44 interchange would remain in its current configuration,  
45 Wadsworth would not be widened, and there would be  
46 no direct effect to historic properties.

47 Noise walls east of Wadsworth would continue to  
48 reduce traffic noise and have a beneficial impact to the  
49 residential settings of these properties adjacent to the  
50 US 6 frontage roads east of Wadsworth. No noise  
51 walls would be provided west of Wadsworth along  
52 US 6, and the beneficial effects to the residential  
53 character of historic properties located in these  
54 neighborhoods west of US 6, such as the Meadowlark  
55 Hills Historic District, would not be realized.

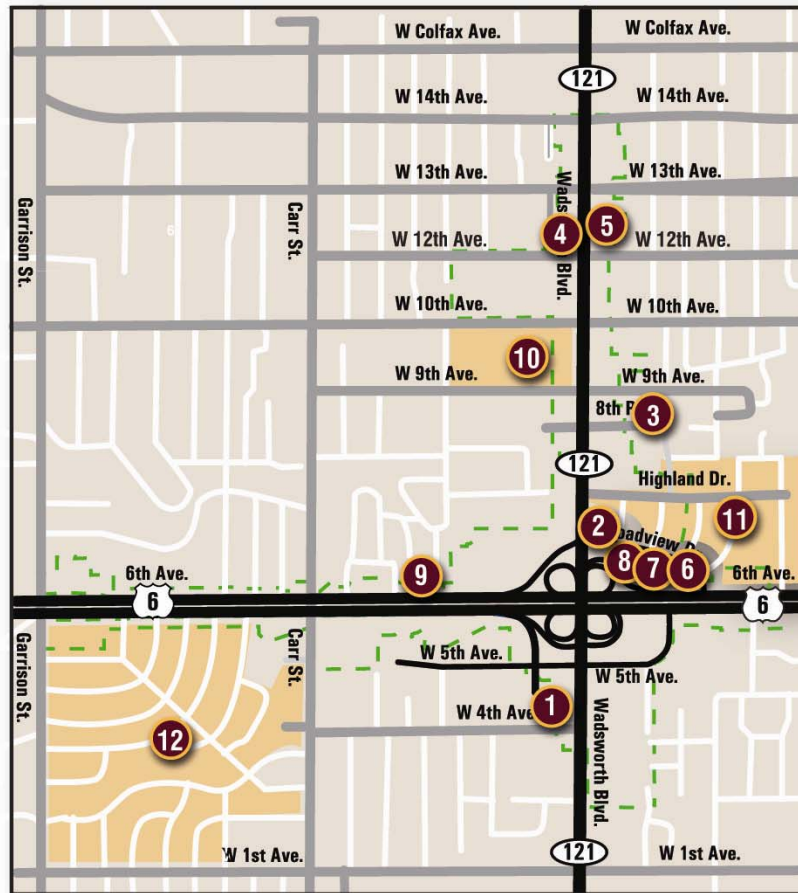
### 56 **3.8.2 ENVIRONMENTAL CONSEQUENCES OF** 57 **THE BUILD ALTERNATIVE**















58 Under Section 106 of the National Historic  
59 Preservation Act, effect determinations consist of one  
60 of the following:

- 61 ♦ No Historic Properties Affected – historic properties  
62 are either not present or not affected by the action,
- 63 ♦ No Adverse Effect – a historic property is affected  
64 but the characteristics that qualify the property for  
65 inclusion in the NRHP are not affected, or
- 66 ♦ Adverse Effect – an action directly or indirectly  
67 alters the characteristics of a historic property that  
68 qualify it for inclusion in the NRHP.

69 Of the nine individually eligible historic properties, the  
70 Build Alternative was determined to have the following  
71 effects: one No Historic Properties Affected, four No  
72 Adverse Effects, and four Adverse Effects. The three  
73 historic districts received No Adverse Effect  
74 determinations. Effect determinations are presented in  
75 Exhibit 3-14.

EXHIBIT 3-13: HISTORIC PROPERTIES LOCATED WITHIN STUDY AREA



- |  |  |
|--|--|
|  Historic District Boundary |  7395 W 6th Ave (5JF3548)           |
|  Survey Area                |  7423 W 6th Ave (5JF3549)           |
|  401 Wadsworth (5JF4586)    |  7433 W 6th Ave (5JF4542)           |
|  700 Wadsworth (5JF4536)    |  8125 W 6th Ave (5JF4563)           |
|  7558 W 9th Ave (5JF3554)   |  Lakewood School Historic District  |
|  1215 Wadsworth (5JF4511)   |  Green Acres Historic District      |
|  1230 Wadsworth (5JF4513)   |  Meadowlark Hills Historic District |

Source: TEC, 2008



EXHIBIT 3-14: EFFECTS TO HISTORIC PROPERTIES AND DISTRICTS

| Site No.<br>Map ID                               | Address  | Description   | Date                                  | NRHP<br>Eligibility<br>(Criteria)                           | Impact  | Effect                                | Criteria of<br>Adverse<br>Effect          |
|--|--|---|---------------------------------------|---|---|---------------------------------------|---|
| 5JF4586<br>1                                     | 401<br>Wadsworth<br>Blvd.  | Gas Station   | 1958                                  | Officially<br>Eligible (C)                                  | Sidewalk replaced in front<br>of property but no change<br>to historic features,<br>setting, or use   | No Adverse<br>Effect                  | n/a                                       |
| 5JF4536<br>2                                     | 700<br>Wadsworth<br>Blvd.  | Ranch residence<br>converted into a business  | 1947                                  | Officially<br>Eligible (C)                                  | Demolition of structure<br>(total acquisition)  | Adverse<br>Effect                     | i. Physical<br>destruction of<br>property |
| 5JF3554<br>3                                     | 7558 W. 9th<br>Ave.  | Art Deco single-family<br>residence   | 1939                                  | Officially<br>Eligible (C)                                  | No direct or indirect<br>impact (no change to<br>setting)   | No Historic<br>Properties<br>Affected | n/a                                       |
| 5JF4511<br>4                                     | 1215<br>Wadsworth<br>Blvd.   | Dutch Colonial Revival<br>single-family residence   | 1918,<br>1948-<br>1949                | Officially<br>Eligible (A)                                  | Partial acquisition of<br>historic property frontage  | No Adverse<br>Effect                  | n/a                                       |
| 5JF4513<br>5                                     | 1230<br>Wadsworth<br>Blvd.   | Craftsman Bungalow<br>residence converted into a<br>business                                  | 1928                                  | Officially<br>Eligible (C)                                  | Acquisition of portion of<br>property that does not<br>contribute to historic<br>significance   | No Adverse<br>Effect                  | n/a                                       |
| 5JF3548<br>6                                     | 7395 W. 6th<br>Ave. Frontage<br>Rd.  | English Norman Cottage<br>single-family residence   | 1946                                  | Officially<br>Eligible (C)                                  | Demolition of structure<br>(total acquisition)  | Adverse<br>Effect                     | i. Physical<br>destruction of<br>property |
| 5JF3549<br>7                                     | 7423 W. 6th<br>Ave. Frontage<br>Rd.  | Mediterranean Revival<br>single-family residence  | 1939                                  | Officially<br>Eligible (C)                                  | Demolition of structure<br>(total acquisition)  | Adverse<br>Effect                     | i. Physical<br>destruction of<br>property |
| 5JF4542<br>8                                     | 7433 W. 6th<br>Ave. Frontage<br>Rd.  | Minimal Traditional single-<br>family residence   | 1940                                  | Officially<br>Eligible (C)                                  | Demolition of structure<br>(total acquisition)  | Adverse<br>Effect                     | i. Physical<br>destruction of<br>property |
| 5JF4563<br>9                                     | 8125 W. 6th<br>Ave. Frontage<br>Rd.  | Craftsman single-family<br>residence  | 1918                                  | Officially<br>Eligible (C)                                  | No direct or indirect<br>impact (no adverse<br>change to setting);<br>beneficial noise reduction  | No Adverse<br>Effect                  | n/a                                       |
| Lakewood<br>School<br>Historic<br>District<br>10 | Located west<br>of Wadsworth<br>between 10th<br>and 12th<br>Avenues  | School complex<br>comprising the New<br>America School and<br>Jefferson County Open<br>School | 1927-<br>1977                         | Officially<br>Eligible<br>Historic<br>District (A<br>and C) | Acquisition of portion of<br>parking lot along eastern<br>edge of the historic<br>district; parking area is<br>noncontributing to the<br>significance of the historic<br>district   | No Adverse<br>Effect                  | n/a                                       |
| Green<br>Acres<br>Historic<br>District<br>11     | Bounded by<br>Emerald Lane<br>and Reed<br>Street from<br>US 6 to 9th<br>Place  | Post World War II<br>residential subdivision  | late<br>1940s<br>to<br>early<br>1960s | Officially<br>Eligible<br>Historic<br>District (A<br>and C) | Construction of sound<br>wall near south and west<br>boundaries of the district;<br>minor property acquisition<br>from corner of one<br>contributing property;<br>beneficial effects of<br>restoration of<br>neighborhood roads and<br>reduction in traffic noise | No Adverse<br>Effect                  | n/a                                       |
| Meadowlark<br>Hills Historic<br>District<br>12   | Bounded by<br>West 6th<br>Avenue/Front-<br>age Road to<br>the north, Carr<br>Street to the<br>east, West 1st<br>Avenue to the<br>south, and<br>Garrison<br>Street to the<br>west | Post World War II<br>residential subdivision  | 1953<br>to<br>1956                    | Officially<br>Eligible<br>Historic<br>District (A<br>and C) | Construction of sound<br>wall across frontage road<br>near district's northern<br>boundary; beneficial<br>effects of reduction in<br>traffic noise  | No Adverse<br>Effect                  | n/a                                       |

1 Determination of effects to historic properties was  
2 undertaken in consultation with the SHPO and other  
3 consulting parties. The SHPO concurred with all effect  
4 determinations in a letter dated December 19, 2008.  
5 Consulting parties were afforded an opportunity to  
6 comment and did not express objections. Detailed  
7 documentation supporting these determinations is  
8 presented in the *Determination of Effects to Historic*  
9 *Properties* (CH2M HILL et al., 2008d) included in  
10 Appendix C.

11 The Build Alternative would result in unavoidable  
12 impacts to four historic residences located along the  
13 frontage road in the northeast quadrant of the  
14 interchange. CDOT considered numerous options to  
15 minimize effects to these properties but ultimately had  
16 no other option that met safety, traffic, and community  
17 needs without demolishing historic properties 5JF4536,  
18 5JF3548, 5JF3549, and 5JF4542.

19 A brief discussion of these properties and the effects of  
20 the Build Alternative is included below. Further details  
21 about these effects and the options that CDOT  
22 considered to avoid impacting historic properties can  
23 be found in the *Determination of Effects to Historic*  
24 *Properties* (CH2M HILL et al., 2008d) included in  
25 Appendix C.

### 26 3.8.2.1 700 Wadsworth Boulevard (5JF4536)

27 The building at 700 Wadsworth Blvd. is a one-story,  
28 Ranch-style house with Usonian characteristics  
29 (Exhibit 3-15). It was constructed in 1947 and is clad in  
30 ashlar stone masonry. It is eligible for listing on the  
31 NRHP under Criterion C because it is a good example  
32 of a late 1940s residence that blends the Ranch and  
33 Usonian architectural styles.

EXHIBIT 3-15: 5JF4536 (700 WADSWORTH BLVD.)



34 The property is located along the tight curve of the  
35 existing off-ramp from westbound US 6 to northbound  
36 Wadsworth. In addition to the close horizontal distance  
37 to both the ramp and Wadsworth, the property is  
38 elevated 10 to 15 feet from the surrounding roadways.  
39 Not accounting for the grade difference (which  
40 exacerbates the difficulty in developing options to avoid  
41 the property), the auxiliary lane on Wadsworth impacts  
42 the house to the west, and the frontage road affects  
43 the building to the east, and, would need to be  
44 removed under the Build Alternative. CDOT would,  
45 therefore, acquire this property and demolish the  
46 historic residence. CDOT would need to acquire the  
47 house and its detached garage under the Build  
48 Alternative. The proposed off-ramps for westbound  
49 US 6 to northbound Wadsworth and roadway slope  
50 would run through the house. Although the garage  
51 would not be directly affected, it would not retain  
52 historic integrity or residential function if disconnected  
53 from the residence. The removal of the house and  
54 garage would result in a direct impact and an Adverse  
55 Effect to this historic property.

### 56 3.8.2.2 7395 West 6th Avenue Frontage Road 57 (5JF3548)

58 The building at 7395 W. 6th Ave. Frontage Road is an  
59 English Norman Cottage-style, one-story, single-family  
60 house built in 1946 that is clad in blonde brick (Exhibit  
61 3-16). It is eligible for listing in the NRHP under  
62 Criterion C because the house is representative of the  
63 English Norman Cottage architectural style. The  
64 detached, two-car brick garage located northwest of  
65 the house contributes to the house's historical setting  
66 and is a contributing historic feature of the property.

67 EXHIBIT 3-16: 5JF3548 (7395 W. 6TH AVENUE FRONTAGE ROAD)



1 **3.8.2.3 7423 West 6th Avenue Frontage Road**  
2 **(5JF3549)**

3 The building at 7423 W. 6th Ave. Frontage Road is a  
4 stucco-clad, Mediterranean Revival-style, one-story,  
5 single-family residence built in 1939 (Exhibit 3-17). It is  
6 eligible for listing in the NRHP under Criterion C for its  
7 representative architecture. The house's detached  
8 garage located northwest of the house is also clad in  
9 stucco, and is a contributing historic feature of the  
10 property.

EXHIBIT 3-17: 5JF3549 (7423 W. 6TH AVENUE FRONTAGE ROAD)



11 As with 5JF3548, 5JF3549 would need to be acquired  
12 because the ramp and frontage road encroach onto the  
13 property and directly affect the historic home.

14 **3.8.2.4 7433 West 6th Avenue Frontage Road**  
15 **(5JF4542)**

16 The building at 7433 W. 6th Ave. Frontage Road is a  
17 one-story, single-family house built in 1940  
18 (Exhibit 3-18). It is eligible for listing on the NRHP  
19 under Criterion C because it is representative of the  
20 Minimal Traditional architectural style.

EXHIBIT 3-18: 5JF4542 (7433 W. 6TH AVENUE FRONTAGE ROAD)



21 As with 5JF3548 and 5JF3549, 5JF4542 would need to  
22 be acquired because the ramp and frontage road  
23 encroach onto the property and directly affect the  
24 historic home.

25 **3.8.3 MITIGATION**

26 A Memorandum of Agreement (MOA) will be  
27 negotiated among CDOT, FHWA, and the Colorado  
28 SHPO to identify measures CDOT will undertake to  
29 mitigate adverse effects to historic properties. The  
30 Lakewood Historical Society, Lakewood, and Jefferson  
31 County will be provided an opportunity to participate in  
32 the MOA. Mitigation measures being considered  
33 include interpretive signage and creation of an  
34 educational website.

35 Any new historic documentation that is developed as  
36 part of the MOA will be provided to interested local  
37 historic preservation groups (CDOT has already  
38 provided historic survey information for properties and  
39 neighborhoods inventoried as part of this project).

40 **3.9 HAZARDOUS MATERIALS**

41 Hazardous materials include materials that are  
42 regulated as solid waste, hazardous waste, and other  
43 wastes contaminated with petroleum fuels, toxic  
44 substances, pollutants, or radioactive materials. The  
45 presence of sites containing hazardous materials  
46 within a project area can result in project delays and  
47 increase the cost of construction; therefore, it is  
48 important to identify properties that may contain  
49 contamination prior to ROW acquisition and  
50 construction.

51 The properties along Wadsworth have historically been  
52 used for commercial purposes, including service  
53 stations, auto repair shops, dry cleaners, print shops,  
54 and other businesses that often use hazardous  
55 materials during daily operations. A database review  
56 revealed more than 50 sites with potential  
57 contamination, mostly related to petroleum releases,  
58 within a half-mile radius of the project corridor. A  
59 reconnaissance review of properties within the  
60 construction footprint of the Build Alternative  
61 supplemented the database search. These sites and

1 the potential effect of the Build Alternative on these  
 2 sites are described in Section 3.9.2.

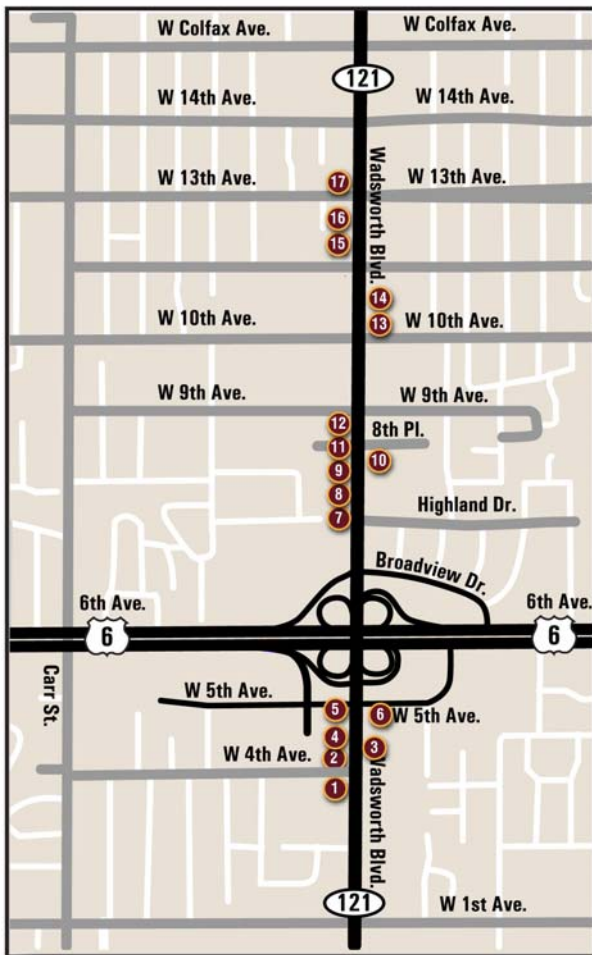
3 **3.9.1 ENVIRONMENTAL CONSEQUENCES OF**  
 4 **THE NO BUILD ALTERNATIVE**

5 The No Build Alternative would have no effects on  
 6 known hazardous material sites.

7 **3.9.2 ENVIRONMENTAL CONSEQUENCES OF**  
 8 **THE BUILD ALTERNATIVE**

9 The Build Alternative could affect 17 sites of potential  
 10 environmental concern through property acquisition or  
 11 construction near potentially contaminated soils or  
 12 water. The sites of potential concern and the actions  
 13 affecting them are shown by location in Exhibit 3-19  
 14 and described in Exhibit 3-20.

15 EXHIBIT 3-19: LOCATION OF HAZARDOUS MATERIALS SITES



# Sites the Project Has a Potential to Impact



North

Source: Pinyon Environmental, 2009

16 Twelve of the 17 sites identified would not be totally  
 17 acquired. However, there may be partial acquisition of  
 18 these parcels, and some construction activities, such  
 19 as pavement removal and replacement, would occur.  
 20 Given the historical operations at these facilities, it is  
 21 unlikely that contamination would be encountered in  
 22 the upper foot of soil, the anticipated depth of  
 23 excavation.

24 Several alternatives were evaluated for shifting the  
 25 alignment to avoid total acquisition of contaminated  
 26 properties; however, that was not feasible because of  
 27 the proximity of those properties to existing roadways.  
 28 For three of the sites that would be acquired, cleanup  
 29 is either complete or is ongoing. The responsible party  
 30 would continue to be required to pay for any  
 31 remediation required. At the other sites, no  
 32 investigation work has been completed, and the extent  
 33 of contamination, if any, is unknown. It is not possible  
 34 to estimate those costs at this time; however, CDOT is  
 35 aware of the potential impact.

36 Buildings and structures, such as traffic poles, could  
 37 contain lead based paint. Lead based paint can be  
 38 hazardous to workers if it is disturbed during  
 39 construction. Lead is also an environmental toxin, and  
 40 requires disposal as a hazardous waste if  
 41 concentrations exceed the Colorado Department of  
 42 Public Health and Environment (CDPHE) limits.

43 Many buildings and structures constructed before 1981  
 44 contain asbestos materials. Most of the structures and  
 45 buildings that would be demolished under the Build  
 46 Alternative were constructed prior to this date.  
 47 Asbestos surveys will, therefore, be required to  
 48 determine if asbestos is present. Asbestos-containing  
 49 building materials must be abated prior to demolition  
 50 activities.

EXHIBIT 3-20: HAZARDOUS MATERIALS SITES WITH THE POTENTIAL TO IMPACT THE PROJECT

| Map ID | Site  | Address                     | Reason for Concern   | Impact   |
|--------|---|-----------------------------|--|--|
| 1      | Grease Monkey   | 395 Wadsworth Blvd.         | Operating auto repair, possible petroleum, solvents and heavy metal contamination.   | Partial acquisition, construction would occur near this parcel.        |
| 2      | Merchants Oil, Inc. (aka Bradley)                         | 401 Wadsworth Blvd.         | Operating service station, listed as a tank leak facility, possible petroleum contamination.   | Partial acquisition, construction would occur near this parcel.        |
| 3      | Wal-Mart  | 440 Wadsworth Blvd.         | Wal-Mart service center and listed as a closed tank leak in July 1997, possible petroleum contamination.   | Partial acquisition, construction would occur near this parcel.        |
| 4      | Beauty College  | 441 Wadsworth Blvd.         | Chemicals used in nail salons are classified as hazardous substances. Depending on handling practices, site could be impacted. Depending on sand trap maintenance, site could be impacted. | Partial acquisition, construction would occur near this parcel.        |
| 5      | Circle S Mini Mart (aka Boonshow Gas)                     | 495 Wadsworth Blvd.         | Operating service station, listed as a tank leak facility, possible petroleum contamination.   | The Build Alternative would require full acquisition of this property. |
| 6      | Summit Lakewood   | 7576 West 5th Avenue        | Previous motorcycle sales, and possible repair. Possible petroleum, solvent and heavy metal contamination.   | Partial acquisition, construction would occur near this parcel.        |
| 7      | Former 7-Eleven (currently a multi-suite office building) | 699 Wadsworth Blvd.         | Tank facility - tanks removed and clean-up complete, possible residual petroleum contamination.  | The Build Alternative would require full acquisition of this property. |
| 8      | Diamond Shamrock (aka Western Convenience)                | 715 Wadsworth Blvd.         | Operating service station, listed as a tank leak facility, possible petroleum contamination.   | The Build Alternative would require full acquisition of this property. |
| 9      | Longs Peak Equipment                                      | 815 Wadsworth Blvd.         | May repair and service equipment, possible petroleum, solvent and heavy metal contamination.   | Partial acquisition, construction would occur near this parcel.        |
| 10     | U-Haul  | 820 Wadsworth Blvd.         | May repair and service equipment, possible petroleum, solvent and heavy metal contamination.   | Partial acquisition, construction would occur near this parcel.        |
| 11     | Fling's Auto Repair/Corvette Specialists                  | 829 and 831 Wadsworth Blvd. | Two active auto maintenance shops operating on the same property, possible petroleum, solvents and heavy metal contamination.  | Partial acquisition, construction would occur near this parcel.        |
| 12     | Former Pine Cove Greenhouse (currently Jensen's Flowers)  | 845 Wadsworth Blvd.         | Listed as having a historical tank leak, possible petroleum contamination.   | Partial acquisition, construction would occur near this parcel.        |
| 13     | Lakewood Muffler & Brake                                  | 1000 Wadsworth Blvd.        | Operating automotive company, possible petroleum and solvent contamination.  | The Build Alternative would require full acquisition of this property. |
| 14     | Car Wash  | 1080 Wadsworth Blvd.        | Sand traps associated with car washes can collect petroleum and other pollutants.  | Partial acquisition, construction would occur near this parcel.        |
| 15     | Beauty College (currently an unoccupied site)             | 1225 Wadsworth Blvd.        | Chemicals used in nail salons are classified as hazardous substances. Depending on handling practices, site could be impacted. Depending on sand trap maintenance, site could be impacted. | Partial acquisition, construction would occur near this parcel.        |
| 16     | Motorcycle/Scooter Sales                                  | 1251 Wadsworth Blvd.        | May repair and service vehicles, possible petroleum, solvent and heavy metal contamination.  | Partial acquisition, construction would occur near this parcel.        |
| 17     | Western Convenience/ Diamond Shamrock                     | 7603 West 13th Ave.         | Operating service station, listed as a tank leak facility, possible petroleum contamination.   | The Build Alternative would require full acquisition of this property. |

Source: Pinyon Environmental, 2009

### 3.9.3 MITIGATION

Protective measures will be taken before, during, and after construction to minimize the risk of encountering petroleum products and petroleum-contaminated soils. A full Phase I Environmental Site Assessment (ESA) according to American Society of Testing and Materials (ASTM) 2005 standards will be completed prior to any total property acquisition. Given the possibility of multiple property transactions, more than one ESA may be required. Phase II ESAs will be required to characterize, manage, and remediate contaminated properties. Phase II ESA recommendations will be finalized on the basis of Phase I results.

