



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

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.

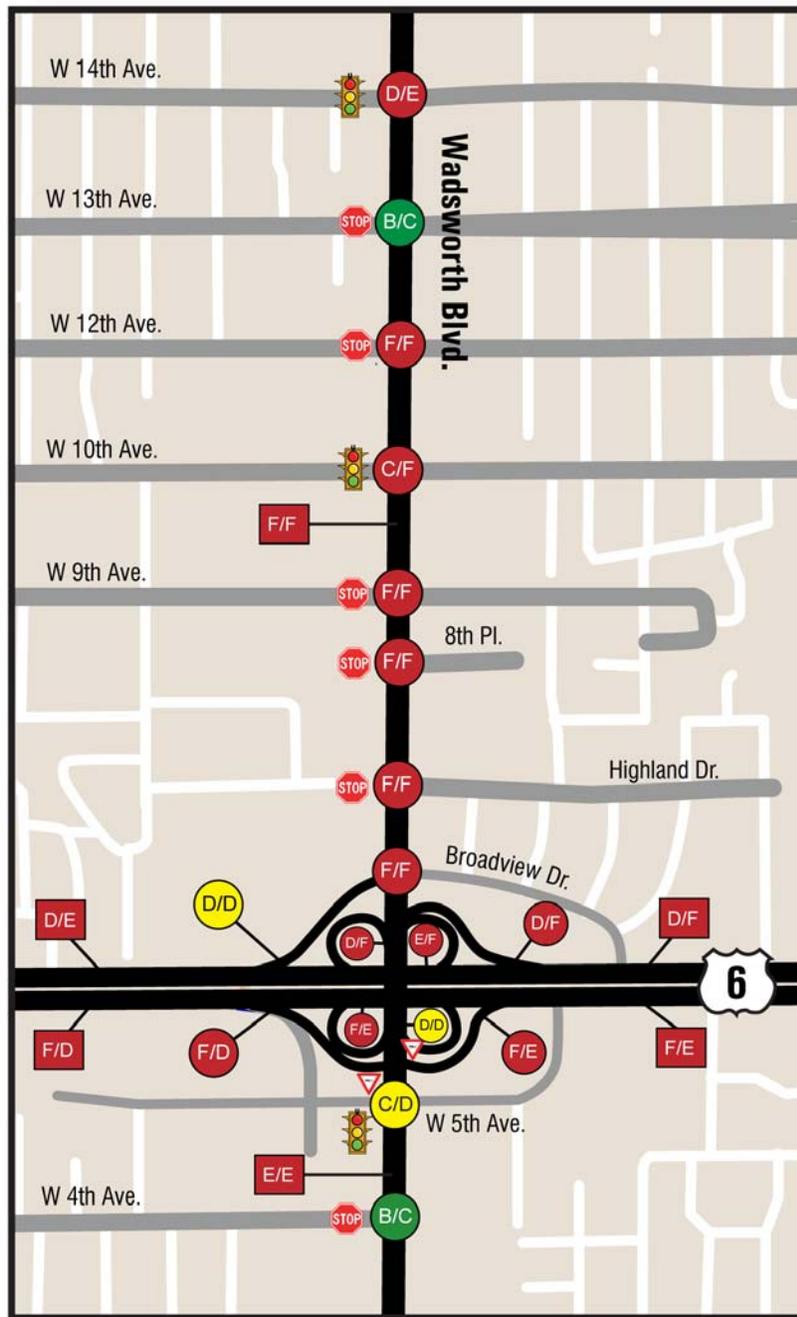
61 3.1.1.2 Safety

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.

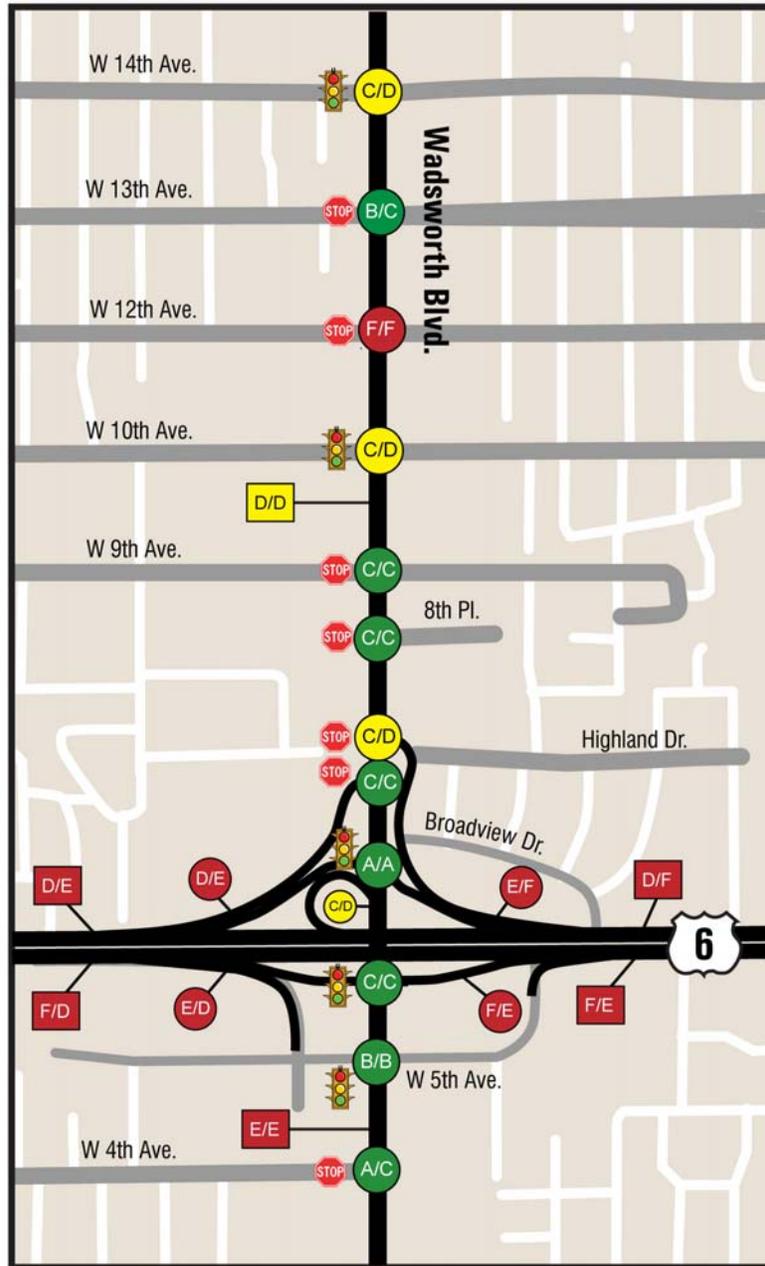
The 12th Avenue intersection would remain unsignalized and would continue to allow turns in all directions, which results in LOS F performance today and in the future. Because of the uncertainty of future development around the 13th Avenue LRT station and potential redevelopment plans for the Jefferson 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

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

- ABC = Good
- D = Fair
- EF = 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 ¹ Loudest Hour Noise Level (dBA)	Number of Impacted Residences ²
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:

¹ Average of residences in each row.

² 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 ¹
	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:

¹ 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.