A *Materials Handling Plan* to address contaminated soil and groundwater will be developed to CDOT standards. The Materials Management Plan will include a section on dealing with unanticipated contamination. Project specifications will be prepared and implemented during construction to ensure worker and public safety on or near contaminated sites, as directed by the findings of Phase I assessments. CDOT's *Environmental Safety Management Specifications*, Section 250, will be followed in the transportation, handling, monitoring, and disposal of any hazardous materials encountered during construction.

If painted surfaces are disturbed during construction or demolition and disposed of separately, they will need to be tested using Toxicity Characteristic Leaching Procedure (TCLP) to determine proper disposal methods. Moreover, workers will be required to follow the U.S. Occupational Safety and Health Administration (OSHA) "Lead in Construction Standard" (OSHA, 29 CFR 1926.26), if the lead based paint is going to be disturbed.

Based on the U.S. Environmental Protection Agency (EPA) and CDPHE regulations, an asbestos survey and demolition permit are required prior to the demolition of a bridge. Any asbestos-containing material that is friable or will be friable during construction and demolition activities must be removed prior to demolition by a licensed abatement contractor. This includes demolition of any acquired properties.

### 3.10 FLOODPLAINS

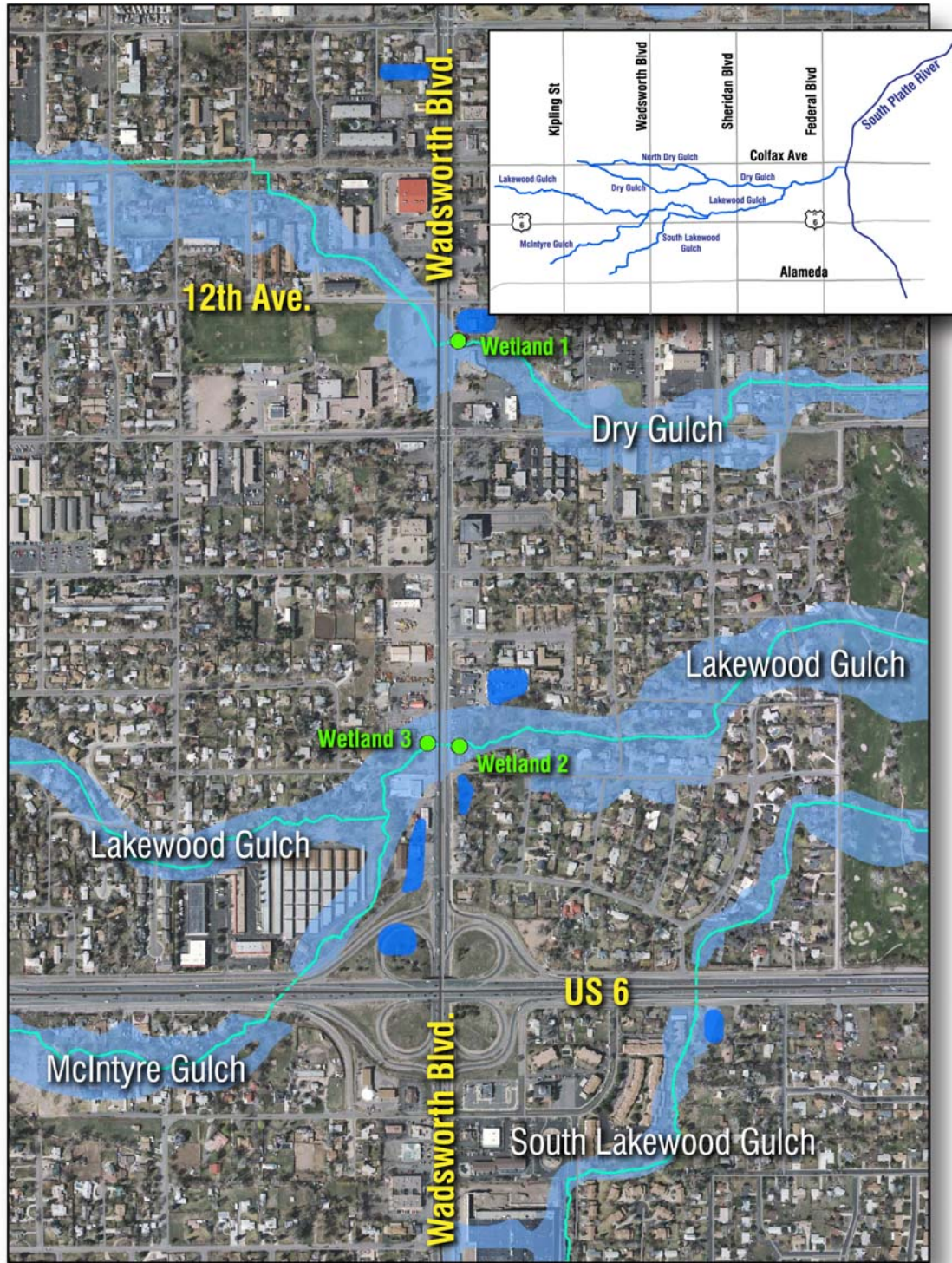
Executive Order 11988 (Floodplain Management) requires federal agencies to avoid impacts to floodplains whenever possible. FHWA requirements for compliance with this Executive Order are outlined in 23 CFR 650, Subpart A.

A floodplain is the low land adjacent to a stream that is inundated with water during a flood event. Federal law requires agencies to minimize the impact of highway actions that adversely affect the floodplain and make efforts to restore and preserve natural and beneficial floodplain values.

The 100-year floodplain (the area of land that would be covered by the 100-year flood) is the regulatory standard used to administer flood management programs.

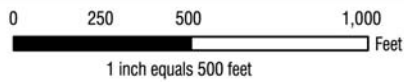
The 100-year floodplains have been delineated by the Federal Emergency Management Agency (FEMA) for four gulches in the study area: McIntyre Gulch, Lakewood Gulch, South Lakewood Gulch, and Dry Gulch (Exhibit 3-21). US 6 and Wadsworth both encroach on these floodplains where the gulches cross under the roadways in culverts. In all cases, the culverts are too small to convey large flood waters underneath the roadway. When culverts are undersized, flood waters back up at the culvert entrance and can cause increased flooding of surrounding properties. In the cases of Lakewood Gulch and Dry Gulch, the backed-up flood waters overtop Wadsworth as well, near Highland Drive and 12th Avenue, respectively.

EXHIBIT 3-21: WATERWAYS AND 100-YEAR FLOODPLAINS IN STUDY AREA



**Legend**

- Existing Wetlands
- Proposed Water Quality Pond
- 100-Year Floodplain



Source: CH2M HILL, 2009d; Pinyon Environmental, 2008

### 3.10.1 ENVIRONMENTAL CONSEQUENCES OF THE NO BUILD ALTERNATIVE

The No Build Alternative would not modify the floodplains in the project area. The existing locations where US 6 and Wadsworth cross floodplains associated with McIntyre, Lakewood, South Lakewood, and Dry Gulches would continue to encroach on these floodplains, limiting the capacity of the floodplains to carry a 100-year flood. The floodplain boundaries would remain unchanged and flooding of surrounding properties and overtopping of Wadsworth would continue.

### 3.10.2 ENVIRONMENTAL CONSEQUENCES OF THE BUILD ALTERNATIVE

The Build Alternative would reduce flooding in the project area by widening and realigning channels and by constructing culvert crossings large enough to convey flood waters under US 6 and Wadsworth. The existing crossings of McIntyre, Lakewood, and Dry Gulches would be replaced with larger structures, reducing flooding on surrounding properties, and eliminating flood water overtopping of Wadsworth at Lakewood Gulch and Dry Gulch. The crossing of South Lakewood Gulch under US 6 would be reconstructed; however, a larger structure would not be provided because the channel downstream lacks capacity to convey the larger volume of water that would result from a larger crossing.

The Build Alternative would encroach on floodplains in the project area. The proposed interchange reconstruction would encroach into the McIntyre Gulch floodplain and require extending and upsizing the existing culvert an additional 600 feet underneath the interchange and its associated ramps and frontage roads. The widening of Wadsworth would encroach into the Lakewood and Dry Gulch floodplains by 10 to 20 feet on each side of Wadsworth. The interchange reconstruction would encroach into the South Lakewood Gulch floodplain by approximately 10 feet on each side of US 6. In each of these cases, new larger culverts would not only convey flood waters underneath the newly encroaching roadways but would also improve the conveyance of flood waters

underneath existing roadways by replacing the existing undersized culverts.

Major modifications to the channels and their roadway crossings would improve flood conveyance and reduce flooding risks in the project area.

The Build Alternative would widen and realign portions of McIntyre Gulch and Lakewood Gulch, and would widen Dry Gulch (at entrance and exit portions of the new culvert) to provide adequate conveyance of flood waters within the project area. In the area near the confluence of McIntyre and Lakewood Gulches, channel widening was required to avoid flooding of Wadsworth. The channel was so narrow in this location that if the channel were not widened, waters would overtop the floodplain (and Wadsworth) before reaching the new culvert. In addition to eliminating flooding of Wadsworth, the realigned channel would have beneficial effects to the natural and beneficial floodplain values in the area.

The Build Alternative would also control the rate of water flowing from storm drains into the gulches during flood events. Storm drains would outfall into new water quality treatment ponds, where water would be stored and filtered before flowing into adjacent channels. Water is typically released from ponds over a 40-hour period. The delay in stormwater flow rate into the gulches would contribute to the reduction of flooding risks in the project area.

Temporary construction disturbance would occur when the channels of McIntyre and Lakewood Gulches are widened and realigned, and when the channel of Dry Gulch is widened. Temporary construction disturbance would also occur when the crossing structures are reconstructed at each gulch crossing of US 6 and Wadsworth.

### 3.10.3 MITIGATION

The proposed improvements to the channels and culvert crossings will be designed to convey 100-year flows, and will follow CDOT recommendations for the 50- to 100-year flood event capacity. An independent hydraulics report entailing the details of all hydrology analysis and hydraulics designs will be part of the final



1 design for the Build Alternative. This report details all of  
2 the mitigating requirements related to floodplains.  
3 CDOT will work closely with Lakewood on the  
4 proposed changes to the gulches and its roadway  
5 crossings, and will adhere to both Lakewood and  
6 CDOT hydraulic design criteria for major and minor  
7 storm drainage.

8 During final design, CDOT will coordinate with the  
9 appropriate local and federal agencies to conduct  
10 hydraulic analysis and obtain required floodplain  
11 permits. Floodplain permits, including a floodplain  
12 development permit, Conditional Letter of Map  
13 Revision (CLOMR), and Letter of Map Revision  
14 (LOMR) will be acquired for modifications to the  
15 floodplain. This process will follow the requirements of  
16 23 CFR 650 and 44 CFR 1.

17 Sediment traps, check dams, sediment basins, or other  
18 BMPs will be installed to slow runoff and run-on during  
19 construction of drainage improvements in gulches.  
20 Specific BMPs will be determined during final design.

### 21 **3.11 WATER QUALITY**

22 Transportation projects can impact water quality during  
23 both the construction and maintenance/operation  
24 phases of a project. During construction, soils are  
25 exposed, increasing wind and water erosion and  
26 potential for sediment to enter water bodies. Roadways  
27 also collect pollutants, such as sediments, metals, and  
28 petroleum compounds that can enter water bodies in  
29 the form of stormwater runoff. CDOT evaluates the  
30 potential for water quality impacts to ensure the quality  
31 of stormwater runoff is protected while its roadways are  
32 constructed, operated, and maintained.

33 The study area is located in the Upper South Platte  
34 River Basin. The main channel of the South Platte  
35 River, the primary drainage near the project, is located  
36 4.6 miles east of the study area. Portions of the South  
37 Platte River do not currently meet water quality  
38 standards for nitrate, fecal coliform, and *E. coli*.  
39 Discharges from wastewater facilities are considered  
40 the primary source of contamination. Several smaller  
41 creeks and drainages in or adjacent to the study area  
42 are tributaries to the South Platte River. As shown in

43 Exhibit 3-21, several of these tributaries (Dry Gulch,  
44 Lakewood Gulch, and McIntyre Gulch) cross under  
45 Wadsworth north of US 6. South Lakewood Gulch  
46 crosses US 6 east of Wadsworth.

47 Although portions of the South Platte River have water  
48 quality concerns, all of the gulches in the study area  
49 are within a segment of the Upper South Platte River  
50 Basin (classified by CDPHE as Segment 16c) that  
51 meets water quality standards. Waters in the study  
52 area are not capable of sustaining a wide variety of  
53 aquatic life but are suitable for irrigation and recreation.  
54 No special water quality protection is required for these  
55 waters.

56 Grass swales and depression areas currently lie along  
57 some of the US 6 frontage roads and provide a small  
58 amount of water quality treatment in these areas. No  
59 water quality systems exist in the study area store and  
60 filter stormwater runoff.

61 Runoff from the existing road carries some sediment  
62 and petroleum-related contaminants into the gulches.  
63 Estimated pollutant loads for highway runoff were  
64 calculated using the FHWA-approved Driscoll model  
65 for estimating mass loads from project sites. A limited  
66 analysis was conducted because many of the site-  
67 specific parameters required for a complete analysis  
68 were not available. Monitoring wells that collect long-  
69 term trend data are located within the South Platte  
70 River basin but none are near enough to the project  
71 site to provide relevant data to establish a water quality  
72 baseline specific to the project area.

73 Water quality impacts are summarized below.  
74 Additional information about water quality monitoring,  
75 characterization, and modeling results are included in  
76 the *Water Quality Technical Memorandum*  
77 (CH2M HILL, 2009d) in Appendix C.

#### 78 **3.11.1 ENVIRONMENTAL CONSEQUENCES OF** 79 **THE NO BUILD ALTERNATIVE**

80 The No Build Alternative would not construct any  
81 additional impervious surface or cause additional  
82 stormwater runoff. Impervious surfaces are hard  
83 surfaces such as asphalt, concrete, rooftops, and  
84 highly compacted soils. Unlike pervious areas where

1 soil and vegetation absorb rainwater, impervious  
2 surfaces are areas that water cannot penetrate. Land  
3 cover that is impervious prevents rainwater from  
4 entering into the soil and forces it to travel along the  
5 ground, carrying with it pollutants that are then  
6 discharged directly into a water body. Surface runoff  
7 into South Lakewood Gulch, Lakewood Gulch,  
8 McIntyre Gulch, and Dry Gulch contributes roadway  
9 pollutants, such as metals and petroleum-based  
10 products, to these drainages and to the South Platte  
11 River.

12 The existing roadway areas contain approximately  
13 37 acres of impervious surface area. No systems  
14 would be constructed to filter stormwater runoff, and  
15 untreated runoff would continue to discharge into  
16 adjacent water bodies. Although no new impervious  
17 areas would be added under the No Build Alternative,  
18 higher future traffic volumes would increase pollutant  
19 concentrations in stormwater runoff, and cause further  
20 water quality degradation in surrounding water bodies.

### 21 3.11.2 ENVIRONMENTAL CONSEQUENCES OF 22 THE BUILD ALTERNATIVE

23 The Build Alternative would increase the existing  
24 impervious surface area of US 6 and Wadsworth by  
25 3 acres (from 37 acres to a total of 40 acres) and  
26 would result in an increased volume of stormwater  
27 runoff from the highway.

28 The Driscoll model predicted that, without treatment,  
29 concentrations of metals and petroleum-related  
30 contaminants would increase from the existing  
31 condition between 1 and 27 percent under the Build  
32 Alternative. This prediction is based primarily on the  
33 increase in impervious surface area (because that was  
34 the main project-specific input available for the model).

35 During construction, soil-disturbing activities and the  
36 placement of new fill would expose surfaces subject to  
37 erosion. Erosion can lead to high amounts of  
38 sediments entering waterways and can destroy riparian  
39 areas surrounding the waterways. Gulch realignment  
40 would have short-lived, immediate turbidity effects (the  
41 waters would lose their transparency with an increase  
42 in sediments), but could effectively isolate the flowing  
43 stream from in-stream construction disturbance. Other

44 construction activities, such as the demolition of  
45 existing structures, placement of new structures,  
46 dewatering for foundations, and storage and fueling of  
47 equipment, also have the potential to release water  
48 contaminants.

### 49 3.11.3 MITIGATION

50 Permanent water quality treatment features will be  
51 included in the final design to filter roadway runoff  
52 associated with the Build Alternative and improve  
53 water quality for receiving waters. Water quality ponds  
54 will be provided to capture and treat 100 percent of the  
55 stormwater that would run off the roadways during a 2-  
56 year storm event. The conceptual drainage design  
57 determined that seven water quality facilities were  
58 needed to provide the necessary water quality capture  
59 volume (WQCV). The locations of these facilities are  
60 shown in Exhibit 3-21.

61 A Colorado Discharge Permit System - Stormwater  
62 Construction Permit (SCP) will be required for this  
63 project. A Stormwater Management Plan will be  
64 developed in accordance with the conditions of the  
65 SCP. Erosion and sediment control BMPs will be  
66 implemented in accordance with *CDOT Standard  
67 Specifications for Road and Bridge Construction* and  
68 the revised provisions for water quality outlined in the  
69 Consent Order with CDPHE and incorporated into  
70 Section 107.25 (Water Quality) and Section 208  
71 (Erosion Control). This project will also require  
72 obtaining a Construction Dewatering Permit.

### 73 3.12 WETLANDS

74 Executive Order 11990 (Protection of Wetlands)  
75 requires federal agencies to protect wetlands by  
76 avoiding construction in wetlands whenever possible.  
77 FHWA requirements for compliance with this Executive  
78 Order are outlined in 23 CFR 777.

79 Wetlands, also called bogs, swamps, and marshes,  
80 provide many benefits including water quality  
81 improvements, food and habitat for fish and wildlife,  
82 flood control and river bank erosion control, and  
83 recreation. In urban areas, wetlands serve a  
84 particularly important function of controlling increases  
85 in the rate and volume of stormwater runoff.

1 Wetlands are a valuable and declining resource and as  
2 such are protected in certain ways under the Clean  
3 Water Act. Section 404 of the Clean Water Act  
4 provides protection for America's wetlands, streams  
5 and other waters by requiring a permit from the U.S.  
6 Army Corps of Engineers (USACE) for any actions that  
7 may dredge or fill streams or wetlands. In general, to  
8 obtain a Section 404 permit, applicants must  
9 demonstrate that dredging or filling streams or  
10 wetlands under the jurisdiction of the USACE  
11 (jurisdictional wetlands and other waters of the United  
12 States) would not significantly degrade the nation's  
13 waters and no practicable alternatives less damaging  
14 to the aquatic environment exist.

15 Wetlands and other waters of the United States (WUS)  
16 were evaluated in the summer of 2007 in accordance  
17 with the *USACE Wetland Delineation Manual* (USACE,  
18 1987). Wetland determination was based on the  
19 presence of hydrophytic vegetation, hydric soils, and  
20 wetland hydrology. WUS include wetlands, lakes,  
21 rivers, and streams (intermittent and perennial) and  
22 their tributaries, under the jurisdiction of the United  
23 States and the State of Colorado. For additional  
24 information, refer to the *Wetland Delineation Report of*  
25 *US 6 and Wadsworth Boulevard* (Pinyon  
26 Environmental, 2008) in Appendix C.

27 Three wetland sites totaling 0.02 acre are located  
28 within the study area in portions of Dry Gulch and  
29 Lakewood Gulch adjacent to Wadsworth; these  
30 wetlands are shown in Exhibit 3-21. Wetland types are  
31 palustrine emergent (non-tidal wetlands dominated by  
32 grasses, sedges, and forbs) and contain a variety of  
33 wetland plant species including emory's sedge (*Carex*  
34 *emoryi*), reed canary grass (*Phalaris arundinacea*), and  
35 smooth brome (*Bromus inermis*), with an overstory of  
36 Siberian Elms (*Ulmus pumila*), peachleaf willow (*Salix*  
37 *amygdaloides*), and prairie cottonwood (*Populus*  
38 *deltoides*). As shown in Exhibits 3-22 and 3-23,  
39 wetlands in the project area are generally low quality  
40 and provide limited habitat for wildlife species. Three  
41 WUS are located within the study area: Dry Gulch,  
42 Lakewood Gulch, and McIntyre Gulch (Exhibit 3-21).  
43 These gulches have been channelized and redirected  
44 to accommodate past development, and in their current

45 configurations, are not adequate to convey the flow of  
46 the 100-year flood event. The USACE has declined to  
47 make a jurisdictional determination for wetlands and  
48 WUS in the study area at this time. The impact  
49 analysis and mitigation analyzed in this EA assumes  
50 that waters and wetlands within the study area are  
51 jurisdictional and subject to Section 404 requirements.  
52 Correspondence with the USACE is included in  
53 Appendix C.

EXHIBIT 3-22: DRY GULCH CROSSING AT WADSWORTH

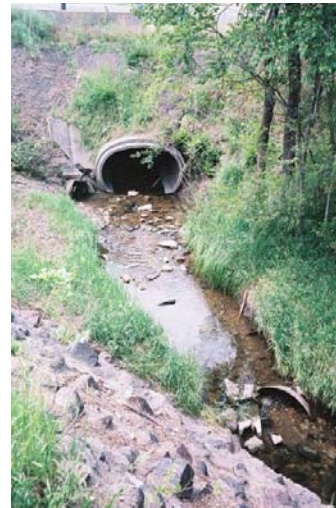


EXHIBIT 3-23: LAKEWOOD GULCH WEST OF WADSWORTH



**3.12.1 ENVIRONMENTAL CONSEQUENCES OF THE NO BUILD ALTERNATIVE**

No wetlands or WUS would be permanently impacted by the No Build Alternative.

**3.12.2 ENVIRONMENTAL CONSEQUENCES OF THE BUILD ALTERNATIVE**

All three wetland sites would be removed as a result of the Build Alternative, resulting in a direct permanent impact to 0.02 acre of wetlands. There were no options to avoid disturbing these wetlands because they are located along confined drainages that need to be expanded and regraded.

Channel improvements included in the Build Alternative would widen drainage areas and stabilize embankments. The wider channel would provide a greater opportunity for riparian vegetation and wetlands to re-establish. The wider drainage channels also would distribute and dissipate flows to reduce scour and erosion in the channels, which would reduce sedimentation and improve the quality of WUS.