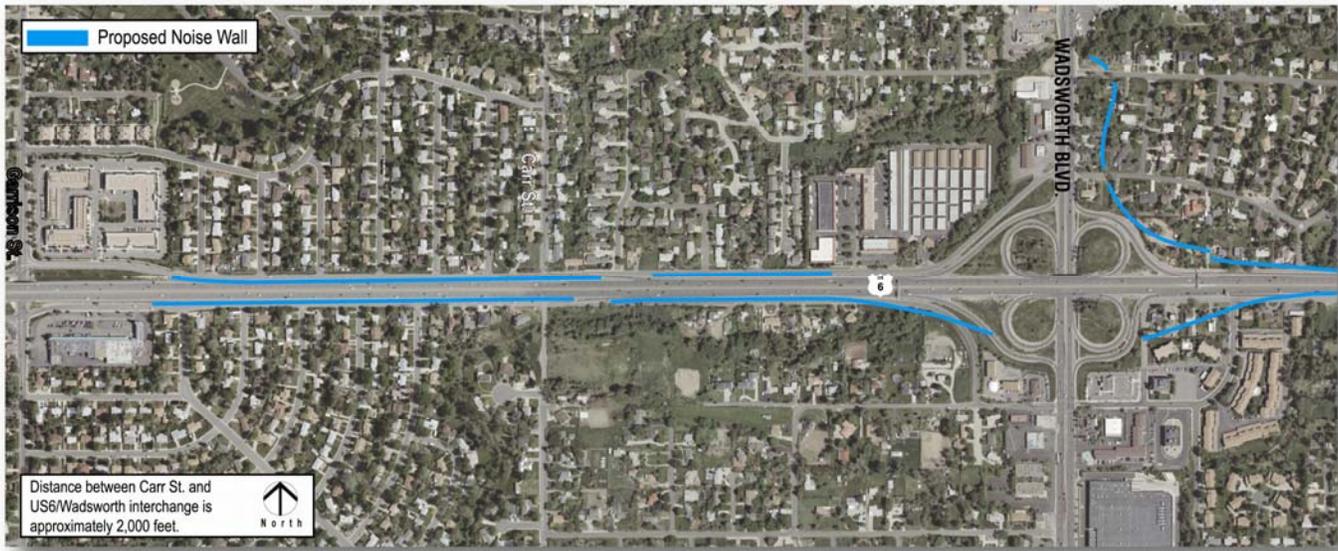
19 3.3.3 MITIGATION

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.

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

Type	Land Use Category		
	Residential	Commercial	Public
Total Acquisitions	17 (6.7 acres)	18 (7.4 acres)	2 (0.6 acre)
Partial Acquisitions	28 (2.2 acres)	47 (10.6 acres)	2 (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.

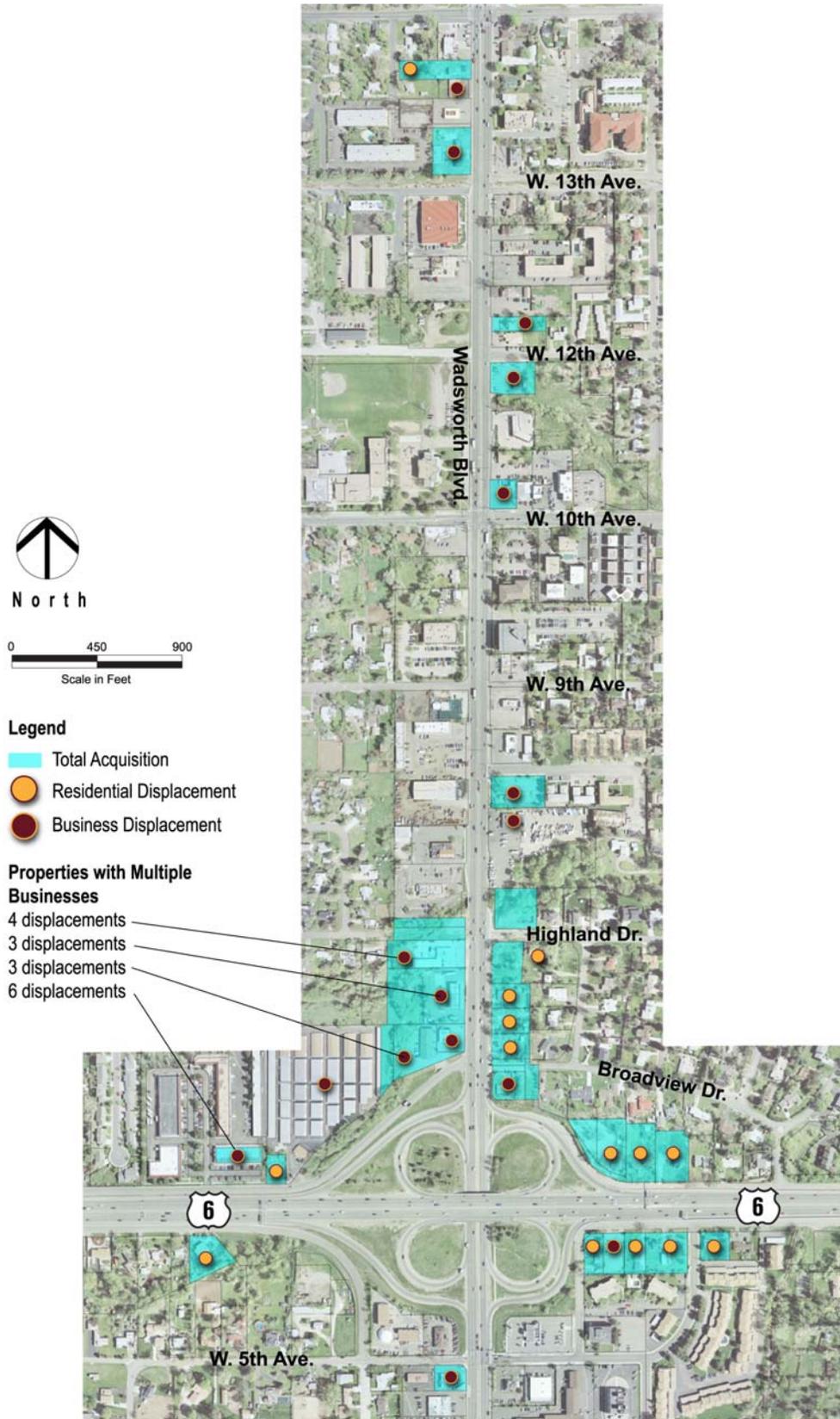
The property acquired for new ROW would be maintained by CDOT and Lakewood. Acquisitions would range from small slivers of properties to entire parcels. Some would also involve the relocation of personal property not permanently attached to the site.