Approximately 0.27 acre of WUS associated with Dry Gulch, Lakewood Gulch, and McIntyre Gulch would be temporarily impacted during construction. While the WUS areas would be disturbed during construction, they would be permanently enlarged as a result of widening the gulches from the Build Alternative. The adverse impact, therefore, is temporary during construction, while the permanent, long-term impact would be beneficial as the WUS areas would be substantially increased. A summary of the impacts to WUS is presented in Exhibit 3-24. All three gulches would be realigned and/or widened to accommodate the new interchange and reconfigured to convey 100-year flows. The project team has coordinated with Lakewood and the Urban Drainage and Flood Control District. Each has contributed to the design of the project and recommends the drainage improvements included in the Build Alternative.

Realignment of these gulches represents a minor impact to WUS, especially when weighed against the benefits associated with improved system function, flood conveyance, bank stability, and riparian habitat

EXHIBIT 3-24: SUMMARY OF BUILD ALTERNATIVE IMPACTS TO WETLANDS AND WATERS OF THE UNITED STATES

| Feature              | Area Impacted Acres | Impact Description |
|----------------------|---------------------|--------------------|
| Wetland 1            | 0.002               | Permanent          |
| Wetland 2            | 0.01                | Permanent          |
| Wetland 3            | 0.001               | Permanent          |
| <b>Wetland Total</b> | <b>0.02</b>         | <b>Permanent</b>   |
| Dry Gulch            | 0.02                | Temporary          |
| Lakewood Gulch       | 0.21                | Temporary          |
| McIntyre Gulch       | 0.04                | Temporary          |
| <b>WUS Total</b>     | <b>0.27</b>         | <b>Temporary</b>   |

Source: CH2M HILL, 2009d; Pinyon Environmental, 2008

potential. Widening the channels represents a net benefit to WUS, which would be permanently increased in size.

**3.12.3 AVOIDANCE AND MINIMIZATION**

Total permanent impacts to jurisdictional wetlands and other WUS would be 0.02 acre. The project team evaluated placing walls around wetlands to avoid permanent impacts. However, this action would have conflicted with the realignment and widening of Dry Gulch and Lakewood Gulch. The realignment of Dry Gulch, Lakewood Gulch, and McIntyre Gulch would restore the gulches to a more natural flow and improve flood control at crossings at US 6 and Wadsworth.

**3.12.4 MITIGATION**

A wetland finding will be completed during final design and will include a final assessment of impacts and a detailed plan for mitigation.

CDOT will obtain a Section 404 permit from the USACE for impacts to wetlands and WUS. Because total permanent impacts to jurisdictional wetlands and other WUS would be minor, and there is a net benefit associated with the realignment the gulches, the project would qualify for streamlined permitting under the General Nationwide Permit (NWP) #14 for Linear Transportation Projects and NWP #27, Aquatic Habitat Restoration, Establishment, and Enhancement Activities. General permits are often issued by USACE

1 for categories of activities that are similar in nature and  
2 have only minimal individual or cumulative adverse  
3 environmental effects. The USACE has confirmed  
4 informally that the Build Alternative could be permitted  
5 under a NWP, and an individual permit would not be  
6 required; final permit applications will be filed later in  
7 the design phase.

8 CDOT requires compensatory mitigation at a 1:1 ratio  
9 for all wetlands permanently impacted by project  
10 activities. Unavoidable impacts to wetlands resulting  
11 from the Build Alternative will be mitigated on a one-  
12 for-one basis in accordance with CDOT policy,  
13 resulting in no net loss of wetlands.

### 14 **3.13 CUMULATIVE IMPACT ANALYSIS**

15 Cumulative impacts result from the incremental impact  
16 of an action when added to other past, present, and  
17 reasonably foreseeable future actions, regardless of  
18 the agency (federal or non-federal) or person who  
19 undertakes such other actions. Cumulative impacts  
20 can result from individually minor, but collectively  
21 significant, actions taking place over a period of time  
22 (40 CFR 1508.7).

23 The study area for cumulative impacts (Exhibit 3-25) is  
24 defined by the largest geographic scope of the  
25 resources that could be affected by cumulative  
26 impacts. In this case (and for most highway projects),  
27 the largest area of influence extends to the area of  
28 influence on traffic levels of the proposed project  
29 (FHWA, 1992). The time frame established for the  
30 analysis extends from 1940 to 2035. These dates were  
31 based upon growth and development that occurred  
32 between World War II and the project horizon.

#### 33 **3.13.1 PAST, PRESENT, AND REASONABLY 34 FORESEEABLE FUTURE ACTIONS**

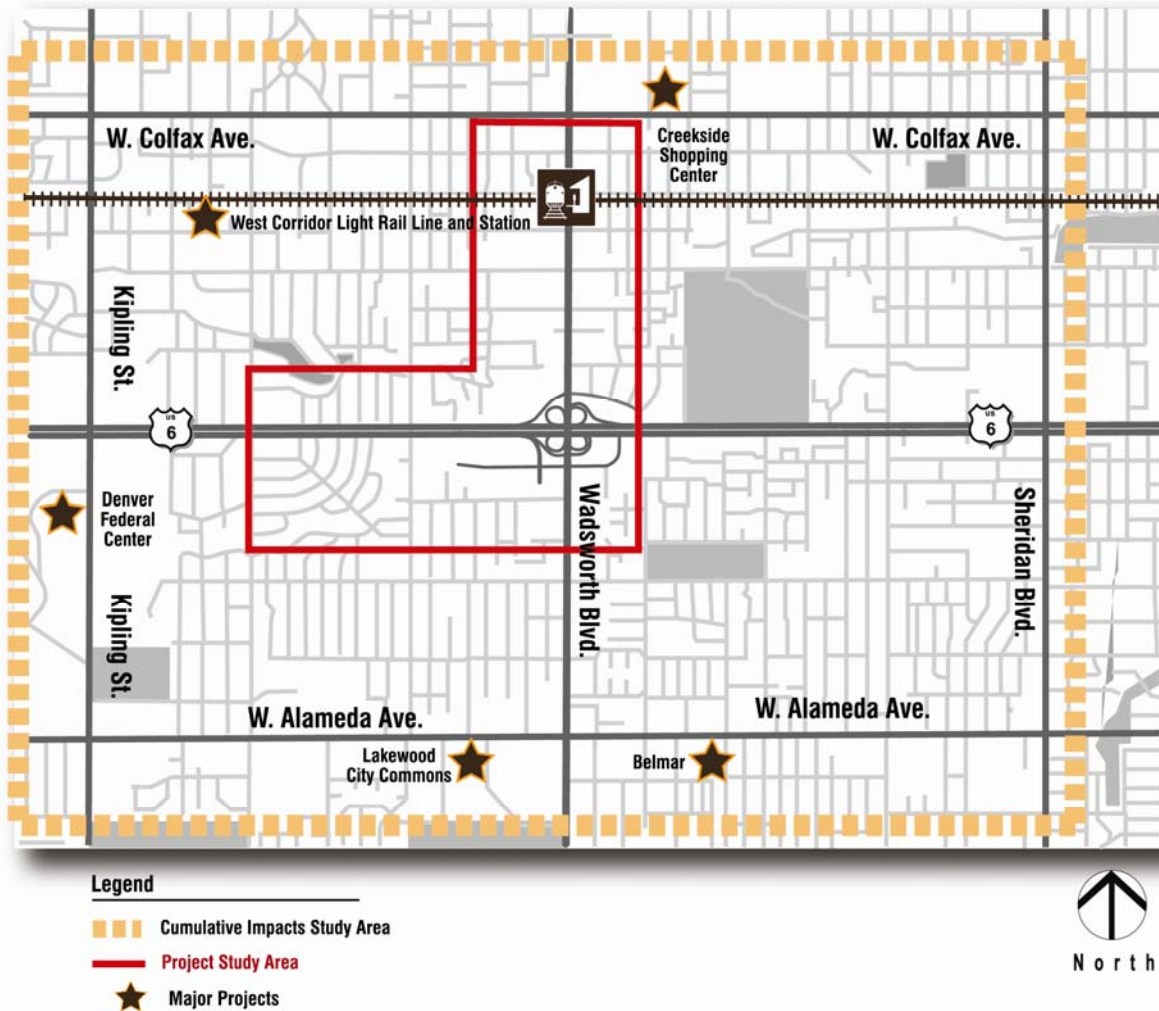
35 A key component of the cumulative impacts analysis is  
36 the identification of past, present, and reasonably  
37 foreseeable future actions that incrementally impact  
38 resources affected by the Build Alternative.

39 Lakewood started as a small farming community  
40 5 miles west of Denver. By 1940 the area had grown  
41 into a suburban city filled out by neighborhood  
42 subdivisions. Past projects contributing to growth and  
43 land use change in the study area include the  
44 construction of early railroads and east-west roadways  
45 connecting Denver to Lakewood (Colfax Avenue and  
46 US 6), development of manufacturing operations  
47 during World War II (followed by the Denver Federal  
48 Center in 1950), establishment of post-World War II  
49 residential subdivisions, construction of Wadsworth  
50 and the US 6/Wadsworth interchange in 1961, and  
51 other infrastructure expansion to support this  
52 development. These projects transformed Lakewood  
53 from largely agricultural and open space areas to  
54 chiefly developed urban areas with pockets of open  
55 spaces.

56 The increase in impervious surfaces, modification of  
57 natural drainages, and conversion of habitat areas  
58 have degraded fish and wildlife habitat, water  
59 resources, air quality, and floodplains. Economic and  
60 neighborhood development have strengthened  
61 community and civic systems within Lakewood.

62 Projects completed more recently in the vicinity of the  
63 proposed project include the Creekside Shopping  
64 Center, Lakewood City Commons, Belmar, and other  
65 smaller residential and commercial developments.  
66 Large planned projects include construction and  
67 operation of RTD's West Corridor light rail line and  
68 transit station, future phases of the Belmar  
69 development, redevelopment of the Denver Federal  
70 Center, and other smaller developments. Future  
71 development around the 13th Avenue LRT station is  
72 expected but no specific proposals are under review or  
73 development, so detailed information that could be  
74 evaluated for cumulative impacts is not available. Past,  
75 present, and future projects considered are described  
76 in the *Land Use Existing Conditions Summary  
77 Technical Memorandum* (CH2M HILL, 2007c),  
78 contained in Appendix C. Major recent and planned  
79 developments are shown by location in Exhibit 3-25.

EXHIBIT 3-25: PAST, PRESENT, AND REASONABLY FORESEEABLE LAND DEVELOPMENT PROJECTS



Source: CH2M HILL, 2007c

1 **3.13.2 CUMULATIVE IMPACTS**

2 Cumulative impacts analysis focuses on specific  
 3 resources that are directly or indirectly affected by the  
 4 Build Alternative. If the Build Alternative has no direct  
 5 or indirect effect on a resource, then it would not  
 6 contribute to cumulative effects upon that resource,  
 7 regardless of the effects of other past, present, or  
 8 future projects. No impacts associated with the Build  
 9 Alternative have been identified for land use or  
 10 environmental justice. The No Build Alternative does  
 11 not have any effects on resources so is not included in  
 12 the cumulative effects analysis.

13 While past and recent development has altered the  
 14 environmental and social resources within the study

15 area, trends do not indicate that any resources are  
 16 diminished to be especially susceptible to cumulative  
 17 effects. Agency scoping did not identify any resources  
 18 of concern for cumulative effects within the study area.  
 19 Direct and indirect effects of the Build Alternative  
 20 discussed earlier in this chapter are identified with  
 21 consideration of the existing conditions of each  
 22 resource (and the past and present actions that have  
 23 the potential to affect those resources).

24 This analysis considers the potential for impacts of the  
 25 Build Alternative to interact with impacts of future  
 26 projects by others to accumulate and result in adverse  
 27 impacts to resources. The relevant future projects  
 28 include development and operation of the West  
 29 Corridor light rail line and Wadsworth station,

1 continued development of Belmar, and redevelopment  
2 of the Denver Federal Center.

3 The Build Alternative would result in beneficial impacts  
4 to floodplains, riparian habitat and wetlands, pedestrian  
5 and bicycle facilities, noise, socioeconomic conditions,  
6 transportation, water quality, and hazardous wastes.  
7 Other projects would have similar effects that would  
8 result in beneficial cumulative impacts for the study  
9 area.

10 ♦ The West Corridor project would construct water  
11 quality and storm detention facilities, clean up  
12 contaminated properties acquired for the project,  
13 and construct new sidewalks and bicycle paths  
14 near the light rail line and stations. Intersection  
15 improvements around the Wadsworth light rail  
16 station are also planned to improve traffic flow and  
17 safety.

18 ♦ Future phases of the Belmar development would  
19 include treatment of stormwater, sidewalk and  
20 roadway improvements, and improved community  
21 facilities and connections.

22 ♦ The redevelopment of the Denver Federal Center  
23 would provide improved pedestrian, bicycle, and  
24 transit connections associated with the expanded  
25 Cold Spring Park-n-Ride and light rail station, and  
26 improved roadway capacity and circulation from  
27 the reconnection of roadways closed when the  
28 Denver Federal Center was originally constructed.  
29 The continued remediation of contaminated sites  
30 on the property would improve environmental  
31 conditions and reduce risks to human health and  
32 the environment.

33 The following beneficial cumulative impacts would be  
34 expected:

- 35 ♦ Improved flood conveyance and floodplain values
- 36 ♦ Opportunities for riparian habitat and wetlands to  
37 establish
- 38 ♦ Remediation of contaminated properties
- 39 ♦ Improved pedestrian and bicycle facilities

40 ♦ Improved neighborhood integrity and community  
41 connections

42 ♦ Improved mobility, safety, and additional roadway  
43 capacity

44 ♦ Surface water runoff detention and treatment

45 The Build Alternative would result in adverse effects to  
46 historic properties and wetlands. Other projects do not  
47 affect historic properties; therefore, no cumulative  
48 impacts are anticipated. None of the properties around  
49 13th Avenue has been identified as listed or eligible for  
50 listing on the NRHP; other than impacts to a historic  
51 rail line, the West Corridor project is not anticipated to  
52 affect historic properties. According to the *Denver  
53 Federal Center Final Master Site Plan and  
54 Environmental Impact Statement* (EDAW/AECOM,  
55 2008), redevelopment of the Denver Federal Center  
56 would not result in adverse effects to historic  
57 properties. Belmar's buildings are recent, and no  
58 historic properties would be affected by continued  
59 development of the site.

60 The Build Alternative would permanently impact  
61 0.02 acre of jurisdictional wetlands. The incremental  
62 effect of this impact is so small that it would not result  
63 in meaningful impacts. Because CDOT requires  
64 mitigation on a one-for-one basis for any wetland  
65 impact (regardless of jurisdictional status), there would  
66 be no net loss of wetlands as a result of CDOT actions.

67 ♦ No wetlands are present within the portion of the  
68 West Corridor light rail line or station in the study  
69 area. RTD will mitigate for wetlands impacted by  
70 the light rail project outside of the immediate study  
71 area by following the requirements of the Section  
72 404 permitting process.

73 ♦ No wetlands would be affected by continued infill  
74 development of Belmar because the property is a  
75 former mall that did not contain wetlands.

76 ♦ Wetlands present on the Denver Federal Center  
77 would be incorporated into the designated open  
78 space areas and would be protected (EDAW/  
79 AECOM, 2008). No adverse cumulative effects to  
80 wetlands are anticipated.

1 If construction of multiple projects occurs at the same  
2 time, there could be negative short-term impacts to  
3 traffic operations and congestion in Lakewood. Impacts  
4 would include air emissions, noise, access disruptions,  
5 and congestion.

### 6 3.13.3 MITIGATION

7 The Build Alternative, when added to past, present,  
8 and reasonably foreseeable actions, would not result in  
9 long-term adverse cumulative impacts to  
10 environmental resources. In many cases the  
11 incremental impact of the Build Alternative would be  
12 positive and would contribute beneficially to  
13 environmental resources. Project contributions to  
14 cumulative impacts will be mitigated in the ways  
15 already described as mitigation for direct and indirect  
16 adverse effects of the Build Alternative.

### 17 3.14 OTHER RESOURCES

18 After consideration of data obtained from literature and  
19 field reviews, the following resources are not evaluated  
20 in detail in this EA because they were not present in  
21 the study area, would not be affected by the Build  
22 Alternative, or would experience negligible impacts  
23 after application of standard construction precautions:  
24 Archaeological Resources, Paleontological Resources,  
25 Native American Consultation, Air Quality, Energy,  
26 Geologic Resources and Soil, Farmlands, Fish and  
27 Wildlife, Threatened and Endangered Species,  
28 Vegetation and Noxious Weeds, Visual Resources,  
29 and Utilities. A brief background on these resources  
30 and the reason for their dismissal is included below.

31 Additional information about these resources and the  
32 recommendations for analysis are available in the  
33 *Summary of Existing Conditions, US 6 and Wadsworth*  
34 *Boulevard Area* (CH2M HILL, 2007a) and *Existing*  
35 *Conditions Report of Engineering Design Elements*  
36 (CH2M HILL, 2007d) in Appendix C. In some cases,  
37 additional analysis was conducted to inform the  
38 decisions about impact analysis, and this analysis is  
39 included in separate memorandums, also included in  
40 Appendix C and referenced below.

### 41 3.14.1 ARCHAEOLOGICAL RESOURCES

42 The study area is highly developed and most natural  
43 areas have been disturbed, making it unlikely that any  
44 important, intact archaeological resources are present.  
45 A file and literature search conducted with the  
46 Colorado Historical Society Office of Archaeology and  
47 Historic Preservation (OAHF) confirmed that no  
48 archaeological resources had been previously  
49 recorded in the study area, and no undisturbed areas  
50 with archaeological potential were discovered during a  
51 field survey (TEC, 2008). In the unlikely event that  
52 cultural deposits are discovered during construction,  
53 CDOT would follow its standard practice of ceasing  
54 work, consulting with the CDOT archaeologist, and  
55 evaluating materials in consultation with the Colorado  
56 SHPO to determine if mitigation is required.

### 57 3.14.2 PALEONTOLOGICAL RESOURCES

58 To assess the paleontological sensitivity of the area,  
59 literature and museum records were reviewed, and a  
60 field survey was conducted to inspect the study area  
61 for paleontological resources (RMP, 2007). No record  
62 or presence of fossils was revealed in the study area.

63 The Denver Formation is present within the study area  
64 and could be affected by construction excavations. To  
65 ensure that important paleontological remains are not  
66 destroyed during construction, the CDOT Staff  
67 Paleontologist will examine final plans to determine  
68 whether construction monitoring is required.  
69 Furthermore, prior to construction, the CDOT Staff  
70 Paleontologist will examine existing Denver Formation  
71 bedrock exposure that could not be examined  
72 previously because of snow cover at the time of  
73 original survey. If any scientifically significant fossil  
74 localities are discovered during that survey, CDOT will  
75 perform mitigation of construction impacts by  
76 systematic salvage of a statistically representative  
77 sample of the fossils found there, either prior to or  
78 during construction. If any subsurface bones or other  
79 potential fossils are found anywhere within the study  
80 area during construction, the CDOT Staff  
81 Paleontologist will assess their significance and make  
82 further recommendations.



### 3.14.3 NATIVE AMERICAN CONSULTATION

Section 106 of the National Historic Preservation Act (as amended) and the Advisory Council on Historic Preservation regulations (36 CFR 800.2[c][2][ii]) mandate that federal agencies coordinate with interested Native American tribes in the planning process for federal undertakings. Consultation with Native American tribes recognizes the government-to-government relationship between the United States government and sovereign tribal groups. In that context, federal agencies must acknowledge that historic properties of religious and cultural significance to one or more tribes may be located on ancestral, aboriginal, or ceded lands beyond modern reservation boundaries. Consulting tribes are offered the opportunity to identify concerns about cultural resources and comment on how the project might affect them. If it is found that the project will impact properties that are eligible for inclusion on the NRHP and are of religious or cultural significance to one or more consulting tribes, their role in the consultation process may also include participation in resolving how best to avoid, minimize, or mitigate those impacts. By describing the proposed undertaking and the nature of any known cultural sites, and consulting with the interested Native American community, FHWA and CDOT strive to effectively protect areas important to American Indian people.

In September 2007, FHWA contacted 14 federally recognized tribes with an established interest in Jefferson County, Colorado, and invited them to participate as consulting parties. Only the Northern Cheyenne Tribe responded in writing to the solicitation, declining the invitation to consult. None of the remaining tribes elected to reply, and therefore no tribal governments participated in the project under the auspices of the National Historic Preservation Act. As a result of these actions, FHWA has fulfilled its legal obligations for tribal consultation under federal law.

### 3.14.4 AIR QUALITY

Air quality analysis, detailed in the *Air Quality Technical Memorandum* (CH2M HILL, 2009e), indicates that the Build Alternative would not result in long-term or permanent adverse effects to air quality.

The project is included in the air quality conforming *2035 Metro Vision Regional Transportation Plan* (DRCOG, 2007) and the conforming *2008-2013 Transportation Improvement Program* (DRCOG, 2008), which means that the project has been factored into the larger, regional air quality conformity determination for the Denver Metropolitan Area. Regional conformity indicates that transportation activities within the region will not cause new air quality violations, worsen existing violations, or delay timely attainment of National Ambient Air Quality Standards (NAAQS).

CDOT also conducts project-level conformity analysis in non-attainment or attainment/maintenance areas to assess localized effects of traffic growth in the air quality planning process. Project-level analyses indicated that carbon monoxide (CO) would not exceed NAAQS. CO emissions are projected to decrease by the design year (2035) as a result of reduced congestion and other regional actions not related to this project. The Build Alternative would not be likely to cause or contribute to any new localized violations of ozone (O<sub>3</sub>) or particulate matter less than 10 microns in diameter (PM<sub>10</sub>), or increase the frequency or severity of any existing violations.

No appreciable difference in regional mobile source air toxics (MSAT) emissions is anticipated between the No Build Alternative and the Build Alternative, and, in both cases, emissions in 2035 would likely be lower than present levels as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020.

Air pollutants would increase temporarily during construction as a result of the operation of heavy equipment, lower traffic speed, earth excavation, and paving activities. These impacts would be addressed by the implementation of BMPs during construction as specified in Appendix B, *Summary of Mitigation and Monitoring Commitments*.

### 3.14.5 ENERGY

A slight decrease in fuel usage would be expected under the Build Alternative because decreased traffic congestion would result in more efficient fuel use by

1 vehicles in the study area. Improved access to transit  
2 also may reduce regional vehicle miles traveled (VMT).  
3 Expected increases in vehicle fuel economy, unrelated  
4 to the project, could also contribute to fuel use  
5 reductions.

6 During construction, CDOT will require contractors to  
7 follow standard specifications for reducing energy  
8 consumption, such as limiting the idling of construction  
9 equipment, locating construction staging areas close to  
10 the work site, minimizing motorist delays and vehicle  
11 idling with effective traffic management, and  
12 coordinating general maintenance activities during  
13 construction outside of peak commuting hours.

### 14 3.14.6 GEOLOGICAL RESOURCES AND SOIL

15 No major geologic hazards were identified in the study  
16 area that would restrict construction. No important  
17 mineral resources were identified in the study area.

### 18 3.14.7 FARMLANDS

19 The study area is located within the Denver-Aurora  
20 Census 2000 urbanized area; all soils within this area  
21 are excluded from protection under the Farmland  
22 Protection Policy Act of 1981.

### 23 3.14.8 FISH AND WILDLIFE

24 The study area is highly developed and most natural  
25 areas have been disturbed. Biologists from CH2M HILL  
26 and CDOT conducted a field review of the study area  
27 and concluded that limited wildlife habitat is present;  
28 wildlife observed consisted of common urban wildlife  
29 species, including foxes, skunks, raccoons, coyotes,  
30 and squirrels (CH2M HILL, 2007e). Wildlife habitat is  
31 provided primarily by Lakewood Gulch and Dry Gulch,  
32 stream drainages that cross under Wadsworth. These  
33 drainages are highly constrained and do not provide  
34 quality habitat for fish. No bird nests were identified  
35 within the study area along the two gulches, and no  
36 swallow nests were observed in the culverts.