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

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

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

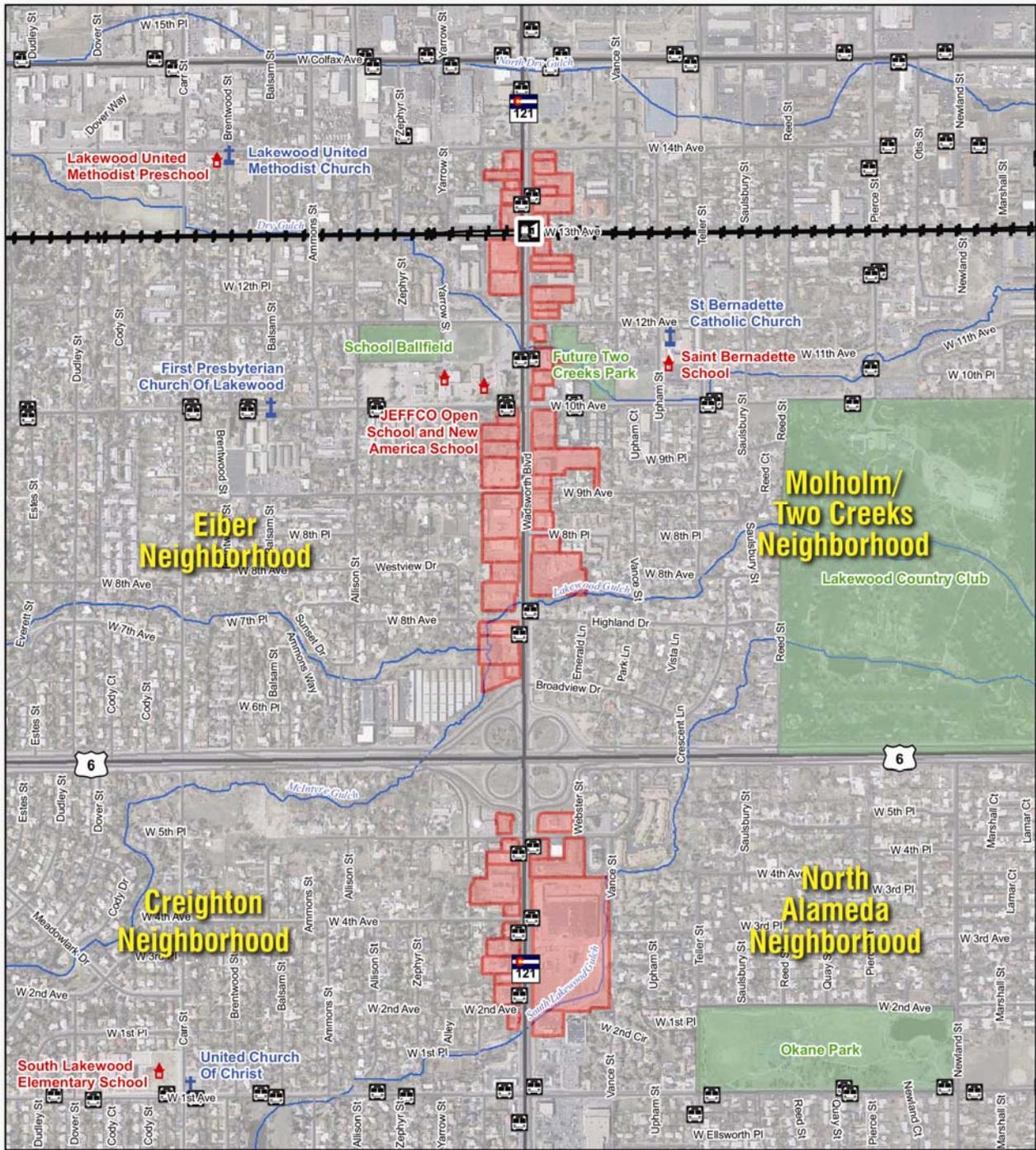
41 The community has identified two issues that affect
 42 quality of life within the study area – severe noise
 43 levels (75 dBA or greater) in the northwest and
 44 southwest quadrants of the interchange and
 45 discontinuous or missing sidewalks throughout the
 46 study area. Noise is a community 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

- | | | | | | |
|--|---------------------------------|--|--|--|--------|
| | Future Light Rail Station (RTD) | | Businesses Adjacent to Wadsworth Boulevard | | Church |
| | Future Light Rail Line (RTD) | | Parks/Golf Course | | School |
| | Bus Stop | | | | |



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 populations¹ 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.

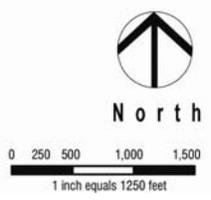
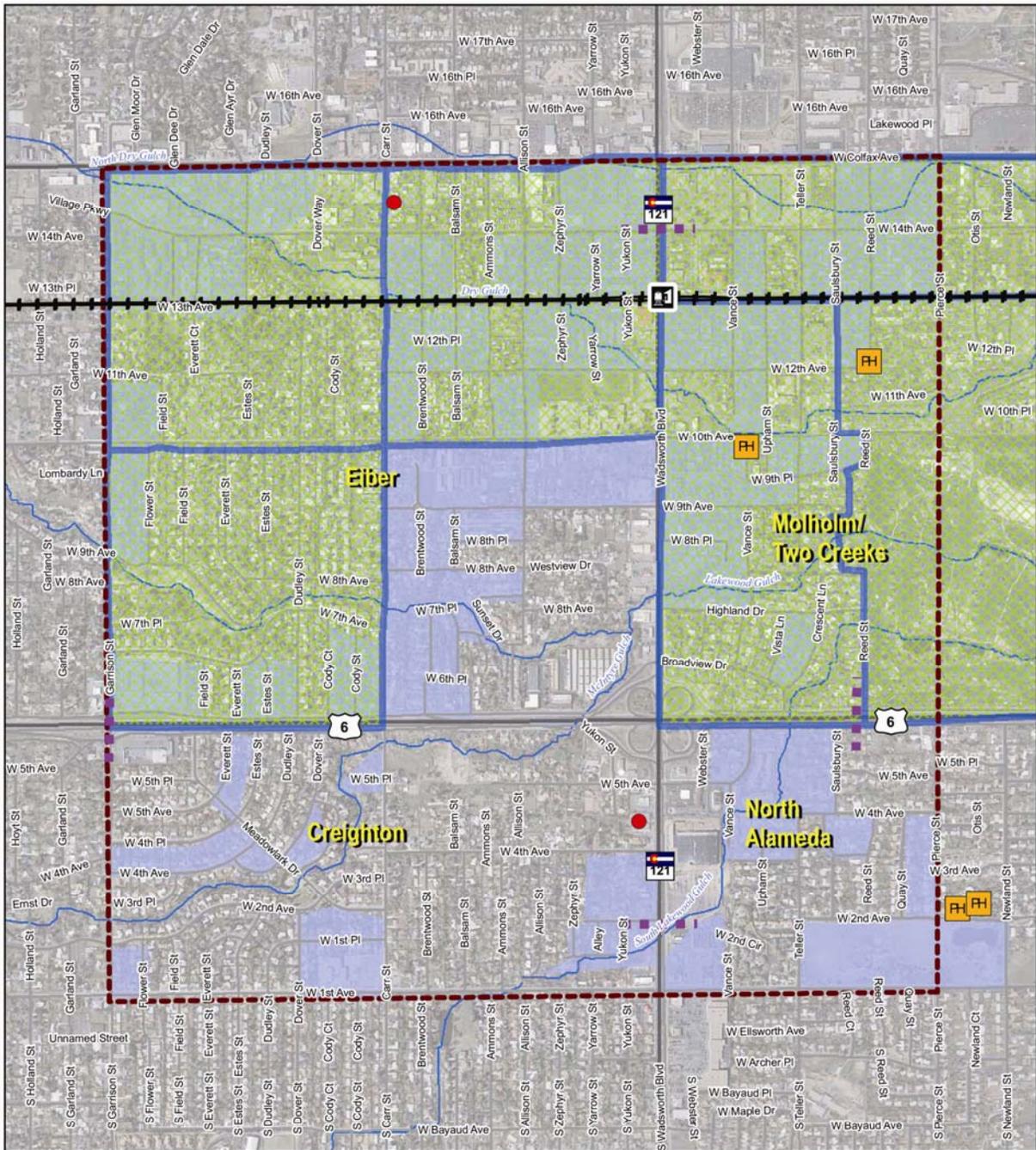
49 Low-income populations were initially identified using
50 CDOT's recommended approach of deriving a low-
51 income threshold from a combination of average
52 household size (from Census data) and low-income
53 household thresholds set annually by the U.S.
54 Department of Housing and Urban Development
55 (HUD).² 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

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

² 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.