37 Wildlife would benefit from widened box culverts under  
38 Wadsworth at Lakewood Gulch and Dry Gulch that  
39 would improve wildlife movement along the gulches. In  
40 addition, widened drainage channels would provide an

41 opportunity for riparian habitat and wetlands to  
42 establish in the study area, improving wildlife habitat.

43 Adverse impacts to wildlife would be limited to minor  
44 habitat loss as a result of vegetation removal during  
45 construction. Project construction activities would be  
46 carried out in accordance with CDOT's standard  
47 revegetation requirements, and compliance with  
48 requirements of the Migratory Bird Treaty Act of 1918  
49 and Senate Bill 40 certification as specified in  
50 Appendix B, *Summary of Mitigation and Monitoring*  
51 *Commitments*.

### 52 3.14.9 THREATENED AND ENDANGERED 53 SPECIES

54 Federally threatened, endangered, or candidate  
55 species, state threatened and endangered (T&E)  
56 species, and state species of special concern are  
57 either not present or are unlikely to occur in the study  
58 area (CH2M HILL, 2007e and CH2M HILL, 2009f). The  
59 study area lacks suitable habitat to support the wildlife  
60 appearing on the U.S. Fish and Wildlife Service  
61 (USFWS) list of federally threatened and endangered  
62 species for Jefferson County. The project occurs within  
63 the Denver metropolitan block clearance area for  
64 Preble's meadow jumping mouse, within which the  
65 USFWS has determined that the species is not likely to  
66 exist.

### 67 3.14.10 VEGETATION AND NOXIOUS WEEDS

68 A field review of the study area was conducted in  
69 July 2007 (CH2M HILL, 2007e). Natural vegetation  
70 within the study area is concentrated along the  
71 Lakewood and Dry Gulch drainages near Wadsworth.  
72 Vegetation consists of an overstory of native trees  
73 (plains cottonwood, peachleaf willow, and box elder),  
74 non-native trees (Chinese elm and green ash), and an  
75 understory comprising weedy grasses and forbs.  
76 Noxious weeds occur in both of these drainages. Refer  
77 to the *6th Avenue/Wadsworth Boulevard Biological*  
78 *Field Review* (CH2M HILL, 2007e) in Appendix C for  
79 additional information.

80 Natural vegetation and noxious weeds would be  
81 disturbed during construction of the Build Alternative.  
82 To minimize impacts to natural vegetation and limit the

1 spread of noxious weeds in the construction area,  
2 vegetation removed during construction will be  
3 replaced with native vegetation, which will be  
4 established as soon as feasible. Prior to construction, a  
5 noxious weeds survey will be conducted, and, if  
6 needed, an Integrated Noxious Weed Management  
7 Plan will be developed and implemented during  
8 construction. The plan will contain specific BMPs, such  
9 as managing open soil surfaces and topsoil that is  
10 stockpiled for reuse, to control the establishment of  
11 noxious weeds.

### 12 3.14.11 VISUAL RESOURCES

13 Current views in the study area are limited by mature  
14 trees, walls, and large buildings, and the study area  
15 generally lacks visual focus (Civitas, 2007). No  
16 important views requiring protection or preservation are  
17 present in the study area. Refer to the *Aesthetic and*  
18 *Visual Context Technical Memorandum* in Appendix C  
19 for additional information. A raised median, roadside  
20 buffers, and buried utilities would provide opportunities  
21 for landscaping and visual continuity on Wadsworth.  
22 Noise walls would not block any significant views, and  
23 views from US 6 to the mountains would not change.

24 The new interchange would provide the opportunity to  
25 establish visual distinction and a sense of gateway for  
26 Lakewood. Lakewood has developed an aesthetic  
27 vision for the project and will have the opportunity to  
28 work closely with CDOT during the final design phase  
29 of the project to weigh in on the aesthetics of design  
30 elements. CDOT will also work closely with Lakewood  
31 on aesthetics related to noise walls, including grading,  
32 landscaping, and color and material of noise walls, with  
33 the goal of constructing an aesthetically pleasing  
34 project. By creating continuity on both the east and  
35 west sides of the corridor, the new interchange has the  
36 potential to establish visual distinction and a sense of  
37 gateway for Lakewood.

38 Lakewood will install, irrigate, and maintain any  
39 landscaping in medians or other areas. Landscaping  
40 will comply with clear zone requirements. CDOT will  
41 continue to maintain any non-irrigated areas in the  
42 interchange area.

### 43 3.14.12 UTILITIES

44 A review of existing utilities was conducted during the  
45 scoping phase of the EA (CH2M HILL, 2007d). The  
46 review included contacting the Utility Notification  
47 Center of Colorado to identify private utilities and  
48 municipalities with facilities in the study area, reviewing  
49 USGS topographic mapping, and conducting a  
50 reconnaissance field review. Utilities in the study area  
51 include overhead electric transmission lines, buried  
52 fiber optic lines, high pressure gas lines, water lines,  
53 sanitary sewer, and irrigation ditches. The Build  
54 Alternative design has been reviewed, potential  
55 conflicts with known utilities have been identified, and  
56 utility relocation costs have been included in the  
57 conceptual cost estimate for the Build Alternative.  
58 During final design, utilities will be avoided through  
59 design modifications or, where conflicts cannot be  
60 avoided, utilities will be relocated. Impacts to buried  
61 utilities may be avoided by protecting them with  
62 encasements. CDOT will coordinate utility impacts with  
63 Lakewood and private and public utility providers  
64 throughout project design and construction.

### 65 3.15 SUMMARY OF IMPACTS AND MITIGATION

66 Exhibit 3-26 summarizes the impacts of the No Build  
67 and Build Alternatives and identifies mitigation  
68 measures CDOT will include in the project to minimize  
69 impacts of the Build Alternative. The impacts and  
70 mitigation are presented for the thirteen environmental  
71 and social resources analyzed in detail in this EA.  
72 CDOT also has committed to mitigation for other  
73 resources (that is, those discussed in Section 3.14);  
74 Appendix B contains a complete listing of all mitigation  
75 and monitoring commitments included for the Build  
76 Alternative.

EXHIBIT 3-26: SUMMARY OF IMPACTS AND MITIGATION, US 6/WADSWORTH ENVIRONMENTAL ASSESSMENT

| Impacts of the No Build Alternative   | Impacts of the Build Alternative  | Mitigation Measures for the Build Alternative  |
|---|---|--|
| <b>Transportation</b>   |   |  |
| <ul style="list-style-type: none"> <li>◆ The four-lane section on Wadsworth operates at an unacceptable level of service during peak hours; traffic operations are projected to deteriorate further as traffic volumes increase.</li> <li>◆ Anticipated increases in bus frequency on Wadsworth would add to congestion in travel lanes and could affect transit transfers at the 13th Avenue LRT station.</li> <li>◆ The existing cloverleaf interchange at US 6 has low ramp speeds, short weaving sections, and tight curves that result in unacceptable LOS during peak hours.</li> <li>◆ Rear-end collisions related to sight distance and congestion, and sideswipe collisions related to lane changes and merges are the most frequent accident types in the study area. Operational inefficiencies at the interchange and along Wadsworth contribute to accidents.</li> <li>◆ As traffic volumes increase on Wadsworth, turning in and out of businesses and neighborhoods adjacent to Wadsworth would become more difficult, and neighborhood cut-through traffic may increase.</li> <li>◆ Cross street intersections with Wadsworth operate at unacceptable LOS; long delays (several minutes) at non-signalized intersections would get worse as traffic volumes increase.</li> <li>◆ One-way frontage roads in the interchange area on the north side of US 6 would continue to encourage neighborhood cut-through traffic to access businesses along the frontage road.</li> </ul> | <ul style="list-style-type: none"> <li>◆ An additional travel lane in each direction and access control measures, such as raised medians and driveway consolidation, would increase capacity on Wadsworth.</li> <li>◆ Traffic operations would be acceptable for all but one of the intersections (12th Avenue) on Wadsworth. Intersection improvements at 12th Avenue are not included due to uncertainty with land use changes/future development plans.</li> <li>◆ Transit operations at the 13th Avenue LRT station could be integrated with surrounding roadway operations.</li> <li>◆ Eliminating the existing cloverleaf design and increasing ramp lengths to meet current design standards would increase capacity at the interchange. However, the additional capacity could only be fully realized with capacity improvements to US 6.</li> <li>◆ Improving the operation of the US 6 and Wadsworth interchange would improve traffic flow on neighborhood streets and the surrounding major roadway network, including Wadsworth, Kipling, Sheridan, and US 6.</li> <li>◆ Traffic volumes on Wadsworth would increase an additional 10 percent (beyond 2035 No Build projections) because some traffic would shift to Wadsworth from adjacent corridors, such as Kipling and Sheridan. This would not induce additional travel but instead should help operations on those other parallel facilities.</li> <li>◆ Access to and conditions of bus stops would be improved with improved sidewalks.</li> <li>◆ Reduced congestion, access control, fewer vehicle conflicts, and improving operational efficiency of outdated transportation facilities would improve safety.</li> </ul> | <ul style="list-style-type: none"> <li>◆ CDOT will continue to coordinate with the RTD and Lakewood regarding development plans at and around the 13th Avenue LRT station.</li> <li>◆ CDOT will coordinate with RTD and Lakewood on the placement and aesthetics of bus stops and shelters. Bus shelters would be provided by others.</li> <li>◆ CDOT will coordinate with RTD to ensure access to bus stops during construction.</li> <li>◆ Any lane closures during construction will comply with CDOT's Lane Closure Strategy. Advance notice will be provided for extended lane closures. Detours will be identified with adequate signing to minimize out-of-direction travel.</li> </ul> |

EXHIBIT 3-26: SUMMARY OF IMPACTS AND MITIGATION, US 6/WADSWORTH ENVIRONMENTAL ASSESSMENT (CONT.)

| Impacts of the No Build Alternative  | Impacts of the Build Alternative  | Mitigation Measures for the Build Alternative   |
|--|---|---|
| <b>Pedestrian and Bicycle Facilities</b>   |   |   |
| <ul style="list-style-type: none"> <li>◆ The existing sidewalk system lacks continuity, contains various obstructions, and does not meet needs of pedestrians and bicyclists (including Americans with Disability Act standards). North of 10th Avenue, 85 percent of the sidewalk system is missing or substandard and would not support pedestrian and bicycle activity around the new light rail station at 13th Avenue.</li> <li>◆ US 6 would remain a barrier to safe pedestrian and bicycle travel as a result of uncontrolled crossings of high-volume, free-flow cloverleaf ramps with few gaps in traffic, limited sidewalks, and poor visibility between vehicles and pedestrians/bicyclists.</li> <li>◆ The lack of traffic signals between 5th and 10th Avenues limits safe crossings of Wadsworth between these intersections and may encourage pedestrians to make unsafe mid-block crossings.</li> <li>◆ Uncontrolled access and traffic congestion would continue to create unsafe conditions for pedestrians and bicyclists traveling along Wadsworth.</li> <li>◆ Pedestrian- and bicycle-related crashes would likely increase due to increased vehicular traffic volumes, increased pedestrian and bicyclist activity, and the lack of adequate sidewalks.</li> </ul> | <ul style="list-style-type: none"> <li>◆ The sidewalk crossing of US 6 would be improved; three of four loop ramps would be eliminated in the interchange, removing safety concerns for pedestrian/bicycle traffic associated with crossings of loop ramps (due to curvature and poor visibility).</li> <li>◆ The loop ramp in the northwest quadrant could be a barrier to pedestrian and bicycle crossing because high traffic volumes do not provide adequate gaps for pedestrian crossings, and the curvature of the ramp does not provide vehicles adequate advance visibility of pedestrians or bicycles crossing the ramp.</li> <li>◆ Several unsignalized crossings of free-flow on- and off-ramps, which also provide inadequate gaps for crossings in peak hours, would remain on the east side of Wadsworth.</li> <li>◆ Medians and lack of traffic signals at intersections between US 6 and 10th Avenue would create out-of-direction travel for pedestrians and bicyclists or result in unsafe mid-block crossings of Wadsworth.</li> <li>◆ Pedestrian and bicycle improvements would meet or exceed mobility and safety standards for multi-use paths</li> <li>◆ Detached paths along Wadsworth would provide continuous, separated areas for pedestrians and bicycles to move north-south through the impact area and would support pedestrian and bicycle activity around the new light rail station at 13th Avenue.</li> <li>◆ Access control and reduced traffic congestion would improve safety for pedestrians and bicyclists traveling along Wadsworth.</li> <li>◆ Pedestrian and bicycle routes could be disrupted during construction.</li> </ul> | <ul style="list-style-type: none"> <li>◆ ITS options, such as signing, lighting, and pavement treatments, will be considered in final design to improve safety of pedestrian and bicycle crossings of US 6 ramps on the east side of Wadsworth.</li> <li>◆ A grade-separated pedestrian/bicycle crossing to remove conflicts between bicycles and pedestrians at the loop ramp on the west side of Wadsworth will be examined further in final design.</li> <li>◆ Signage and designated pedestrian and bicycle routes will be provided during construction.</li> </ul> |

EXHIBIT 3-26: SUMMARY OF IMPACTS AND MITIGATION, US 6/WADSWORTH ENVIRONMENTAL ASSESSMENT (CONT.)

| Impacts of the No Build Alternative  | Impacts of the Build Alternative  | Mitigation Measures for the Build Alternative   |
|--|---|---|
| <b>Noise</b>   |   |   |
| <ul style="list-style-type: none"> <li>◆ High noise levels would persist in the northwest and southwest quadrants of the interchange where no noise walls are present.</li> <li>◆ More than 100 residences would experience noise above CDOT Noise Abatement Criteria (66 dBA or higher).</li> </ul> | <ul style="list-style-type: none"> <li>◆ Without noise mitigation, projected noise would increase 2 to 7 dBA over the No Build baseline. (The noise conditions do not change dramatically because the highway is already at capacity and no additional capacity would be added to US 6, which is the primary noise source.)</li> <li>◆ Noise studies did not indicate a need for noise mitigation on Wadsworth because traffic volumes are lower and residences are located farther from the roadway (buffered by commercial businesses).</li> <li>◆ During construction, intermittent noise from diesel-powered equipment would range from 80 to 95 dBA at a distance of 50 feet. Impact equipment such as rock drills and pile drivers can generate louder noise levels.</li> </ul> | <ul style="list-style-type: none"> <li>◆ New noise walls will be constructed between the frontage roads and US 6 west of Wadsworth to Garrison Street. Noise walls to east will be reconstructed and would be more effective than current walls.</li> <li>◆ Noise walls will provide approximately 380 residences with a noticeable reduction in traffic noise (3 dBA or more). Traffic noise levels at residences up to three rows from US 6 would decrease by an average of approximately 10 dBA, or be about half as loud as they are presently.</li> <li>◆ Noise analysis will be conducted during final design to confirm noise wall heights and alignments</li> <li>◆ During final design of the project, the Lakewood will have the opportunity to provide input on design elements related to noise mitigation, including grading, landscaping, and color and material of any noise walls, with the goal of constructing an aesthetically pleasing and economically viable project.</li> <li>◆ Construction noise impacts will be mitigated by limiting work to daytime hours (as described by CDOT and Lakewood requirements) when possible and requiring the contractor to use well-maintained equipment, including muffler systems.</li> </ul> |
| <b>Right-of-Way and Relocations</b>  |   |   |
| <ul style="list-style-type: none"> <li>◆ No ROW acquisition, residential or business relocations, or permanent or temporary easements would be required.</li> </ul>  | <ul style="list-style-type: none"> <li>◆ The Build Alternative would require acquisition of approximately 31.1 acres of property from 96 ownerships through 114 parcels, including 45 residential, 65 commercial, and four vacant or publicly owned parcels. Acquisitions would range from small slivers of property to entire parcels.</li> <li>◆ 14 residences and 28 businesses would be displaced.</li> <li>◆ Temporary construction easements (to allow temporary access to the property during construction or to the construction area from the property) would be required on 18 properties not otherwise affected by ROW acquisition needs.</li> </ul>   | <ul style="list-style-type: none"> <li>◆ All acquisitions and relocations will comply fully with federal and state requirements, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.</li> </ul>   |

EXHIBIT 3-26 SUMMARY OF IMPACTS AND MITIGATION, US 6/WADSWORTH ENVIRONMENTAL ASSESSMENT (CONT.)

| Impacts of the No Build Alternative   | Impacts of the Build Alternative   | Mitigation Measures for the Build Alternative  |
|---|--|--|
| <b>Socioeconomics</b>   |  |  |
| <ul style="list-style-type: none"> <li>◆ The No Build Alternative would not accommodate anticipated increases in traffic volumes and changes in traffic patterns. Worsening congestion would make it increasingly difficult to access businesses, residences, and community facilities within the study area.</li> <li>◆ Traffic, safety, and access problems would increase the number of traffic incidents, increase emergency response times, and create unfavorable conditions for local businesses as traffic volumes increase.</li> <li>◆ Discontinuous and missing sidewalks would persist, perpetuating safety and mobility problems for pedestrians and bicyclists, particularly as traffic volumes increase.</li> <li>◆ Noise is a community concern because it can be annoying, negatively affect property values, and interfere with sleep, work, and recreation. Residents are concerned about sidewalks because of safety, limited opportunities to connect with services along either side of Wadsworth, and access to existing and future transit.</li> </ul> | <ul style="list-style-type: none"> <li>◆ Community cohesion would be enhanced by:                             <ul style="list-style-type: none"> <li>- Better north-south and east-west pedestrian connections.</li> <li>- Improved access to neighborhoods and businesses in the project area through improved roadway operations (access, capacity, and safety) and addition of sidewalks.</li> <li>- Reduced neighborhood cut-through traffic due to improved capacity on Wadsworth, restoration/ reconnection of roadways, and separation of frontage road traffic from neighborhood streets.</li> <li>- Reduced noise levels, which are more compatible with residential neighborhood character.</li> </ul> </li> <li>◆ Emergency response times should improve with improved capacity on Wadsworth but medians may result in out-of-direction travel that could add time to some trips</li> <li>◆ Higher traffic volumes and changes in travel patterns anticipated from the 13th Avenue LRT station and higher population densities allowed by transit mixed use zoning would be accommodated.</li> <li>◆ Consistent sidewalks provide improved pedestrian access to the Jefferson County Open School and planned Two Creeks Park.</li> <li>◆ Some temporary impacts would occur during construction such as delays, detours, out-of-direction travel, construction-related noise and air emissions, and temporary access changes.</li> </ul> | <ul style="list-style-type: none"> <li>◆ CDOT will coordinate with emergency service providers to identify possible locations for emergency access breaks in the medians.</li> <li>◆ CDOT will provide advance notice to emergency service providers, local schools, residents, and local businesses of upcoming construction activities that are likely to result in traffic disruption. This will be accomplished through direct contact, radio and public announcements, flyers, newspaper notices, onsite signage, and the use of Lakewood and CDOT websites.</li> </ul> |
| <b>Environmental Justice</b>  |  |  |
| <ul style="list-style-type: none"> <li>◆ No disproportionately high and adverse impacts would occur in areas of minority or low-income populations.                             <ul style="list-style-type: none"> <li>- No displacement of minority or low-income residents, businesses, or employees would be anticipated.</li> <li>- Traffic congestion would worsen in the impact area, hindering access to housing, businesses, community facilities and the provision of emergency services for minority and low-income populations as well as for the overall community.</li> <li>- No mitigation for noise would be provided; CDOT lacks funding to provide noise barriers for existing roadways without an identified construction project. Benefits associated with noise mitigation would not be received by the overall community, including minority and low-income populations.</li> </ul> </li> </ul>  | <ul style="list-style-type: none"> <li>◆ No disproportionately high and adverse impacts would occur in areas of minority or low-income populations.                             <ul style="list-style-type: none"> <li>- Property acquisitions and construction-related impacts would not be predominantly borne by minority or low-income residents.</li> <li>- Minority and low-income residents, as well as the overall community, would benefit from improved mobility, safety, and access to businesses, residences, and community facilities and services.</li> <li>- Noise walls would reduce noise levels, benefiting the overall community, including minority and/or low-income households.</li> <li>- Bicycle and pedestrian facilities would improve connections to transit.</li> </ul> </li> </ul>  | <ul style="list-style-type: none"> <li>◆ No mitigation measures are necessary.</li> </ul>  |

EXHIBIT 3-26: SUMMARY OF IMPACTS AND MITIGATION, US 6/WADSWORTH ENVIRONMENTAL ASSESSMENT (CONT.)

| Impacts of the No Build Alternative  | Impacts of the Build Alternative  | Mitigation Measures for the Build Alternative  |
|--|---|--|
| <b>Land Use</b>  |   |  |
| <ul style="list-style-type: none"> <li>◆ The No Build Alternative would be inconsistent with the traffic and pedestrian safety and mobility goals presented in adopted land use and neighborhood plans.</li> <li>◆ The existing interchange would be unable to accommodate traffic growth and planned land use changes in the study area.</li> <li>◆ Additional travel lanes and sidewalks would not be added to Wadsworth, which could hamper future growth and implementation of planned land uses.</li> </ul> | <ul style="list-style-type: none"> <li>◆ The Build Alternative would be consistent with adopted land use and neighborhood plans. It would support goals for traffic management and safety, landscaping, recreational amenities, noise mitigation, multimodal connections and safety, and drainage improvements.</li> <li>◆ ROW acquisition would affect land use for some individual parcels:                             <ul style="list-style-type: none"> <li>- Full property acquisitions would result in direct conversion of commercial and residential land to transportation, drainage, and water quality uses.</li> <li>- Partial property acquisitions would result in some nonconforming uses related to parking, landscaping, and setback requirements.</li> </ul> </li> <li>◆ Changes to the interchange and Wadsworth alone are not expected to influence regional land use patterns or induce growth. Additional travel lanes, sidewalks, and access control would support (but not cause) planned future land use changes, including the newly adopted zoning between 10th and 14th Avenues.</li> </ul> | <ul style="list-style-type: none"> <li>◆ Final design and ROW negotiations by CDOT will coordinate with Lakewood to address compatibility with land use plans and the allowance of nonconforming properties that may result from ROW acquisition.</li> </ul>   |
| <b>Historic Properties</b>   |   |  |
| <ul style="list-style-type: none"> <li>◆ The No Build would result in No Historic Properties Affected.</li> </ul>  | <ul style="list-style-type: none"> <li>◆ Adverse Effects for four properties individually eligible for the NRHP along the westbound to northbound frontage road and ramps; the properties must be removed to accommodate the new interchange design.</li> <li>◆ No Adverse Effect for three buildings individually eligible for the NRHP and three NRHP-eligible historic districts (including all of the contributing resources within those districts).</li> <li>◆ No Historic Properties Affected for one building individually eligible for the NRHP.</li> </ul>  | <ul style="list-style-type: none"> <li>◆ Mitigation measures will be part of an MOA negotiated among CDOT, FHWA, and the Colorado SHPO. The Lakewood Historical Society, Lakewood, and Jefferson County will be provided an opportunity to participate in the MOA. Mitigation may include interpretive signage and an educational website.</li> <li>◆ Any new historic documentation that is developed as part of the MOA will be provided to interested local historic preservation groups</li> </ul> |



EXHIBIT 3-26: SUMMARY OF IMPACTS AND MITIGATION, US 6/WADSWORTH ENVIRONMENTAL ASSESSMENT (CONT.)