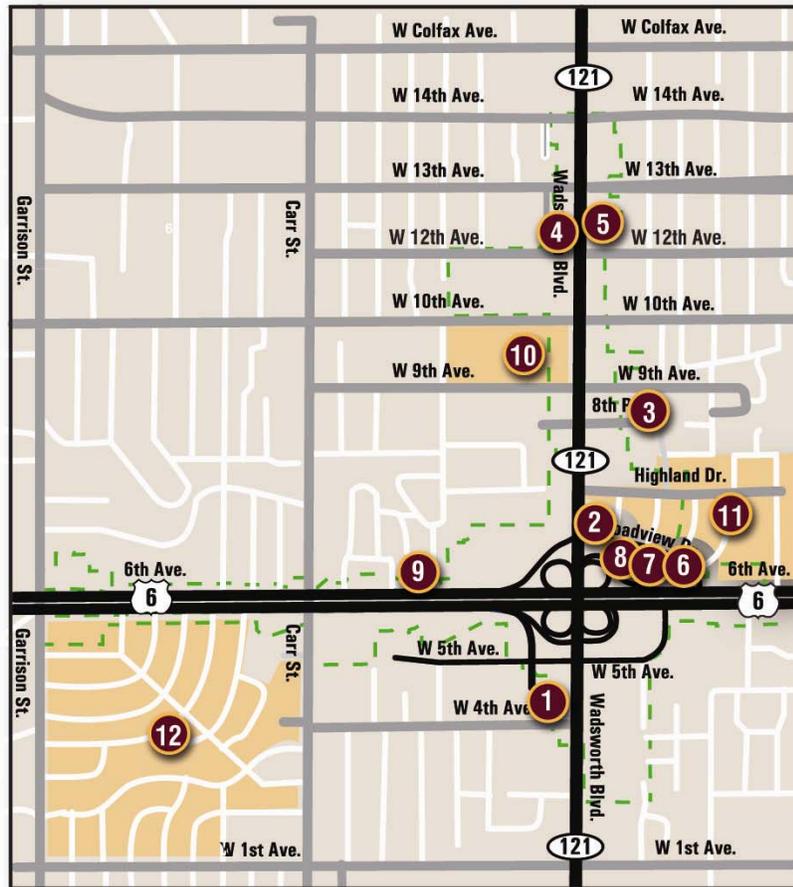
56 **3.8.2 ENVIRONMENTAL CONSEQUENCES OF** 57 **THE BUILD ALTERNATIVE**

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

57
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.

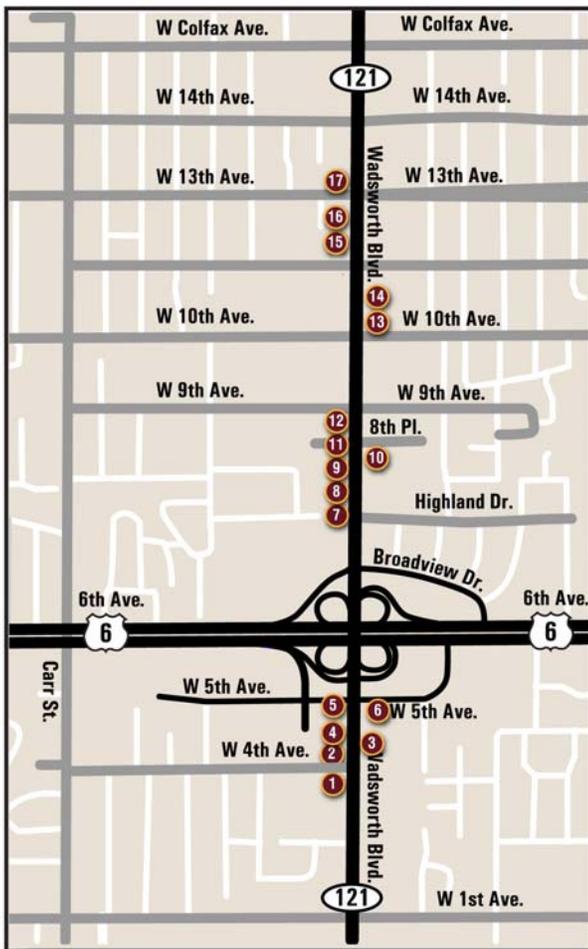
15 EXHIBIT 3-19: LOCATION OF HAZARDOUS MATERIALS SITES

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.