| Impacts of the No Build Alternative  | Impacts of the Build Alternative  | Mitigation Measures for the Build Alternative  |
|--|---|--|
| <b>Hazardous Materials</b>   |   |  |
| <ul style="list-style-type: none"> <li>◆ There would be no effect on known hazardous material or waste sites.</li> </ul> | <ul style="list-style-type: none"> <li>◆ Construction impacts would affect seventeen sites of concern for environmental (petroleum-related) contamination.                             <ul style="list-style-type: none"> <li>- Four properties with potential environmental contamination would be acquired.</li> <li>- Partial acquisition and construction activities (ground disturbance) would affect twelve properties with potential environmental contamination.</li> </ul> </li> <li>◆ Buildings and structures, such as traffic poles painted with lead based paint could be disturbed during construction</li> <li>◆ Based upon the overall age of the transportation facilities and property acquisitions, asbestos-containing building materials would likely be present.</li> </ul> | <ul style="list-style-type: none"> <li>◆ Protective measures will be taken before, during, and after construction to minimize the risk of encountering petroleum products and petroleum-contaminated soils. A full Phase I ESA according to ASTM 2005 standards will be completed prior to any total property acquisition. Phase II ESAs will be conducted to characterize, manage, and remediate contaminated properties identified as concern in Phase I ESAs.</li> <li>◆ A <i>Materials Handling Plan</i> will be prepared to address contaminated soil and groundwater that may be encountered as directed by the findings of Phase I assessments. The plan will be prepared according to CDOT standards.</li> <li>◆ Painted surfaces disturbed during construction or demolition and disposed of separately will be tested, handled, and disposed of properly.</li> <li>◆ An asbestos survey will be conducted and a demolition permit will be obtained prior to the demolition of bridges or buildings. Any asbestos-containing material that is friable or will be friable during construction and demolition activities will be removed prior to demolition by a licensed abatement contractor.</li> </ul> |

EXHIBIT 3-26: SUMMARY OF IMPACTS AND MITIGATION, US 6/WADSWORTH ENVIRONMENTAL ASSESSMENT (CONT.)

| Impacts of the No Build Alternative   | Impacts of the Build Alternative  | Mitigation Measures for the Build Alternative   |
|---|---|---|
| <b>Floodplains</b>  |   |   |
| <ul style="list-style-type: none"> <li>◆ Existing encroachments of US 6 and Wadsworth roadways on the floodplains associated with Lakewood Gulch, McIntyre Gulch, and Dry Gulch would persist.</li> <li>◆ Drainage facilities under Wadsworth would continue to provide inadequate conveyance capacity, and flooding of Wadsworth and surrounding properties at Lakewood Gulch and Dry Gulch crossings during large storm events would be expected to continue.</li> <li>◆ Flooding immediately upstream and downstream of the McIntyre Gulch crossing of US 6 would continue.</li> </ul> | <ul style="list-style-type: none"> <li>◆ Conveyance and natural values of floodplains in the impact area would be improved.                             <ul style="list-style-type: none"> <li>- Adequately-sized drainage structures and channels would be provided under Wadsworth and US 6 to remove roadways from the floodplain and reduce flooding risks for properties surrounding gulches within the impact area.</li> <li>- Lakewood Gulch/McIntyre Gulch confluence would be realigned to remove existing encroachments (highway and other development), provide a more natural channel grading, and improve the floodplains' natural values.</li> </ul> </li> <li>◆ Culvert and channel improvements will be designed to convey 100-year flows, and will follow CDOT recommendations for the 50- to 100-year flood event capacity.</li> <li>◆ The Build Alternative would remove CDOT roadways from the 100-year floodplain within the impact area.</li> </ul> | <ul style="list-style-type: none"> <li>◆ Sediment traps, check dams, sediment basins, or other BMPs will be installed to control sedimentation during construction of drainage improvements in gulches. Specific BMPs will be determined during final design.</li> <li>◆ During final design, CDOT will coordinate with the appropriate local and federal agencies to conduct hydraulic analysis and obtain necessary floodplain permits.</li> </ul>  |
| <b>Water Resources/Quality</b>  |   |   |
| <ul style="list-style-type: none"> <li>◆ Water from roadways that may contain petroleum, sediment, or other pollutants would continue to flow into streams/gulches untreated.</li> </ul>  | <ul style="list-style-type: none"> <li>◆ An increase of approximately 3 acres of impervious (paved) surfaces would, without water quality treatment, increase pollutant runoff into receiving waterways.</li> <li>◆ Grading and earthmoving for road construction, bridge construction, dewatering activities, and temporary stream diversions may cause erosion or sedimentation of gulches within the impact area, particularly during periods where bare surfaces are exposed.</li> </ul>  | <ul style="list-style-type: none"> <li>◆ Permanent water quality treatment features will be included in the final design to collect and treat roadway runoff by filtering pollutants before discharging stormwater into area waterways.</li> <li>◆ A Colorado Discharge Permit System - Stormwater Construction Permit will be required for this project. A Stormwater Management Plan will be developed in accordance with the conditions of this permit.</li> <li>◆ A construction dewatering permit will be obtained.</li> <li>◆ Erosion and sediment control BMPs will be implemented in accordance with CDOT Standard Specifications for Road and Bridge Construction and the revised provisions for water quality outlined in the Consent Order with CDPHE and incorporated into Section 107.25 (Water Quality) and Section 208 (Erosion Control).</li> </ul> |

EXHIBIT 3-26: SUMMARY OF IMPACTS AND MITIGATION, US 6/WADSWORTH ENVIRONMENTAL ASSESSMENT (CONT.)

| Impacts of the No Build Alternative  | Impacts of the Build Alternative   | Mitigation Measures for the Build Alternative   |
|--|--|---|
| <b>Wetlands and Waters of the United States</b>  |  |   |
| <ul style="list-style-type: none"> <li>◆ No wetlands or WUS would be affected.</li> <li>◆ Drainages would continue to be confined and channelized, providing little opportunity for wetlands to establish along riparian areas.</li> </ul>                             | <ul style="list-style-type: none"> <li>◆ The realignment/expansion of McIntyre, Lakewood, and Dry Gulches to convey 100-year flows would result in temporary disruption of flow to 0.27 acre of WUS and fill of 0.02 acre of associated wetlands.</li> </ul>   | <ul style="list-style-type: none"> <li>◆ CDOT will obtain a Section 404 permit from the USACE for impacts to wetlands and WUS. USACE has confirmed informally that a Nationwide Permit would be applicable.</li> <li>◆ A wetland finding will be completed during final design and will include a final assessment of impacts and a detailed plan for mitigation.</li> <li>◆ Unavoidable impacts to wetlands resulting from the Build Alternative will be mitigated on a one-for-one basis</li> </ul> |
| <b>Cumulative Impacts</b>  |  |   |
| <ul style="list-style-type: none"> <li>◆ Because CDOT would not take any action under the No Action Alternative, effects of its actions cannot combine with other projects to create cumulative effects. (Other foreseeable projects would be implemented.)</li> </ul> | <ul style="list-style-type: none"> <li>◆ Beneficial cumulative impacts to floodplains, riparian habitat and wetlands, pedestrian and bicycle facilities, noise, socioeconomic conditions, transportation, water quality, and hazardous wastes from US 6/Wadsworth project combined with other development/redevelopment projects in the study area, including the West Corridor LRT, future phases of Belmar development, and the redevelopment of the Denver Federal Center.</li> </ul> | <ul style="list-style-type: none"> <li>◆ No mitigation necessary.</li> </ul>  |

# CHAPTER 4

## Draft Section 4(f) Evaluation

### 4.1 INTRODUCTION

This evaluation assesses impacts of the proposed US 6/Wadsworth project on parks and historic properties. It was prepared in compliance with Section 4(f) of the Department of Transportation Act and is supported by other analyses in this EA and these reference documents available in Appendix C: *Alternatives Development and Screening Technical Memorandum* (CH2M HILL, 2008c), *Historic Resources Survey* (TEC, 2008), and *Determination of Effects to Historic Properties* (CH2M HILL et al., 2008d).

### 4.2 SECTION 4(f)

Section 4(f) of the Department of Transportation Act of 1966, as amended, and codified in 49 United States Code (U.S.C.) § 303, declares that “[i]t is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.” FHWA has adopted regulations to ensure its compliance with Section 4(f) (23 CFR 774).

Section 4(f) prohibits FHWA from approving the use of a publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance unless:

- ◆ A determination is made that 1) there is no feasible and prudent avoidance alternative to use of land from the property, AND 2) the action includes all possible planning to minimize harm to the property resulting from such use, OR
- ◆ The use of the property, including any measures to minimize harm, will have a *de minimis* impact on the property.

There are three types of Section 4(f) uses: direct use, temporary use, and constructive use. Because this project would not result in any temporary or constructive uses, they are not discussed further.

#### 4.2.1 DIRECT USES

A direct use takes place when the land is permanently incorporated into a transportation facility.

#### 4.2.2 DE MINIMIS IMPACTS

Certain uses of Section 4(f) land may have a minimal or *de minimis* impact on the protected resource. When this is the case, FHWA can make a *de minimis* impact determination. Properties with a *de minimis* determination do not require an analysis of avoidance alternatives or a least harm analysis (23 CFR 774.17[5]; FHWA, 2005a).

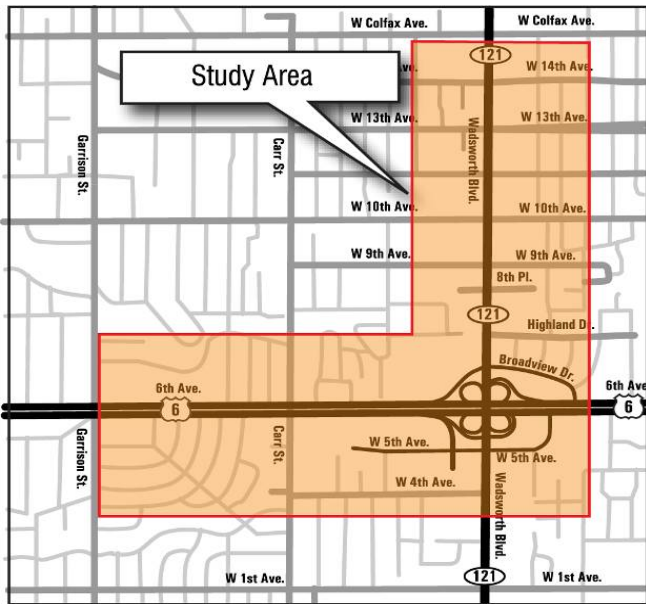
The *de minimis* criteria and associated determination are different for historic sites than for parks, recreation areas, and wildlife and waterfowl refuges.

- ◆ For publicly owned parks, recreation areas, and wildlife and waterfowl refuges, *de minimis* impacts are defined as those that do not “adversely affect the activities, features and attributes” of the Section 4(f) resource. The public must be afforded an opportunity to review and comment on the findings.
- ◆ For historic sites, *de minimis* impacts are based on the determination that no historic property is affected by the project or that the project will have no adverse effect on the historic property in accordance with Section 106 of the National Historic Preservation Act. FHWA must notify SHPO of its intent to make a *de minimis* finding.

### 4.3 PURPOSE AND NEED

The purpose of the US 6 and Wadsworth project is to improve traffic flow and safety, accommodate high traffic volumes, and increase multi-modal travel options and connections at the US 6 and Wadsworth interchange and along Wadsworth between 4th Avenue and 14th Avenue. The project is located entirely within central Lakewood in Jefferson County, Colorado (see Exhibit 4-1).

EXHIBIT 4-1: PROJECT LOCATION



Improvements are needed to:

- ◆ Improve safety for motorists, pedestrians, and bicyclists
- ◆ Improve the operational efficiency of the interchange and on Wadsworth
- ◆ Meet current and future traffic demands
- ◆ Support multi-modal connections

Chapter 1 of the EA provides additional details about the purpose and need for this project.

### 4.4 FEASIBLE AND PRUDENT ALTERNATIVES

The first test under Section 4(f) is to determine which alternatives are feasible and prudent. An alternative is feasible if it is technically possible to design and build. According to FHWA regulations (23 CFR 774.17), an

alternative may be rejected as not prudent for the following reasons:

- i) It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
- ii) It results in unacceptable safety or operational problems;
- iii) After reasonable mitigation, it still causes:
  - a) Severe social, economic, or environmental impacts;
  - b) Severe disruption to established communities;
  - c) Severe disproportionate impacts to minority or low-income populations; or
  - d) Severe impacts to environmental resources protected under other federal statutes;
- iv) It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
- v) It causes other unique problems or unusual factors; or
- vi) It involves multiple factors described above, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

Where sufficient analysis demonstrates that a particular alternative is not feasible and prudent, the consideration of that alternative as a viable alternative comes to an end. If an alternative is identified that avoids the use of Section 4(f) properties, it must be selected. No prudent and feasible avoidance alternative was identified for this project.

The US 6/Wadsworth project considered 9 interchange alternatives (including the No Build Alternative). Three additional alternatives were developed as Section 4(f) avoidance options. Exhibit 4-2 summarizes the Section 4(f) use and avoidance for all of these alternatives. Five were determined to be feasible and prudent but none of the feasible and prudent alternatives avoided Section 4(f) resources. Three avoid Section 4(f) resources but are not feasible and prudent. Additional details on these alternatives are available in reference documents included in Appendix C (CH2M HILL, 2008c; CH2M HILL et al., 2008d; CH2M HILL, 2009h).

EXHIBIT 4-2: SUMMARY OF FEASIBLE AND PRUDENT INTERCHANGE ALTERNATIVES

| Alternative  | Feasible and Prudent? <sup>1</sup>   | Avoids 4(f) Use?  |
|--|--|---|
| <b>No Build Alternative</b> ; no reconstruction of interchange   | <b>No.</b> Not prudent (i). Does not meet purpose and need to improve safety, capacity, interchange operations, multimodal connections.  | <b>Yes</b>  |
| <b>Tight Diamond with Loop Interchange (Build Alternative)</b> ; similar to the Tight Diamond (see below) except it maintains a loop ramp in the NW quadrant of the interchange, and there would be no traffic signal at the intersection of the loop ramp with Wadsworth; maintains off-ramp and frontage road in NE quadrant | <b>Yes</b>   | <b>No.</b> Requires use of four historic properties (5JF4536, 5JF4542, 5JF3549, and 5JF3548). |
| <b>Traditional Diamond Interchange</b> ; most common interchange type with one entrance and one exit in each direction; on- and off-ramps meet at two signalized intersections; ramps form a diamond shape when viewed from the air; maintains off-ramp and frontage road in NE quadrant                                       | <b>Yes</b>   | <b>No.</b> Requires use of four historic properties (5JF4536, 5JF4542, 5JF3549, and 5JF3548). |
| <b>Tight Diamond Interchange</b> ; like a traditional diamond, except entrance and exit ramps are shifted closer to the freeway; maintains off-ramp and frontage road in NE quadrant   | <b>Yes</b>   | <b>No.</b> Requires use of four historic properties (5JF4536, 5JF4542, 5JF3549, and 5JF3548). |
| <b>Single Point Urban Interchange</b> ; similar to a diamond interchange but with all ramps controlled by a single set of traffic signals; maintains off-ramp and frontage road in NE quadrant   | <b>Yes</b>   | <b>No.</b> Requires use of four historic properties (5JF4536, 5JF4542, 5JF3549, and 5JF3548). |
| <b>Partial Cloverleaf Interchange</b> ; uses loop ramps for two of the left-turn movements and straight ramps to handle the other two left-turn movements; maintains off-ramp and frontage road in NE quadrant   | <b>Yes</b>   | <b>No.</b> Requires use of four historic properties (5JF4536, 5JF4542, 5JF3549, and 5JF3548). |
| <b>Partial Cloverleaf with Flyover Ramp Interchange</b> ; like the partial cloverleaf except the highest-volume traffic movement (in NW quadrant) is handled on an elevated ramp; maintains off-ramp and frontage road in NE quadrant  | <b>No.</b> Not prudent (iii). Would result in cumulatively severe impacts. Would result in unacceptable social impact from increased noise in a community already severely affected by traffic noise. Would result in increased community disruption from nearly twice as many relocations as compared with other alternatives. Would increase construction costs by more than 20 percent, which would be excessive given transportation budget constraints.   | <b>No</b>   |
| <b>Full Cloverleaf Interchange with Collector-Distributor Roads</b> ; enlarges the four loop ramps to meet current design standards and expands the frontage road system between ramps to eliminate weaving conflicts on mainline US 6; maintains off-ramp and expands frontage road in NE quadrant                            | <b>No.</b> Not prudent (i). Does not meet purpose and need to improve pedestrian and bicycle safety because pedestrians and bicycles would still need to cross free-flow loop ramps in all quadrants of the interchange. Would result in highest number of relocations and greatest cost of options considered.  | <b>No</b>   |
| <b>Diverging Diamond Interchange</b> ; rare interchange type that would remove left turns in the intersection by requiring Wadsworth drivers to briefly cross opposite lanes of traffic at two crossover intersections; maintains off-ramp and frontage road in NE quadrant  | <b>No.</b> Not prudent (i). Does not meet purpose and need for improved capacity on Wadsworth. Drivers are not accustomed to crossing opposing traffic, and they would likely slow down due to their uncertainty. Crossing in front of opposing traffic (even though opposing traffic is stopped) violates expectations.   | <b>No</b>   |
| <b>Folded Diamond Interchange</b> ; folds westbound US 6 to northbound Wadsworth onto loop ramp in NW quadrant for westbound US 6 to southbound Wadsworth traffic; maintains existing frontage road but removed off-ramp in NE quadrant  | <b>No.</b> Not prudent (i). Does not meet purpose and need. Would increase congestion along US 6 and at the US 6/Wadsworth interchange because all northbound and southbound Wadsworth traffic from westbound US 6 would exit at one location, and the deceleration lane would not be long enough to handle queues. Operational efficiency of the consolidated loop ramp exit would be compromised to the point that the loop ramp would not function as a free-flow ramp. A signal would be required for northbound Wadsworth, and a double-lane exit ramp would be inefficient and potentially confusing to drivers. | <b>Yes</b>  |
| <b>Close frontage road in NE quadrant and reconstruct interchange</b> ; maintains an off-ramp in the NE quadrant but removes the frontage road and uses the frontage road area for off-ramp  | <b>No.</b> Not prudent (iii). Would result in severe community disruption, as all properties along the frontage road, including historic properties, would need to be acquired because they would have no access.  | <b>No</b>   |
| <b>Improve Kipling and/or Sheridan interchanges to divert Wadsworth traffic</b> ; maintains existing Wadsworth interchange and focuses capacity improvements on the adjacent US 6 interchanges   | <b>No.</b> Not prudent (i). Does not meet purpose and need for safety improvements at the Wadsworth interchange. Would not address traffic demands for access to destinations along Wadsworth or for north-south regional travel.  | <b>Yes</b>  |

<sup>1</sup> As noted in Section 4.4, alternatives are defined as not prudent based on standards contained in 23 CFR 774.17. Where an alternative is deemed not prudent in Exhibit 4-2, the standard is noted. For instance if an alternative does not meet purpose and need, it is presented as "Not prudent (i)."

1 Because all feasible and prudent alternatives use land  
2 from Section 4(f) resources, the next step in the  
3 evaluation is to determine which alternative results in  
4 the least overall harm to the 4(f) resources. The  
5 discussion of least harm is presented in Section 4.6.3.

## 6 4.5 PARKS AND RECREATION RESOURCES

### 7 4.5.1 DESCRIPTION OF 4(f) RESOURCES

8 There is one Section 4(f) park resource within the  
9 construction limits of the Build Alternative. Two Creeks  
10 Park is a planned 3.35-acre recreational facility located  
11 east of Wadsworth between 10th and 12th Avenues.  
12 Only a small “finger” of the property associated with the  
13 confined Dry Gulch drainage channel is adjacent to  
14 Wadsworth. Dry Gulch runs through the southern  
15 portion of the property. The boundaries of the park are  
16 outlined in black in Exhibit 4-3.

17 EXHIBIT 4-3: BOUNDARIES OF TWO CREEKS PARK



18 The City of Lakewood acquired the Two Creeks Park  
19 property in 2007. The acquisition was funded by  
20 Jefferson County Open Space for the express use as a  
21 park. The City Parks Manager identifies the planned  
22 park as a significant recreation resource and envisions  
23 developing trails and providing picnic tables to support  
24 recreational use of the property (CH2M HILL, 2009g).

25 The property is not currently used for recreation or park  
26 purposes, and Lakewood has neither a specific plan  
27 nor funds to develop the property in the next 5 years.  
28 The park is not reflected either in Lakewood’s  
29 Comprehensive Plan or the adopted Neighborhood  
30 Plan, yet both plans identify the need for a park in the  
31 area. Although not formally designated in planning  
32 documents as a park, FHWA determined that the Two  
33 Creeks Park does qualify as a Section 4(f) recreation

34 resource because the property acquisition is recent,  
35 the need for a park in the area is documented in land  
36 use plans, the acquisition is expressly for a park, and  
37 budgetary limitations, not intent, require development  
38 of the park to be phased.

### 39 4.5.2 DE MINIMIS IMPACTS

40 Impacts to the proposed park area are associated with  
41 replacing the Dry Gulch box culvert under Wadsworth.  
42 The existing culvert (Exhibit 4-4) is undersized to carry  
43 a 100-year flood and must be widened; it must also be  
44 lengthened to accommodate the widened Wadsworth  
45 roadway section.

46 EXHIBIT 4-4: DRY GULCH CULVERT



47 The new culvert would extend farther into the park  
48 property, incorporating an additional 0.11 acre of the  
49 drainage channel, resulting in a Section 4(f) use.  
50 These impacts would not adversely affect the future  
51 activities, features, or attributes of the planned Two  
52 Creeks Park. The affected land could not support  
53 active recreation because of the confined channel.

### 54 4.5.3 CONSULTATION AND COORDINATION

55 The project team has coordinated with Lakewood and  
56 the Urban Drainage and Flood Control District. Each  
57 contributed to the design of the Build Alternative and  
58 recommended drainage improvements in the area of  
59 the planned Two Creeks Park. Lakewood concurs that  
60 expansion of the culvert would not adversely affect the  
61 activities, features, and attributes that qualify Two  
62 Creeks Park for protection under Section 4(f).

63 Public comments on the impacts to the planned park  
64 will be solicited at the EA public hearing. After  
65 consideration of public input, FHWA will make a final  
66 determination on this *de minimis* finding.

## 4.6 HISTORIC RESOURCES

The US 6/Wadsworth project would require use of property from eight Section 4(f) historic resources. Four additional historic properties are present within the area of potential effect but have no Section 4(f) use. Section 3.8 of the EA contains additional information on all historic resources.

### 4.6.1 DE MINIMIS IMPACTS

The Build Alternative would result in *de minimis* impacts to two individual historic properties and two historic districts. The properties are illustrated in Exhibit 4-5, and impacts are summarized in Exhibit 4-6. Based on concurrence with the determinations of No Adverse Effect for these four Section 4(f) resources, FHWA has informed SHPO of its intent to make *de minimis* impact determinations.

EXHIBIT 4-5: HISTORIC PROPERTIES WITH DE MINIMIS IMPACTS



5JF4511



5JF4513



Lakewood School Historic District  
(contributing building)



Green Acres Historic District  
(contributing building)

EXHIBIT 4-6: SUMMARY OF *DE MINIMIS* IMPACTS FOR SECTION 4(f) HISTORIC RESOURCES

| Site Number                       | Address   | Date                      | Description  | NRHP Eligibility   | Impact  |
|-----------------------------------|---|---------------------------|--|--|---|
| 5JF4511                           | 1215 Wadsworth Blvd.  | 1918, 1948/1949           | Dutch Colonial Revival single-family residence         | Officially eligible, Criterion A, association with Lakewood's agricultural history   | Partial acquisition (0.08 acre) of historic property frontage   |
| 5JF4513                           | 1230 Wadsworth Blvd.  | 1928                      | Craftsman Bungalow residence converted into a business | Officially eligible, Criterion C, representative architecture  | Acquisition of portion of property (0.03 acre) that does not contribute to historic significance  |
| Lakewood School Historic District | West of Wadsworth to Allison Street between 10th and 12th Avenues | 1927 to 1977              | Public school complex                                  | Officially Eligible Historic District, Criteria A and C as early public school campus in Jefferson County, association with community development, period architecture | Acquisition of a portion of property adjacent to Wadsworth (0.20 acre) that does not contribute to historic significance; no buildings or contributing landscape features affected  |
| Green Acres Historic District     | North of US 6 to 9th Place between Emerald Lane and Reed Street   | Late 1940s to early 1960s | Post-World War II residential subdivision              | Officially Eligible Historic District, Criteria A and C for association with the development of Lakewood and as a representative post-World War II subdivision         | Construction of noise wall near south and west boundaries of the district; permanent easement required from corner of one contributing property; beneficial effects of restoration of neighborhood roads and reduction in traffic noise |



4.6.2 DIRECT USES

Under all feasible and prudent alternatives, four historic homes would be directly used. Photographs of these resources are presented in Exhibit 4-7. They are described briefly below, with additional details available in the *Historic Resources Survey* (TEC, 2008), included in Appendix C.

Property 5JF3548 (7395 W. 6th Ave. Frontage Road) is a one-story, single-family house built in 1946. It is eligible for listing in the NRHP under Criterion C for its representative English Norman Cottage architecture.

Property 5JF3549 (7423 W. 6th Ave. Frontage Road) is a one-story, single-family residence built in 1939. It is eligible for listing in the NRHP under Criterion C because it is representative of the Mediterranean Revival architectural style.

Property 5JF4542 (7433 W. 6th Ave. Frontage Road) is a one-story, single-family house built in 1940. It is eligible for listing in the NRHP under Criterion C because it is representative of the Minimal Traditional architectural style.

Property 5JF4536 (700 Wadsworth Blvd.) is a one-story residence that has been converted to commercial use. It was constructed in 1947 and is eligible for listing in the NRHP under Criterion C because it is a good example of a late 1940s residence that blends the Ranch and Usonian architectural styles.

EXHIBIT 4-7: SECTION 4(f) HISTORIC PROPERTIES WITH DIRECT USE



5JF3548



5JF3549



5JF4542



5JF4536

As summarized in Exhibit 4-8, all feasible and prudent interchange design concepts require use of these four historic properties. The use is the same for all because they share two primary features: the need for a longer deceleration lane for the westbound off-ramp on US 6 and the need for an improved frontage road connection to Wadsworth in the northeast quadrant of the interchange.

EXHIBIT 4-8: SUMMARY OF DIRECT USES OF SECTION 4(f) HISTORIC RESOURCES

| Historic Property | Tight Diamond with Loop                      | Traditional Diamond                          | Tight Diamond                                | SPUI   | Partial Cloverleaf                           | Relative Net Harm |
|-------------------|--|--|--|--|--|-------------------|
| 5JF3548           | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Equal             |
| 5JF3549           | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Equal             |
| 5JF4542           | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Equal             |
| 5JF4536           | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Total acquisition and demolition of building | Equal             |

### 4.6.3 LEAST HARM ANALYSIS

The Section 4(f) regulation states that, if there is no feasible and prudent alternative that avoids use of Section 4(f) properties, FHWA “may approve only the alternative that causes the least overall harm in light of the statute's preservation purpose.” In determining the alternative that causes the overall least harm, the following factors must be balanced (23 CFR 774.3):

- i) The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);
- ii) The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
- iii) The relative significance of each Section 4(f) property;
- iv) The views of the official(s) with jurisdiction over each Section 4(f) property;
- v) The degree to which each alternative meets the purpose and need for the project;
- vi) After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
- vii) Substantial differences in costs among the alternatives.

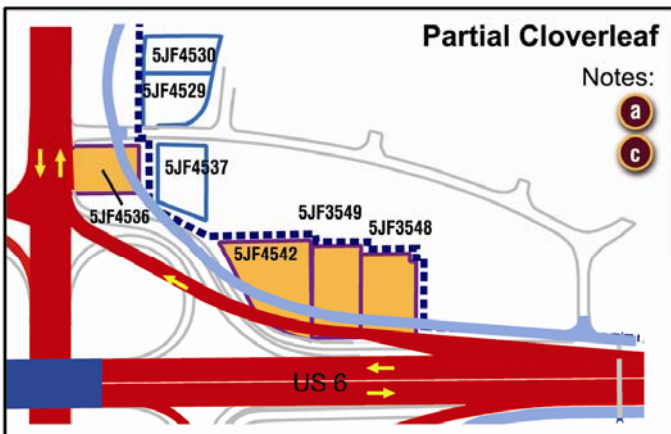
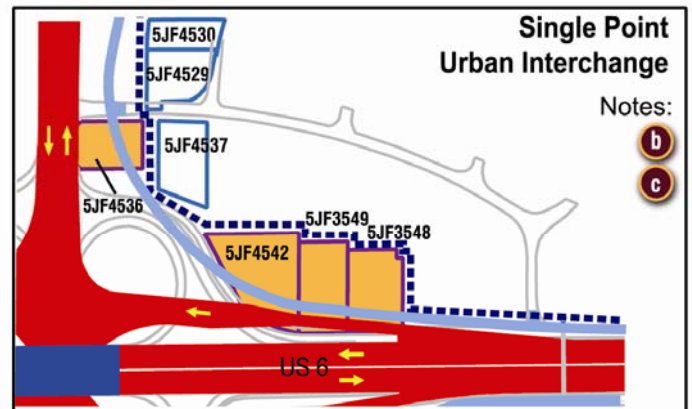
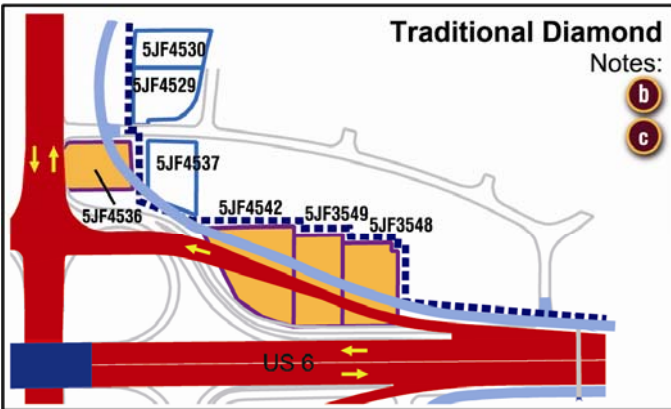
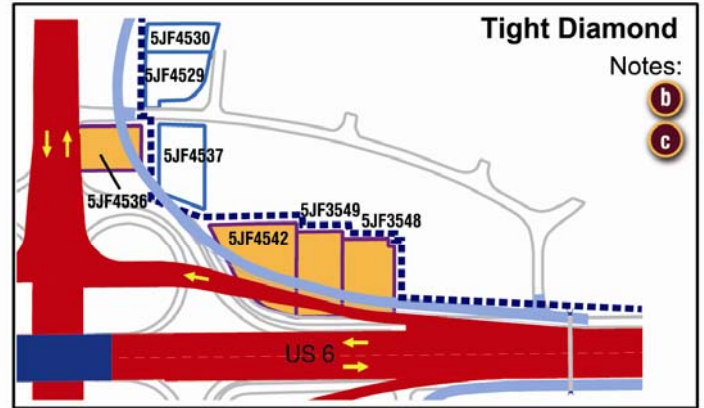
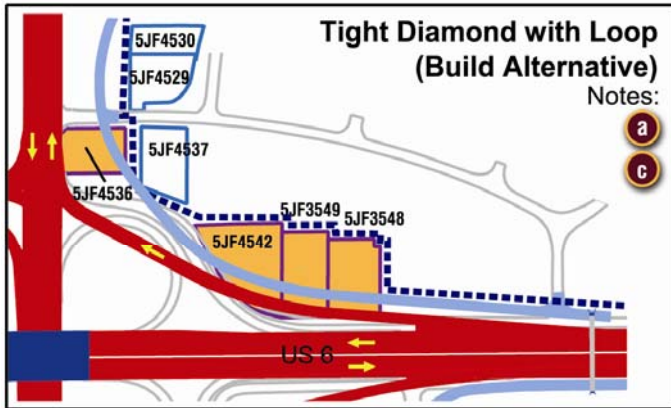
Exhibit 4-8 summarizes the uses associated with the feasible and prudent alternatives. Each requires total acquisition and demolition of the same four historic properties.

As illustrated in Exhibit 4-9, the three historic properties currently located on the frontage road (5JF3548, 5JF3549, and 5JF4542) would need to be acquired under each of the five options due to the requirements for the off-ramp design. The traditional diamond has the greatest encroachment into the historic properties because it shifts the ramp intersection with Wadsworth farther north. Despite slight differences in the design footprints, all alternatives require relocation of the primary residence. The tight diamond and single-point urban interchange (SPUI) alternatives intersect Wadsworth closer to US 6 but require a signal at Wadsworth and, therefore, need a wider, multi-lane intersection for vehicle storage on the ramp. The partial cloverleaf and tight diamond with loop alternatives require only a single lane intersection with Wadsworth but intersect Wadsworth farther north.

Site 5JF4536 (at the intersection of the frontage road and Wadsworth) would need to be acquired to widen Wadsworth and add an auxiliary lane for merging, which are features common to all of the alternatives.

Because the direct use is similar, many of the factors for least harm do not apply to the project (that is, factors i through iv). The Tight Diamond with Loop is determined to be the least harm alternative based on factors v, vi, and vii. It best meets the project's purpose and need, does not result in significant adverse impacts to other resources not protected by Section 4(f), and is not substantially more expensive than the other alternatives.

EXHIBIT 4-9: LEAST HARM ANALYSIS



LEGEND

|  |                         |  |                                    |
|--|-------------------------|--|------------------------------------|
|  | New Structure           |  | Contributing to Historic District  |
|  | Existing Structure/Road |  | Individually Eligible for the NRHP |
|  | Interchange             |  | Total Acquisition                  |
|  | New Frontage Road       |  | Historic District Boundary         |

- a** Left turns for southbound traffic are handled through the loop ramp, and the auxiliary lane allows free-flow right turns for northbound traffic. The free-flow turn requires only a single lane to the intersection, resulting in a narrower footprint in the vicinity of historic properties.
- b** Multi-lane intersection required for vehicle queuing at Wadsworth traffic signal has larger footprint and encroaches farther into Section 4(f) properties. Need for wider intersection (more lanes) and proper intersection geometry (perpendicular rather than skewed) pushes frontage road through properties.
- c** Widening of Wadsworth to add northbound auxiliary merging lane for off-ramp requires acquisition of 5JF4536 regardless of frontage road configuration.

#### 4.6.4 MEASURES TO MINIMIZE HARM

Before approving an action requiring use of any Section 4(f) property, FHWA is required to “include all possible planning to minimize harm” in that action. According to 23 CFR 774.17, “all possible planning means that all reasonable measures identified in the Section 4(f) evaluation to minimize harm or mitigate for adverse impacts and effects must be included in the project.” For historic sites, mitigation measures are generally identified through the Section 106 consultation process (36 CFR 800).

To determine if impacts could be avoided, minimized, or reduced while still maintaining a design that meets safety, capacity, and multimodal needs, interchange design elements of the Build Alternative that resulted in impacts to historic properties were considered carefully. As illustrated in Exhibit 4-10, the following design elements were evaluated:

- ◆ Location of the gore area (the area needed for cars to recover if they miss the exit) for the westbound US 6 off-ramp;
- ◆ Location of the taper area (speed change transition area where pavement width increases or decreases as cars enter or exit a traffic stream) for the westbound US 6 off-ramp;
- ◆ Distance of separation between the frontage road and off-ramp;
- ◆ Length of the deceleration lane for the loop ramp; and
- ◆ Inclusion of an auxiliary or add lane on Wadsworth associated with the northeast off-ramp.

As described in Exhibit 4-10, none of these design elements could be modified enough to avoid impacts to historic properties without compromising the purpose and need for the project.

In addition to modifying design elements, the project team evaluated moving the houses at historic properties 5JF3548, 5JF3549, and 5JF4542 farther back on their existing lots and maintaining the properties in residential use rather than demolishing the buildings. After evaluating this option, CDOT determined that moving the houses is not a practicable avoidance or minimization measure. Moving the properties would diminish the historic integrity of the resources to the point that they would no longer be eligible for listing in the NRHP (and thus, the properties would no longer qualify for Section 4(f) protection) and, therefore, would not minimize harm to these properties.

While measures to avoid, minimize, or reduce impacts to the four historic properties could not be incorporated into the project, compensatory mitigation measures for demolishing the properties have been included in a Memorandum of Agreement (MOA) among CDOT, FHWA, Colorado SHPO, and Lakewood. This MOA was prepared in accordance with the Section 106 consultation process. Mitigation measures focus on those that will add to the local historical record and support Lakewood’s historic preservation goals, including an interpretive sign and educational website. The MOA is expected to be finalized before CDOT and FHWA make a final decision about the US 6/Wadsworth project.

EXHIBIT 4-10: DESIGN FEATURES OF THE TIGHT DIAMOND WITH LOOP INTERCHANGE AND CONSIDERATION OF IMPACTS TO SECTION 4(f) RESOURCES

**Fourth lane add for Wadsworth between off ramp and Highland Drive**  
 The fourth northbound lane on Wadsworth is needed to receive the dedicated right turn lane from the westbound to northbound exit ramp to ensure safety and avoid traffic operation issues on US 6 and Wadsworth.

Without a fourth northbound receiving lane:

- A single lane yield would create a queue on the ramp that extends to US 6 mainline. It would increase the probability of rear end collisions because of reduced stopping sight distance. Vehicles traveling at high speed on US 6 would have to stop in the through lanes.
- A signalized two-lane right turn would solve the queuing to US 6 and rear end collision problems but would adversely affect Wadsworth traffic, increasing congestion along Wadsworth as northbound through traffic would stop at an additional signal.

**Radius of Loop Ramp**  
 Increasing the design speed of the loop ramp to 30 mph would reduce the required deceleration length on US 6 from 550 to 520 feet allowing the gore nose to move closer to Wadsworth to reduce impacts to historic properties. (However, the gore nose is controlled more by the grade issues than by the deceleration length of the loop ramp.)

- Radius of loop would increase from 150 to 231 feet
- Loop ramp is designed at 25 mph; 30 mph was desirable but resulted in significant property impacts in the northwest quadrant, including relocation of a large public storage area and office park, and McIntyre and Lakewood gulches. This resulted in significant impacts to waters and wetlands regulated by the Clean Water Act.



- Contributing to Green Acres Historic District
- Individually eligible for the NRHP
- Historic District Boundary

**Separation of ramp and frontage road**  
 Moving the frontage road closer to the ramp (and away from the historic properties) is not possible because of stopping sight distance requirements along the off-ramp.

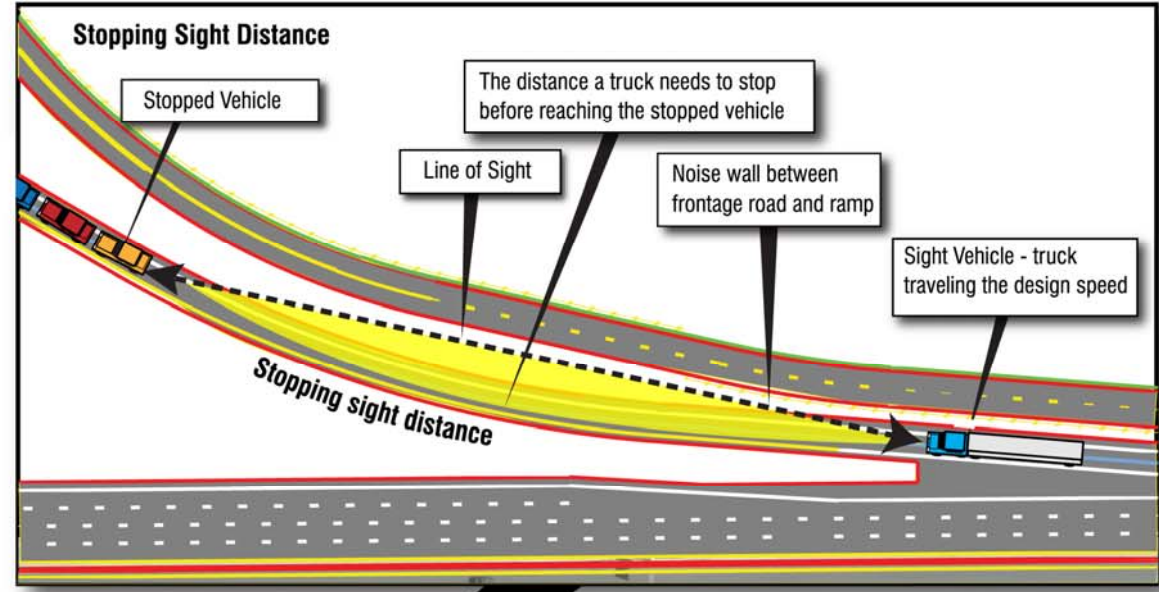
- If the frontage road were closer to the ramp, the roadway would create an obstruction blocking the line of sight for drivers exiting US 6 (see stopping sight distance illustration). Reducing speeds of the ramp to reduce sight distance requirement would cause queuing on US 6, which would not meet purpose and need and, therefore, not be prudent.

**Move ramp closer to US 6**

- Ramp could be moved closer to US 6 at the west end but not enough to save the historic properties, the gore nose location still controls the eastern end of the ramp (where 5JF 3548 is located).

**Gore area**  
 The ramp gore is the area needed for cars to recover if they miss the exit. The end of the gore, or gore nose, is the point where the ramp and the mainline split and begin changing grades. US 6 is going up to get over Wadsworth, and the ramp is going down to meet Wadsworth.

- The off-ramp has been designed to minimize impacts to 5JF3548. Moving the gore west would raise its elevation and require a longer ramp to get back down to Wadsworth and move the merging intersection with Wadsworth north, decreasing the merge distance of the fourth lane.
- Moving the gore nose to the west also would impact the deceleration length for the westbound US 6 to southbound 25 mph Wadsworth loop ramp. Shortening the deceleration length would be possible if the loop was a higher design speed but the higher speed requires a larger loop creating significant additional property impacts (see Radius of Ramp Loop discussion).



**Taper for off-ramp**  
 The length of the taper is controlled by deceleration length requirements and alignment constraints.

- Deceleration length is based on the mainline US 6 design speed of 70 mph to ramp design speed of 50 mph.
- The angle of deflection and location of taper is based on horizontal geometric constraints created by US 6 increasing in elevation to go over Wadsworth. Because of the need to elevate US 6 bridge over Wadsworth, moving the Wadsworth off-ramp departure west, shortens the distance for the ramp to meet Wadsworth grade and results in either too steep a grade or extending the ramp into northbound Wadsworth traffic lanes (essentially eliminating any fourth add lane).

# CHAPTER 5

## Consultation and Coordination

1 This chapter describes the communications and  
2 coordination that have occurred with stakeholders  
3 during the EA process. Coordination with stakeholders  
4 has focused on early identification of issues,  
5 cooperative resolution of issues, and open and honest  
6 communication. The *Stakeholder Involvement Plan*  
7 (CH2M HILL, 2007g) is available in Appendix C.

### 8 5.1 AGENCY CHARTER

9 The team established a charter agreement on June  
10 15, 2007 with the five primary project participants:  
11 FHWA, CDOT, RTD, Lakewood, and CH2M HILL. At  
12 its foundation, the charter established the purpose of  
13 the study: to deliver a NEPA decision document that is  
14 endorsed and supported by the public and  
15 stakeholders. The charter also identified goals and  
16 values for the project and team interactions, formally  
17 articulated the roles and responsibilities of participants  
18 for the study, and provided a structured decision  
19 process where team members would provide  
20 concurrence at key milestones in the NEPA process.  
21 The team also agreed to implement streamlining  
22 techniques into this EA that could be tested and  
23 potentially applied to future projects.

### 24 5.2 AGENCY COORDINATION

25 Resource and regulatory agencies outside of the  
26 charter team and other departments within CDOT and  
27 FHWA have been consulted as part of the agency  
28 coordination process. As described in the *Scoping*  
29 *Summary Report* (CH2M HILL, 2007f), 23 agencies,  
30 listed in Exhibit 5-1, were invited to a formal scoping  
31 meeting on August 16, 2007, to identify issues of  
32 concern. Other CDOT and FHWA departments were  
33 also invited to this meeting. Each participant was  
34 provided a copy of two reports in advance of the  
35 scoping meetings. The *Existing Conditions Report of*  
36 *Engineering Design Elements* (CH2M HILL, 2007d)

37 provided background information on the transportation  
38 problems and “geometric health” of the existing  
39 transportation system, which informed the purpose  
40 and need for the US 6/Wadsworth project.

#### EXHIBIT 5-1: AGENCIES CONSULTED ON US 6/WADSWORTH STUDY

##### Local Agencies

City of Lakewood

Denver Regional Council of Governments

Jefferson County Administration

Jefferson County Department of Health and Environment

Jefferson County Division of Highways and Transportation

Jefferson Economic Council

Regional Air Quality Council

Regional Transportation District

Urban Drainage and Flood Control District

##### State Agencies

Colorado Department of Local Affairs

Colorado Department of Public Health and Environment, Air  
Pollution Control Division

Colorado Department of Public Health and Environment,  
Hazardous Materials and Waste Management Division

Colorado Division of Local Government

Colorado Division of Wildlife

Colorado State Parks

State Historic Preservation Office

##### Federal Agencies

Department of Interior, Office of Environmental Policy and  
Compliance

Department of Housing and Urban Development

Federal Emergency Management Agency

Federal Transit Administration

U.S. Army Corps of Engineers

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service

1 The *Summary of Existing Conditions Report*  
 2 (CH2M HILL, 2007a) outlined the important  
 3 environmental resources that would need to be fully  
 4 evaluated in the EA, identified resources of less  
 5 importance in this project context that would not be  
 6 analyzed in detail, and provided recommendations  
 7 about methodologies to be used for impact analysis.

8 Scoping input received from resource agencies  
 9 indicated agreement with the identified purpose and  
 10 need and recommended level of environmental  
 11 analysis. Letters were sent to the same agencies in  
 12 February 2008 and June 2008 to inform them of study  
 13 progress at key milestones. The agencies have  
 14 received a copy of this EA and will have the  
 15 opportunity to comment on its findings during the  
 16 45-day review period.

17 Formal consultation with the Colorado SHPO has  
 18 been conducted to fulfill the requirements of Section  
 19 106 of the National Historic Preservation Act. In  
 20 addition to the scoping meeting and letters sent to all  
 21 agencies, described above, consultation has included  
 22 the following additional steps: consultation on the  
 23 boundaries of the area of potential effect (APE), which  
 24 resulted in no objections from the SHPO; submittal of  
 25 the determination of eligibility of historic resources,  
 26 which resulted in concurrence from the SHPO; and  
 27 submittal of the determination of effects to historic  
 28 resources, which also resulted in concurrence from  
 29 the SHPO. Negotiations regarding mitigation for  
 30 adverse effects to historic properties is under way and  
 31 will be completed before CDOT and FHWA sign a  
 32 decision document. Records of meetings and  
 33 communications with each agency can be found in  
 34 Appendix C.

35 Formal consultation with the USACE has been  
 36 conducted to fulfill the requirements of Section 404 of  
 37 the Clean Water Act. In addition to the agency  
 38 scoping meeting and letters sent to all agencies,  
 39 described above, consultation with the USACE has  
 40 included the following additional steps: submittal of  
 41 the *Wetland Delineation Report* and jurisdictional  
 42 determinations and informal coordination regarding  
 43 potential impacts and permitting requirements. The  
 44 consultation with the USACE resulted in preliminary

45 jurisdictional determinations for waters and wetlands  
 46 within the construction area under USACE regulatory  
 47 jurisdiction and initial recommendations for Section  
 48 404 permitting. Coordination with the USACE will  
 49 continue through final design and permitting.

## 50 5.2.1 AGENCY COORDINATION ACTIVITIES

51 Exhibit 5-2 lists the agency coordination activities that  
 52 have occurred with local, state, and federal agencies.  
 53 In addition to the activities listed in Exhibit 5-2, nine  
 54 Technical Leadership Team meetings have been held  
 55 to date with Lakewood and RTD to discuss study  
 56 progress, come to consensus on key decisions, and  
 57 fulfill the goals of the charter agreement.

EXHIBIT 5-2: AGENCY COORDINATION ACTIVITIES

| Activity   | Date       |
|--|------------|
| Lakewood project kickoff meeting   | 5/14/2007  |
| NEPA training for Lakewood staff   | 6/6/2007   |
| Lakewood planning meeting  | 6/14/2007  |
| Agency chartering meeting  | 6/15/2007  |
| DRCOG travel demand modeling meeting   | 8/8/2007   |
| Agency scoping meetings  | 8/16/2007  |
| Section 106 Consultation letters mailed to Native American tribes                                  | 9/14/2007  |
| Lakewood City Council briefing   | 9/17/2007  |
| UDFCD drainage coordination meeting  | 9/25/2007  |
| SHPO area of potential effects meeting   | 11/15/2007 |
| Area of potential effects consultation letter and memorandum mailed to SHPO and consulting parties | 12/12/2007 |
| SHPO letter documenting no objections to area of potential effects                                 | 12/26/2007 |
| Progress letter mailed to agencies   | 2/18/2008  |
| DRCOG traffic operations meeting   | 3/28/2008  |
| Lakewood traffic review meeting  | 4/1/2008   |
| Lakewood ROW impacts meeting   | 4/4/2008   |
| Lakewood traffic review meeting  | 5/13/2008  |
| Lakewood noise wall coordination meeting   | 6/30/2008  |
| Progress letter mailed to agencies   | 6/18/2008  |
| Lakewood City Council briefing   | 6/21/2008  |
| Determination of Eligibility consultation letter and report mailed to SHPO and consulting parties  | 7/2/2008   |
| Lakewood/UDFCD drainage coordination meeting   | 7/9/2008   |
| Lakewood ROW impacts meeting   | 7/9/2008   |

EXHIBIT 5-2: AGENCY COORDINATION ACTIVITIES (CONT.)

| Activity  | Date       |
|---|------------|
| Lakewood Development Assistance Team presentation   | 7/10/2008  |
| Request from SHPO for additional information on historic resource eligibility                                 | 8/7/2008   |
| Lakewood funding approaches meeting   | 8/15/2008  |
| Lakewood ROW impacts meeting  | 9/5/2008   |
| Submittal of <i>Wetland Delineation Report</i> and jurisdictional determinations to USACE                     | 9/18/2008  |
| Response to request for additional information and <i>Final Historic Resources Survey Report</i> sent to SHPO | 10/10/2008 |
| SHPO concurrence with determination of eligibility of historic resources                                      | 10/21/2008 |
| USACE e-mail correspondence regarding wetland impacts and permitting  | 11/20/2008 |
| Historic resource effects determination submitted to SHPO and consulting parties                              | 12/9/2008  |
| SHPO effects determination review meeting   | 12/9/2008  |
| SHPO concurrence with determination of effects to historic resources  | 12/19/2008 |

5.2.2 KEY ISSUES RAISED

This section summarizes the key issues raised by agencies and the actions taken to address them.

Scoping Issues

**Issue:** The City of Lakewood should consider the impacts of zoning compliance on ROW acquisition. If zoning compliance is required of all affected properties, ROW acquisition could become an even more significant project cost and impact.

**Action:** Subsequent meetings were held with Lakewood to discuss this issue and determine if some nonconformance may be allowed.

**Issue:** Current Nationwide permit regulations for impacts to wetlands and waters of the United States may not provide coverage for project impacts, and an individual 404(b)(1) permit may be required.

**Action:** Subsequent coordination with USACE determined that Nationwide Permit # 14 (Linear Projects) would be appropriate for project impacts.

**Issue:** Coordination needs to occur with the Urban Drainage and Flood Control District (UDFCD) regarding flood improvements upstream of the project area.

**Action:** Subsequent meetings identified improvements by others that were incorporated into the modeling for project drainage improvements.

Post-Scoping Issues

**Issue:** CDOT should pay close attention to the height and aesthetic treatment of the noise wall proposed along the frontage road northeast of the interchange.

**Action:** CDOT will consult with Lakewood on the design of noise walls during final design.

**Issue:** CDOT should carefully consider how to manage excess ROW from parcels fully acquired.

**Action:** CDOT has explained to Lakewood and interested property owners the ROW policy that addresses disposal of excess property and parties entitled to first right of refusal. CDOT ROW policies also allow owners the ability to maintain ownership of uneconomic remnants if they desire.

5.3 PUBLIC INVOLVEMENT

Public involvement activities were crafted to identify community concerns, provide opportunities for input, and achieve public endorsement and support for the project. Public involvement activities have focused on building a high degree of public trust in the study and decision process. To build and maintain this trust, the project team established the following goals: develop a project that is compatible with community and municipal visions for the corridor; maintain open and honest communications; and thoroughly identify important community issues early in the planning process.

Numerous and timely communications with stakeholders have been essential to achieving these goals. A variety of outreach methods has been used to reach, engage, and inform stakeholders. The sections below describe the outreach efforts and involvement activities that have been conducted, and the important community issues that have been identified through these activities.



1 The public involvement activities conducted to date  
 2 have helped build public trust in project decision  
 3 makers and create widespread public support for the  
 4 planning process and Build Alternative.

### 5 5.3.1 PUBLIC MEETINGS

6 Exhibit 5-3 lists the meetings that have occurred with  
 7 public stakeholders. Meetings with individual groups  
 8 were advertised by those groups to their members.  
 9 Project open houses were advertised by: a) direct  
 10 mailings to the project mailing list; b) flyers mailed and  
 11 hand delivered to businesses and community centers;  
 12 c) advertisements in the *Denver Post* and *Lakewood*  
 13 *Sentinel*; and d) informational postings on Lakewood's  
 14 Channel 8 and website, and the project and local  
 15 organization websites. Attendance at public meetings  
 16 increased throughout the project; 70 people attended  
 17 the first open house (public scoping meeting), 92 were  
 18 in attendance at the second open house, and 127  
 19 attended the third open house.

EXHIBIT 5-3: PUBLIC MEETINGS

| Activity  | Date                   |
|---|------------------------|
| Eiber Neighborhood Organization meeting                 | 7/19/2007              |
| Two Creeks Neighborhood Organization meeting            | 7/21/2007              |
| West Colfax Community Association meeting               | 8/15/2007              |
| Public Scoping Meeting                                  | 8/21/2007              |
| Lakewood on Parade booth                                | 8/25/2007              |
| O'Kane Park Neighborhood Association meeting            | 8/28/2007              |
| Alameda Gateway Community Association meeting           | 9/5/2007               |
| Mid Lakewood Civic Association annual meeting           | 9/25/2007              |
| Morse Park Neighborhood Organization meeting            | 10/11/2007             |
| Informational meetings with schools                     | 9/11/2007 – 10/4/2007  |
| Business owner interviews                               | 10/30/2008 – 12/5/2008 |
| Public Open House #2 – present range of design concepts | 2/12/2008              |
| Eiber Neighborhood Organization meeting                 | 3/13/2008              |
| West Alameda Kiwanis meeting                            | 4/2/2008               |
| Two Creeks Neighborhood Organization meeting            | 4/19/2008              |

EXHIBIT 5-3: PUBLIC MEETINGS (CONT.)

| Activity   | Date                 |
|--|----------------------|
| Eiber Neighborhood Organization meeting              | 4/22/2008            |
| Public Open House #3 – present preferred alternative | 4/29/2008            |
| O'Kane Park Neighborhood Association meeting         | 4/29/2008            |
| Public Open House #3, makeup date                    | 5/21/2008            |
| Noise Assessment and Mitigation meeting              | 6/4/2008             |
| Property owner meetings                              | 6/23/2008 – 7/8/2008 |
| Two Creeks Neighborhood Organization meeting         | 6/21/2008            |
| Alameda Gateway Community Association meeting        | 7/2/2008             |
| West Colfax Community Association meeting            | 7/16/2008            |
| Mid Lakewood Civic Association meeting               | 10/2/2008            |

### 20 5.3.2 PUBLIC OUTREACH EFFORTS

21 In addition to meeting with stakeholders, CDOT used  
 22 other methods to distribute project information. Some  
 23 of those activities are described below. A complete  
 24 listing of outreach activities is available in the  
 25 *Stakeholder Involvement Plan* (CH2M HILL, 2007g) in  
 26 Appendix C.

27 Direct mailings were sent to the entire mailing list,  
 28 including: a) a letter introducing the study and inviting  
 29 recipients to the public scoping meeting; b) the  
 30 January 2008 newsletter; c) the April 2008 newsletter;  
 31 and d) the fall 2008 postcard update on study  
 32 progress. As the study progressed, the mailing list  
 33 expanded from an initial list of 550 addresses within  
 34 three blocks of the project area to 3,700 addresses  
 35 surrounding the project area between Garrison and  
 36 Otis Streets.

37 Mailings and solicitations for interviews were sent to  
 38 specific groups, including businesses and commercial  
 39 property owners, area schools, and owners of  
 40 potentially affected properties. Interviews with  
 41 businesses along the corridor provided an opportunity  
 42 to understand commercial operations within the study  
 43 area; establish a line of communication if potential  
 44 property or business impacts were identified; clarify

1 the scope of the NEPA study; and dispel rumors about  
2 the project, particularly related to the decision-making  
3 process and potential use of eminent domain. The  
4 business survey process also led to more than  
5 100 new businesses being added to the mailing list.  
6 Meetings and discussions with owners of potentially  
7 affected properties provided similar benefits and  
8 established strong lines of communication with many  
9 of the property owners.

10 Regular updates were posted to the project website,  
11 www.US6Wadsworth.com.

12 Study updates were provided to neighborhood and  
13 business groups for publication in their quarterly  
14 newsletters.

### 15 5.3.3 SPECIALIZED OUTREACH TO MINORITY 16 AND LOW-INCOME POPULATIONS

17 Demographic data from the U.S. Census and area  
18 schools indicate minority and low-income populations  
19 are present in higher-than-average percentages in the  
20 neighborhoods surrounding the project area.

21 Specialized outreach efforts, therefore, were  
22 employed to identify and engage minority and low-  
23 income stakeholders in the decision-making process.

24 Newsletters and the public scoping meeting invitation  
25 were mailed in both English- and Spanish-language  
26 versions to all addresses on the project mailing list.

27 Spanish speakers, as opposed to other language  
28 speakers, were targeted because of the high  
29 percentage of Hispanic children identified in the local  
30 school demographics.

31 English- and Spanish-language project fact sheets  
32 were placed in the registration packets of six area  
33 schools in August 2007 to introduce the study to the  
34 public.

35 An informational insert, printed in English and  
36 Spanish, was included in the Jefferson High School  
37 October 2007 newspaper, which was distributed to  
38 3,000 families located in a geographic area containing  
39 identified minority and low-income populations. The  
40 insert provided basic project information and gave  
41 instructions for joining the mailing list.

42 Interviews were conducted with business owners  
43 throughout the project area to gather more information  
44 about possible minority or low-income employee  
45 populations.

46 Spanish translation has been offered at all public  
47 meetings. Newspaper advertisements and press  
48 releases have included telephone numbers for  
49 Spanish translation and information. No requests for  
50 Spanish-language translation were received through  
51 any of these avenues during the study.

### 52 5.3.4 KEY ISSUES RAISED

53 Primary topics of public interest have been noise,  
54 safety, pedestrian and bicycle access, traffic  
55 operations, accommodation of future transit, property  
56 acquisition, and construction staging.

57 Many other issues, from traffic signal timing to  
58 roadway maintenance concerns, have been prevalent  
59 in public discussions as well. CDOT has addressed  
60 many of these in the planning process and proposed  
61 design. Summaries of public discussion at the initial  
62 scoping meeting and subsequent open houses can be  
63 found in the meeting summary reports contained in  
64 Appendix C. Meeting notes from other meetings are  
65 available upon request. This section summarizes  
66 predominant issues raised consistently throughout the  
67 study and the actions taken to address them.

68 **Issue:** Provide noise mitigation on US 6 west of  
69 Wadsworth. Consider quiet pavement and absorptive  
70 wall materials for further noise reduction.

71 **Action:** Noise walls are proposed along both sides of  
72 US 6 between Wadsworth and Garrison Street. CDOT  
73 will consider various wall materials during final design.

74 **Issue:** The design of the interchange and the  
75 unlimited access on Wadsworth lead to many  
76 accidents in the area.

77 **Action:** The proposed changes address the  
78 operational issues with the interchange and provide  
79 access control on Wadsworth, creating safer  
80 conditions for vehicles and other travel modes.

1 **Issue:** Provide dedicated pedestrian and bicycle  
2 facilities that meet Americans with Disability Act  
3 requirements along Wadsworth. Provide safe  
4 pedestrian and bicycle crossings of US 6 on  
5 Wadsworth.

6 **Action:** The proposed action includes sidewalk  
7 facilities throughout the project area and improves  
8 pedestrian and bicycle movements. In most locations,  
9 additional buffers between the sidewalk and travel  
10 lanes also are included.

11 **Issue:** Cut-through traffic in neighborhoods is a  
12 concern. Consider land use and traffic impacts that  
13 will result from light rail and redevelopment.

14 **Action:** Changes to the design of frontage roads  
15 north of US 6 have been made in response to  
16 concerns about cut-through traffic. The traffic  
17 projections used to model future conditions (and  
18 design the capacity of the proposed action) take into  
19 account the light rail line and associated land use  
20 changes that are likely to occur.

21 **Issue:** Accommodate future transit on Wadsworth.

22 **Action:** The ability to accommodate future transit on  
23 Wadsworth was one of the criteria used to evaluate  
24 the project alternatives. The Build Alternative would  
25 provide a bridge on US 6 over Wadsworth that is long  
26 enough to accommodate a future transit lane next to  
27 the proposed travel lanes. Bus operations would be  
28 improved by improved capacity and turning  
29 movements on Wadsworth.

30 **Issue:** Desire to know how much ROW would be  
31 required and how many properties would be affected.

32 **Action:** CDOT mailed letters to owners of potentially  
33 affected properties providing information on potential  
34 impacts and the ROW acquisition process, and  
35 inviting property owners to contact CDOT to discuss  
36 potential impacts.

37 **Issue:** Coordinate construction with RTD West  
38 Corridor light rail and other planned project  
39 construction so that traffic impacts are manageable.  
40 Start construction as soon as possible.

41 **Action:** CDOT has taken note of these comments and  
42 will plan construction phasing in coordination with  
43 other projects, if a construction project is approved  
44 and funded.

45 **Issue:** Flooding on Wadsworth at Lakewood Gulch is  
46 a problem.

47 **Action:** Drainage improvements are proposed at all  
48 four gulches that cross the project area. The  
49 improvements would be substantial and would  
50 decrease surface water elevations so that the  
51 floodplain would no longer encroach upon the  
52 roadways.

## 5.4 REMAINING PUBLIC AND AGENCY INVOLVEMENT

53  
54  
55 FHWA and CDOT are providing this EA for agency  
56 and public comment. A public hearing will be  
57 scheduled in Lakewood at the Lakewood Council  
58 Chambers (480 S. Allison Parkway, Lakewood, CO  
59 80226). Newsletters announcing the public hearing  
60 will be sent to all individuals on the mailing list. The  
61 public hearing also will be advertised in newspapers,  
62 websites, neighborhood newsletters, and flyers  
63 distributed throughout the study area. Interested  
64 individuals can attend the public hearing to provide  
65 comments or learn more about the EA study and its  
66 recommendations. Comments can be provided in  
67 person at the public hearing, on the project website  
68 (<http://us6wadsworth.com/>) or via mail, fax, or email:

69 Seyed Kalantar, P.E.  
70 Project Manager  
71 CDOT Region 6, Central Engineering  
72 425 B Corporate Circle  
73 Golden, CO 80401  
74 (720) 497-6955 (phone)  
75 (720) 497-6951 (fax)  
76 [seyed.kalantar@dot.state.co.us](mailto:seyed.kalantar@dot.state.co.us)

77 Reviewing agencies will be provided a copy of the  
78 document, and individual meetings with agency  
79 representatives will be held if requested.

80 After the review period ends, all comments will be  
81 addressed in a formal response, which will be issued  
82 with the final decision on the project. A newsletter will  
83 be mailed to the entire mailing list at the end of the  
84 study to inform agency and public stakeholders of the  
85 study's conclusions and next steps.



## CHAPTER 6 References

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# Appendix A Glossary

1 The following terms and acronyms may be  
2 encountered in technical reports, plans, data,  
3 informational materials, or conversations about the  
4 US 6 and Wadsworth Environmental Assessment.

5 **Access** – Driveways, median openings, and  
6 intersections on a road. Entrance and exit ramps on a  
7 freeway.

8 **Acceleration Lane** – An auxiliary lane that allows  
9 vehicles to accelerate when entering the through-travel  
10 lane of the road or freeway.

11 **Area of Potential Effect (APE)** – the geographic area  
12 or areas within which an undertaking may directly or  
13 indirectly cause alterations in the character or use of  
14 historic properties, if any such properties exist.

15 **Arterial** – A major road in a city or urban area that  
16 collects traffic and may be connected to the freeway  
17 system. Wadsworth Boulevard is an arterial.

18 **Auxiliary Lanes** – Lanes to the right or left of through-  
19 travel lanes that allow vehicles to accelerate or  
20 decelerate when entering or exiting the road or  
21 freeway. Auxiliary lanes help reduce slowdowns on the  
22 road or freeway and improve safety.

23 **Average Daily Traffic (ADT)** – The average number of  
24 vehicles (both directions) passing a specified point  
25 during a 24-hour period.

26 **Best Management Practices (BMP)** – Common  
27 sense actions, activities, prohibitions, and practices  
28 that protect or maintain the quality of a variety of  
29 resources during and after a construction project.

30 **Capacity** – The maximum flow rate at which vehicles  
31 can be expected to move on a given road segment,  
32 measured in vehicles per hour or passenger cars per  
33 hour.

34 **Centerline** – A line that is equidistant from the sides of  
35 a road. The centerline typically shows the horizontal  
36 alignment of a road.

37 **Cloverleaf Interchange** – An interchange design that  
38 provides free-flowing movements between a road and  
39 a freeway by using loop ramps to handle left turns onto  
40 or off of the freeway. A cloverleaf interchange typically  
41 contains four loop ramps. The existing US  
42 6/Wadsworth Boulevard interchange is a cloverleaf  
43 interchange.

44 **Collector-Distributor (CD) Road** – Freeway travel  
45 lanes on the far right that are physically separated from  
46 through-travel lanes to provide access to and from the  
47 freeway. Collector-distributor roads provide better flow  
48 for the through traffic by separating it from the merging  
49 and weaving vehicles at entrance ramps and exit  
50 ramps.

51 **CDOT** – The Colorado Department of Transportation,  
52 which manages the network of highways within the  
53 state.

54 **Conflict Point** – Any point where the paths of two  
55 through or turning vehicles diverge, merge, or cross.

56 **Curb and Gutter** – A curb is the raised edge built  
57 along the edge of a road. It connects with a gutter,  
58 which is the low area that carries water to the storm  
59 sewer.

60 **dBA** – The abbreviation for A-weighted decibel, the  
61 unit used to measure “weighted” sound levels. Noise  
62 levels are generally weighted to reflect the fact that the  
63 human ear responds differently to sounds of various  
64 levels and frequencies.

65 **Deceleration Lane** – An auxiliary lane that allows  
66 vehicles to decelerate when leaving the through-travel  
67 lane of the road or freeway.

68 **Design Speed** – The maximum speed at which a  
69 vehicle can be operated safely on a road in perfect  
70 conditions.

71 **Diamond Interchange** – The most common  
72 interchange design, usually consisting of four ramps  
73 (two entrance ramps and two exit ramps). Diamond  
74 interchanges have a diamond shape when viewed from



1 the air. Examples near the project area include US 6  
2 and Indiana Street, and US 6 and Sheridan Boulevard.

3 **Eastbound (EB)** – Traveling or heading east.

4 **Entrance Ramp** – Also called an on-ramp, this is a  
5 road segment of one or two lanes used by traffic to  
6 move from the surface streets to connect to the  
7 freeway.

8 **Environmental Assessment (EA)** – A public  
9 document produced as part of the federal National  
10 Environmental Policy Act (NEPA) process that  
11 evaluates potential impacts of transportation projects in  
12 order to determine whether an Environmental Impact  
13 Statement (EIS) is necessary.

14 **Environmental Impact Statement (EIS)** – A public  
15 document produced as part of the NEPA process  
16 required for “major Federal actions that significantly  
17 affect the quality of the human environment” (NEPA  
18 Section 102[c]) to inform decision makers and the  
19 public of the proposed action, reasonable alternatives,  
20 and their environmental impacts.

21 **Exit Ramp** – Also called an off-ramp, this is a road  
22 segment of one or two lanes used by traffic to move off  
23 of the freeway to connect to the surface streets.

24 **External Intersection** – Intersection that is not part of  
25 the interchange. In the US 6/Wadsworth study area,  
26 this includes intersections of Wadsworth Boulevard  
27 with frontage roads or other cross streets.

28 **Federal Highway Administration (FHWA)** – The  
29 branch of the federal Department of Transportation that  
30 oversees the national highway system. The FHWA  
31 works with CDOT on projects affecting national  
32 highways in Colorado (such as US 6).

33 **Floodplain** – An area adjacent to a stream or river that  
34 is inundated periodically by high flows.

35 **FONSI** – A Finding of No Significant Impact, or FONSI,  
36 is a public decision document by a federal agency  
37 under NEPA that briefly presents the reasons why an  
38 action will not have a significant effect on the human or  
39 natural environment and for which an EIS, therefore,  
40 will not be prepared.

41 **Freeway** – A divided highway facility having two or  
42 more travel lanes in each direction for the exclusive  
43 use of through traffic and full access control. US 6 is a  
44 freeway.

45 **Frontage Road** – A road that parallels a major  
46 transportation facility such as a freeway. It serves to  
47 collect and distribute local traffic adjacent to the major  
48 facility without impeding traffic flow on the facility.

49 Frontage roads are also referred to as “access,”  
50 “feeder,” and “service” roads.

51 **Gore** – The area needed for cars to recover if they  
52 miss their exit.

53 **Gore Nose** – The end of the gore and the point at  
54 which the ramp and the mainline split and begin  
55 changing grades.

56 **Grade Separation** – Use of different levels. Grade  
57 separation of an intersection carries traffic over or  
58 under another road. Grade separation of a pedestrian  
59 or bicycle path carries pedestrians and bicyclists over  
60 or under a road.

61 **Hazardous Materials** – Materials that pose a risk to  
62 human health or the environment.

63 **High Volume Movement** – The portion of an  
64 interchange that carries the most traffic. High-volume  
65 movements at the US 6/Wadsworth Boulevard  
66 interchange are northbound Wadsworth Boulevard to  
67 eastbound US 6, and westbound US 6 to southbound  
68 Wadsworth Boulevard.

69 **Intelligent Transportation Systems (ITS)** – Also  
70 referred to as Intelligent Traffic Systems, Travel  
71 Demand Management, and Transportation Systems  
72 Management, ITS apply communications and  
73 information technology to provide solutions to  
74 congestion and other traffic control issues. ITS include  
75 such techniques as providing real-time information  
76 about traffic conditions and coordinating traffic signals.  
77 Specific ITS strategies being considered for this project  
78 include ramp metering, arterial variable messaging  
79 system (VMS), closed-caption television to support  
80 corridor surveillance and VMS, and accident  
81 monitoring and reporting.

82 **Interchange** – A grade-separated (bridge) junction of a  
83 freeway and another road used to provide access  
84 connectivity.

85 **Latent Demand** – Travel that is desired but unrealized  
86 because of constraints such as congestion. The source  
87 of latent demand in the US 6/Wadsworth study area is  
88 traffic diverted from other routes, as opposed to new  
89 travel that would not otherwise have occurred.

90 **Level of Service (LOS)** – A qualitative term used by  
91 transportation engineers to indicate that traffic is  
92 moving at ideal, average, or poor efficiency and  
93 measured on a grade scale of “A” through “F.”

94 **Loop Ramp** – A one-way entrance or exit ramp that  
95 loops 270 degrees to the right and merges onto the  
96 intersecting road or freeway

- 1 **Mainline** – The primary through road or freeway, as  
2 distinct from ramps, auxiliary lanes, and collector-  
3 distributor roads.
- 4 **Median** – A painted or raised area in the center of a  
5 road that separates opposing travel lanes and  
6 consolidates left turns.
- 7 **Merge** – A traffic movement in which two separate  
8 lanes of traffic combine to form a single lane.
- 9 **Mobility** – The ability of traffic or other travel modes to  
10 move unimpeded through a highway or other  
11 transportation facility.
- 12 **MS4** – The abbreviation for Municipal Separate Storm  
13 Sewer System, a system used for collecting or  
14 conveying stormwater that is not a combined sewer or  
15 part of a publicly owned treatment works.
- 16 **NEPA** – The National Environmental Policy Act,  
17 established by Congress in 1969, requires a federal  
18 agency to document the environmental impact of its  
19 actions, including an evaluation of alternatives.
- 20 **Noise Barrier** – A barrier, usually a wall or earthen  
21 berm, separating the highway from adjacent areas to  
22 reduce road noise.
- 23 **Partial Property Acquisition** – A property acquisition  
24 that occurs when only a portion of a property would be  
25 affected by proposed construction but the remaining  
26 portion of the parcel would still be functional.
- 27 **Partial Cloverleaf Interchange** – An interchange  
28 design that uses loop ramps for two of the left-turn  
29 movements onto or off of the freeway, and straight  
30 ramps to handle the other two left-turn movements  
31 onto or off of the freeway. An example in the Denver  
32 area is the US 36 and Federal Boulevard interchange.
- 33 **Peak-Hour Traffic** – The hour in which the maximum  
34 traffic demand occurs on a facility. On most roads,  
35 higher traffic volumes occur in the evening and in the  
36 morning because of work-related trips.
- 37 **Permanent Easement** – A non-possessory permanent  
38 interest to use property in possession of another  
39 person for a stated purpose. Permanent easements  
40 are required for CDOT to conduct ongoing  
41 maintenance after construction.
- 42 **Ramp Meter** – A traffic signal located on an entrance  
43 ramp that controls the flow rate of vehicles onto a  
44 freeway. Ramp meters control the frequency and  
45 spacing of merging vehicles, which helps to improve  
46 the traffic flow on the mainline.
- 47 **Ramp Terminal** – The intersection of entrance and  
48 exit ramps with a connecting surface street.
- 49 **Retaining Wall** – A wall used to retain soil. Retaining  
50 walls can be used to minimize the footprint of a slope.
- 51 **Right-of-Way (ROW)** – The land owned by CDOT for  
52 the purpose of operating and maintaining a highway.
- 53 **Scoping** – A process initiated at the beginning of a  
54 study to solicit public and agency input on the scope of  
55 the study.
- 56 **Shoulder** – A portion of the road at the outside or  
57 inside of the travel lanes that accommodates stopped  
58 vehicles and emergency use.
- 59 **Signal Timing** – The coordinated timing of a sequence  
60 of traffic signals that allows vehicles to progress along  
61 an arterial or cross an arterial. The goal of signal timing  
62 is to minimize delay (the time a vehicle must wait at a  
63 signal) at intersections.
- 64 **Single Point Urban Interchange (SPUI)** – An  
65 interchange design similar to the diamond interchange,  
66 but with all ramps controlled by a single set of traffic  
67 signals. An example in the Denver area is the I-25 and  
68 University Boulevard interchange.
- 69 **Stopping Sight Distance** – The distance that allows a  
70 driver traveling at the design speed to stop before  
71 hitting an observed object.
- 72 **Taper** – speed-change transition areas where  
73 pavement width increases or decreases as cars enter  
74 or exit a traffic stream. In this project area, tapers  
75 occur at the end of acceleration and deceleration  
76 lanes along Wadsworth and at the on- and off-ramps  
77 to US 6.
- 78 **Temporary Easement** – A non-possessory temporary  
79 interest to use property in possession of another  
80 person for a stated purpose. Temporary easements  
81 are required for CDOT to access properties during  
82 construction.
- 83 **Tight Diamond Interchange** – An interchange design  
84 that shifts the entrance and exit ramps closer to the  
85 freeway than in a traditional diamond interchange. This  
86 interchange type requires less land than a traditional  
87 diamond interchange.
- 88 **Tight Diamond Interchange with Loop** – The tight  
89 diamond with loop is similar to the tight diamond  
90 except that a loop ramp would be maintained in the  
91 northwest quadrant of the interchange and there would  
92 be no traffic signal at the intersection of the loop ramp  
93 with Wadsworth.
- 94 **Total Property Acquisition** – A property acquisition  
95 that occurs when the proposed construction limits  
96 would directly impact the principal building on the

1 property, such as a home or business, and the  
2 property would no longer be economically viable after  
3 the building is removed.

4 **Transportation Demand Management (TDM)** – A  
5 general term for actions that encourage a decrease in  
6 the demand for the existing transportation system.

7 **Typical Section** – A cross section that is  
8 representative of the roadway design throughout the  
9 project area.

10 **Variable Messaging System (VMS)** – An electronic  
11 traffic sign used on roads to give travelers information  
12 about traffic congestion, accidents, incidents, work  
13 zones, or other events.

14 **Vehicle Storage** – Length of travel lanes (such as left-  
15 turn lanes or through lanes) where vehicles can queue  
16 while waiting to proceed through a traffic signal.

17 **Volume-to-Capacity (V/C) ratio** – The ratio of flow  
18 rate to capacity. The V/C ratio is a measure of capacity  
19 sufficiency, that is, whether or not the physical  
20 geometry of a road provides sufficient capacity for the  
21 subject movement. Low V/C ratios depict relatively  
22 free-flow conditions. High V/C ratios depict more  
23 congested conditions. A V/C ratio of 1.0 indicates that  
24 the road is at its capacity.

25 **Weaving** – The crossing of two or more traffic streams  
26 traveling in the same direction. For example, weaving  
27 occurs when an interchange entrance ramp is followed  
28 by an exit ramp.

29 **Wetland** – An area sufficiently inundated by surface or  
30 groundwater to support a predominance of vegetation  
31 adapted for life in saturated soil conditions.

32 **Westbound (WB)** – Traveling or heading west.

APPENDIX B: SUMMARY OF MITIGATION AND MONITORING COMMITMENTS

| Resource              | Mitigation and Monitoring Commitments   | Where to Include in BID Package | Implementation Responsibility | Comments/Status <sup>1</sup> |
|-----------------------|---|---------------------------------|-------------------------------|------------------------------|
| Air Quality           | <ul style="list-style-type: none"> <li>Contractors will be required to reduce fugitive dust emissions during construction by implementing best management practices (BMPs), such as spraying exposed soils, covering trucks when transporting materials, minimizing mud tracking by vehicles, controlling vehicle speeds on construction access roads, and stabilizing construction entrances per CDOT M-208-1 requirements.</li> </ul> | Specification                   | Contractor                    |                              |
|                       | <ul style="list-style-type: none"> <li>Contractors will be required to comply with BMPs to reduce air emissions from construction vehicles, such as reducing idling time of equipment and vehicles and using newer construction equipment or equipment with add-on emission controls.</li> </ul>  | Specification                   | Contractor                    |                              |
| Archaeology           | <ul style="list-style-type: none"> <li>In the unlikely event that cultural deposits are discovered during construction, CDOT would follow its standard practice of ceasing work, consulting with the CDOT archaeologist, and evaluating materials in consultation with the State Historic Preservation Office (SHPO) to determine if mitigation is required.</li> </ul>   | Specification                   | CDOT/ Contractor              |                              |
| Cumulative Impacts    | <ul style="list-style-type: none"> <li>No mitigation necessary.</li> </ul>  | NA                              | NA                            |                              |
| Energy                | <ul style="list-style-type: none"> <li>Measures to reduce energy consumption will include limiting the idling of construction equipment, locating construction staging areas close to the work site, minimizing motorist delays and vehicle idling, and coordinating general maintenance activities during construction to avoid excessive queuing and construction delays during peak hours.</li> </ul>                                | Plan/Specification              | Contractor                    |                              |
| Environmental Justice | <ul style="list-style-type: none"> <li>No mitigation measures are necessary.</li> </ul>   | NA                              | NA                            |                              |
| Farmlands             | <ul style="list-style-type: none"> <li>No mitigation measures are necessary.</li> </ul>   | NA                              | NA                            |                              |

<sup>1</sup> To be updated as project is implemented.

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|--------------------------------|---|---------------------------------|-------------------------------|------------------------------|
| Fish and Wildlife              | <ul style="list-style-type: none"> <li>Obtain Senate Bill 40 Permit from CDOW.</li> </ul>   | Permit/Plan                     | FHWA/CDOT (Design Consultant) |                              |
|                                | <ul style="list-style-type: none"> <li>Conduct surveys for bird nests before April 1 and remove any unoccupied nests in advance of construction.</li> </ul>   | Specification                   | Contractor                    |                              |
|                                | <ul style="list-style-type: none"> <li>Trees will not be removed between April 1 and August 15 to avoid impacts to migratory birds.</li> </ul>  | Permit                          | Contractor                    |                              |
| Floodplains                    | <ul style="list-style-type: none"> <li>Sediment traps, check dams, sediment basins, or other best management practices (BMPs) will be installed to control sedimentation during construction of drainage improvements in gulches. Specific BMPs will be determined during final design.</li> </ul>  | Plan/Specification              | Contractor                    |                              |
|                                | <ul style="list-style-type: none"> <li>During final design, CDOT will coordinate with the appropriate local and federal agencies to conduct hydraulic analysis and obtain necessary floodplain permits.</li> </ul>  | Plan/Permit                     | FHWA/CDOT (Design Consultant) |                              |
| Geological Resources and Soils | <ul style="list-style-type: none"> <li>No mitigation measures are necessary.</li> </ul>   | NA                              | NA                            |                              |
| Hazardous Materials            | <ul style="list-style-type: none"> <li>Protective measures will be taken before, during, and after construction to minimize the risk of encountering petroleum products and petroleum-contaminated soils. A full Phase I Environmental Site Assessment (ESA) according to American Society of Testing and Materials (ASTM) 2005 standards will be completed prior to any total property acquisition. Phase II ESAs will be conducted to characterize, manage, and remediate contaminated properties identified as concern in Phase I ESAs.</li> </ul> | NA                              | FHWA/CDOT (Design Consultant) |                              |
|                                | <ul style="list-style-type: none"> <li>A <i>Materials Handling Plan</i> will be prepared to address contaminated soil and groundwater that may be encountered as directed by the findings of Phase I assessments. The plan will be prepared according to CDOT standards.</li> </ul>   | Plan                            | Contractor                    |                              |
|                                | <ul style="list-style-type: none"> <li>Painted surfaces disturbed during construction or demolition and disposed of separately will be tested, handled, and disposed of properly.</li> </ul>  | Plan/Specification              | Contractor                    |                              |
|                                | <ul style="list-style-type: none"> <li>An asbestos survey will be conducted and a demolition permit will be obtained prior to the demolition of bridges or buildings. Any asbestos-containing material that is friable or will be friable during construction and demolition activities will be removed prior to demolition by a licensed abatement contractor.</li> </ul>  | Plan/Specification/Permit       | Contractor                    |                              |

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| Resource            | Mitigation and Monitoring Commitments   | Where to Include in BID Package                  | Implementation Responsibility    | Comments/Status <sup>1</sup> |
|---------------------|---|--|----------------------------------|------------------------------|
| Historic Properties | <ul style="list-style-type: none"> <li>Mitigation measures will be part of a Memorandum of Agreement (MOA) negotiated among CDOT, FHWA, and the Colorado SHPO. The Lakewood Historical Society, City of Lakewood, and Jefferson County will be provided an opportunity to participate in the MOA. Mitigation may include interpretive signage and creation of an educational website.</li> </ul>  | NA (Sign, if applicable, to be included in Plan) | FHWA/CDOT                        |                              |
|                     | <ul style="list-style-type: none"> <li>Any new historic documentation that is developed as part of the MOA will be provided to interested local historic preservation groups</li> </ul>   | N/A  | CDOT                             |                              |
| Land Use            | <ul style="list-style-type: none"> <li>Final design and right-of-way negotiations by CDOT will coordinate with the City of Lakewood to address compatibility with land use plans and the allowance of non-conforming properties that may result from right-of-way acquisition.</li> </ul>   | NA   | FHWA/CDOT/<br>Lakewood           |                              |
| Noise               | <ul style="list-style-type: none"> <li>New noise walls are constructed between the frontage roads and US 6 west of Wadsworth to Garrison Street. Preliminary design and noise modeling indicates that 15-foot walls are required for properties adjacent to US 6, 8-foot walls are appropriate along the reconfigured frontage road in the NE quadrant (Green Acres neighborhood), and 4-foot safety barriers should be included along the US 6 bridge</li> </ul> | Plan   | FHWA/CDOT<br>(Design Consultant) |                              |
|                     | <ul style="list-style-type: none"> <li>Existing walls east of Wadsworth will be reconstructed as necessary.</li> </ul>  | Plan   | FHWA/CDOT<br>(Design Consultant) |                              |
|                     | <ul style="list-style-type: none"> <li>Noise analysis will be conducted during final design to confirm noise wall heights and alignments</li> </ul>   | NA   | FHWA/CDOT<br>(Design Consultant) |                              |
|                     | <ul style="list-style-type: none"> <li>During final design of the project, the City of Lakewood will have the opportunity to provide input on design elements related to noise mitigation, including grading, landscaping, color and material of any noise walls, with the goal of constructing an aesthetically pleasing and economically viable project.</li> </ul>   | Plan   | FHWA/CDOT<br>(Design Consultant) |                              |
|                     | <ul style="list-style-type: none"> <li>Construction noise impacts will be mitigated by limiting work to daytime hours (as described by CDOT and City of Lakewood requirements) when possible and requiring the contractor to use well-maintained equipment, including muffler systems.</li> </ul>   | Specification                                    | Contractor                       |                              |

APPENDIX B: SUMMARY OF MITIGATION AND MONITORING COMMITMENTS

| Resource                          | Mitigation and Monitoring Commitments   | Where to Include in BID Package | Implementation Responsibility | Comments/Status <sup>1</sup> |
|-----------------------------------|---|---------------------------------|-------------------------------|------------------------------|
| Paleontology                      | <ul style="list-style-type: none"> <li>The CDOT Staff Paleontologist will examine final plans to determine whether construction monitoring is required.</li> </ul>  | NA                              | CDOT                          |                              |
|                                   | <ul style="list-style-type: none"> <li>Prior to construction, the CDOT Staff Paleontologist will examine the existing Denver Formation bedrock exposure that could not be examined previously because of snow cover at the time of original survey. If any scientifically significant fossil localities are discovered during that survey, CDOT will perform mitigation of construction impacts by systematic salvage of a statistically representative sample of the fossils found there, either prior to or during construction.</li> </ul> | N/A                             | CDOT                          |                              |
|                                   | <ul style="list-style-type: none"> <li>If sub-surface bones or other potential fossils are found during construction, work will cease. The CDOT Staff Paleontologist will assess the significance and make further recommendations.</li> </ul>  | Specification                   | Contractor                    |                              |
| Pedestrian and Bicycle Facilities | <ul style="list-style-type: none"> <li>Intelligent Transportation Systems (ITS) options, such as signing, lighting, and pavement treatments, will be considered in final design to improve safety of pedestrian and bicycle crossings of US 6 ramps on east side of Wadsworth.</li> </ul>   | Plan                            | FHWA/CDOT (Design Consultant) |                              |
|                                   | <ul style="list-style-type: none"> <li>A grade-separated pedestrian/bicycle crossing to remove conflicts between bicycles and pedestrians at the loop ramp on the west side of Wadsworth will be examined further in final design.</li> </ul>   | Plan                            | FHWA/CDOT (Design Consultant) |                              |
|                                   | <ul style="list-style-type: none"> <li>Signage and designated pedestrian and bicycle routes will be provided during construction.</li> </ul>  | Specification                   | Contractor                    |                              |
| Right-of-Way and Relocations      | <ul style="list-style-type: none"> <li>All acquisitions and relocations will comply fully with federal and state requirements, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.</li> </ul>   | NA                              | CDOT                          |                              |
| Section 4(f) and 6(f) Resources   | <ul style="list-style-type: none"> <li>No mitigation necessary for Section 6(f) resources (none present)</li> <li>See Historic Resources for Section 4(f) mitigation</li> <li>No mitigation necessary for non-historic Section 4(f) resources</li> </ul>  | NA                              | NA                            |                              |
| Socioeconomics                    | <ul style="list-style-type: none"> <li>CDOT will coordinate with emergency service providers to identify possible locations for emergency access breaks in the medians.</li> </ul>  | Plan                            | FHWA/CDOT (Design Consultant) |                              |
|                                   | <ul style="list-style-type: none"> <li>CDOT will provide advance notice to emergency service providers, local schools, residents, and local businesses of upcoming construction activities that are likely to result in traffic disruption. This will be accomplished through direct contact, radio and public announcements, flyers, newspaper notices, onsite signage, and the use of the Lakewood and CDOT websites.</li> </ul>  | Specification                   | Contractor                    |                              |

APPENDIX B: SUMMARY OF MITIGATION AND MONITORING COMMITMENTS

| Resource                      | Mitigation and Monitoring Commitments  | Where to Include in BID Package | Implementation Responsibility | Comments/Status <sup>1</sup> |
|-------------------------------|--|---------------------------------|-------------------------------|------------------------------|
| Threatened/Endangered Species | <ul style="list-style-type: none"> <li>No mitigation measures are necessary.</li> </ul>  | NA                              | NA                            |                              |
| Transportation                | <ul style="list-style-type: none"> <li>Continue to coordinate with the Regional Transportation District (RTD) and City of Lakewood regarding development plans at and around the 13th Avenue LRT station.</li> </ul>   | NA                              | CDOT                          |                              |
|                               | <ul style="list-style-type: none"> <li>Coordinate with RTD and City of Lakewood on the placement and aesthetics of bus stops and shelters. Bus shelters would be provided by others.</li> </ul>  | Plan                            | FHWA/CDOT (Design Consultant) |                              |
|                               | <ul style="list-style-type: none"> <li>Coordinate with RTD to ensure access to bus stops during construction.</li> </ul>   | Specification                   | Contractor                    |                              |
|                               | <ul style="list-style-type: none"> <li>Comply with CDOT Lane Closure Strategy for any lane closures during construction. Provide advance notice for extended lane closures, and identify detours with adequate signing to minimize out-of-direction travel.</li> </ul>   | Scope of Work                   | Contractor                    |                              |
| Utilities                     | <ul style="list-style-type: none"> <li>Utility impacts will be mitigated through close coordination with CDOT, City of Lakewood, and utility providers.</li> </ul>   | NA                              | CDOT                          |                              |
|                               | <ul style="list-style-type: none"> <li>Relocations may be avoided by placing encasement for protection over buried utilities or through design modifications to avoid major utility impacts, such as the use of retaining walls, roadway profile variations, and/or horizontal alignment shifts. For those situations where impacts cannot be avoided, utilities will be relocated.</li> </ul> | Plan                            | FHWA/CDOT (Design Consultant) |                              |
| Vegetation and Noxious Weeds  | <ul style="list-style-type: none"> <li>Vegetation removed during construction will be re-established as soon as feasible.</li> </ul>   | Specification                   | Contractor                    |                              |
|                               | <ul style="list-style-type: none"> <li>Establishment of noxious weeds will be controlled by BMPs such as managing open soil surfaces and topsoil that is stockpiled for reuse.</li> </ul>  | Specification                   | Contractor                    |                              |
|                               | <ul style="list-style-type: none"> <li>Prior to construction the impact area will be surveyed for presence of noxious weeds.</li> </ul>  | Specification                   | Contractor                    |                              |
|                               | <ul style="list-style-type: none"> <li>An Integrated Noxious Weed Management Plan may be developed and implemented to prevent the spread of noxious weeds during construction.</li> </ul>  | Specification                   | Contractor                    |                              |



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| Resource                      | Mitigation and Monitoring Commitments  | Where to Include in BID Package | Implementation Responsibility | Comments/Status <sup>1</sup> |
|-------------------------------|--|---------------------------------|-------------------------------|------------------------------|
| Visual/Aesthetics             | <ul style="list-style-type: none"> <li>CDOT will coordinate with Lakewood with regard to the aesthetics of the Build Alternative.</li> </ul>   | NA                              | CDOT                          |                              |
|                               | <ul style="list-style-type: none"> <li>City of Lakewood will install, irrigate, and maintain any landscaping in medians or other areas. Landscaping will comply with clear zone requirements.</li> </ul>   | NA                              | Lakewood                      |                              |
|                               | <ul style="list-style-type: none"> <li>CDOT will continue to maintain any non-irrigated areas in the interchange area.</li> </ul>  | NA                              | CDOT                          |                              |
| Water Resources/Quality       | <ul style="list-style-type: none"> <li>Permanent water quality treatment features will be included in the final design to collect and treat roadway runoff by filtering pollutants before discharging stormwater into area waterways.</li> </ul>   | Plan                            | FHWA/CDOT (Design Consultant) |                              |
|                               | <ul style="list-style-type: none"> <li>A Colorado Discharge Permit System - Stormwater Construction Permit (SCP) will be required for this project. A Stormwater Management Plan will be developed in accordance with the conditions of the SCP.</li> </ul>  | Specification/Plan              | CDOT/Contractor               |                              |
|                               | <ul style="list-style-type: none"> <li>Obtain a construction dewatering permit.</li> </ul>   | Permit                          | Contractor                    |                              |
|                               | <ul style="list-style-type: none"> <li>Erosion and sediment control BMPs will be implemented in accordance with CDOT Standard Specifications for Road and Bridge Construction and the revised provisions for water quality outlined in the Consent Order with CDPHE and incorporated into Section 107.25 (Water Quality) and Section 208 (Erosion Control).</li> </ul> | Specification/Plan              | CDOT/Contractor               |                              |
| Wetlands and Waters of the US | <ul style="list-style-type: none"> <li>Obtain a Section 404 permit for impacts to wetlands and WUS. The U.S. Army Corps of Engineers (USACE) has confirmed informally that a Nationwide Permit (14 and/or 27) would be applicable.</li> </ul>  | Plan/Permit                     | CDOT                          |                              |
|                               | <ul style="list-style-type: none"> <li>Complete a wetland finding during final design and will include a final assessment of impacts and a detailed plan for mitigation.</li> </ul>  | Plan/Specification              | CDOT/Contractor               |                              |
|                               | <ul style="list-style-type: none"> <li>Unavoidable impacts to wetlands resulting from the Build Alternative will be mitigated on a one-for-one basis in accordance with CDOT policy, resulting in no net loss of wetlands.</li> </ul>  | Permit                          | CDOT                          |                              |