Sites the Project Has a Potential to Impact



Source: Pinyon Environmental, 2009

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

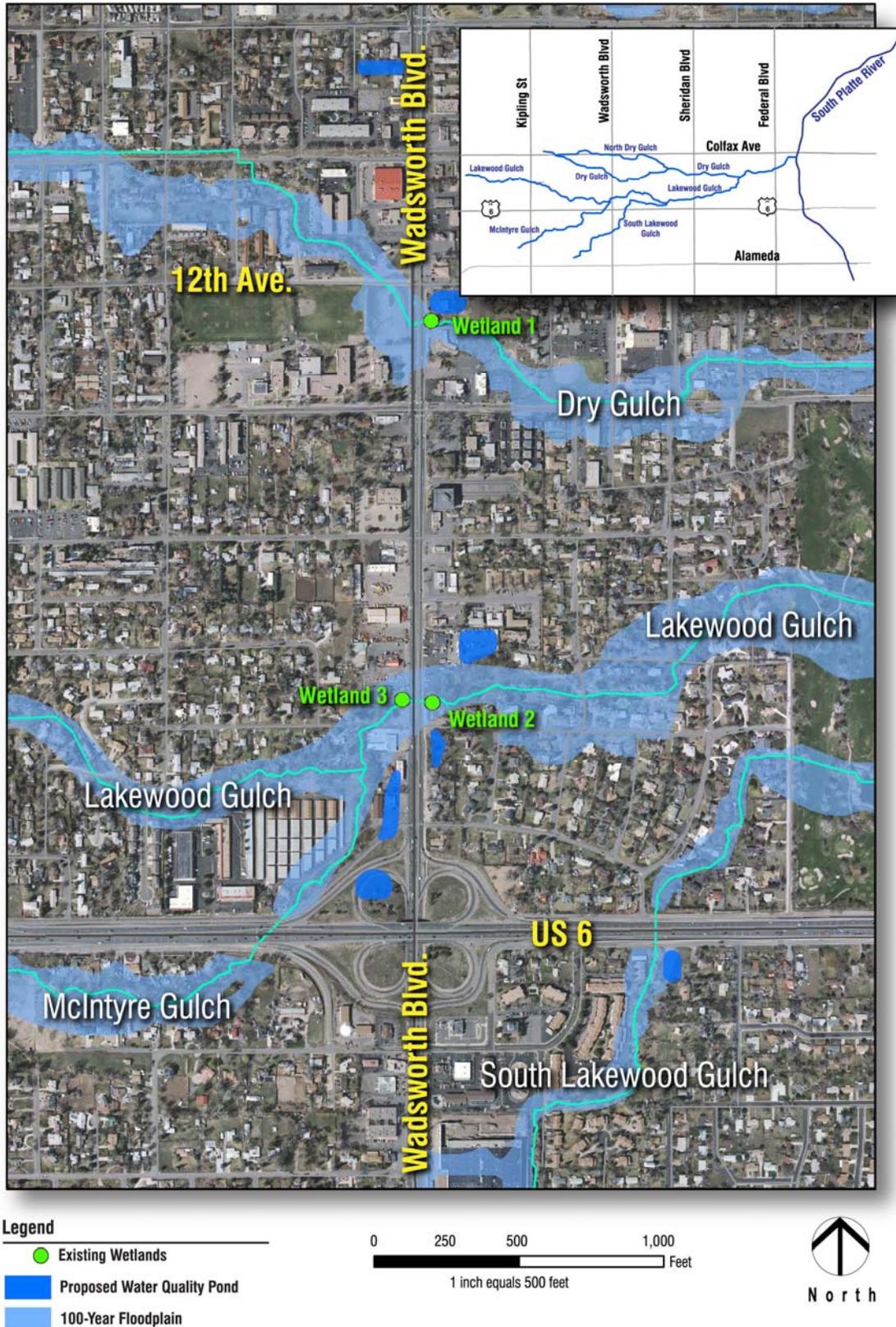
Executive Order 11988 (Floodplain Management) requires federal agencies to avoid impacts to floodplains whenever possible. FHWA requirements for compliance with this Executive Order are outlined in 23 CFR 650, Subpart A.

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



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

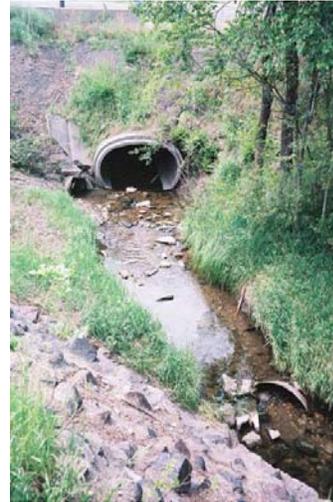


EXHIBIT 3-23: LAKEWOOD GULCH WEST OF WADSWORTH



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
Wetland Total	0.02	Permanent
Dry Gulch	0.02	Temporary
Lakewood Gulch	0.21	Temporary
McIntyre Gulch	0.04	Temporary
WUS Total	0.27	Temporary

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**

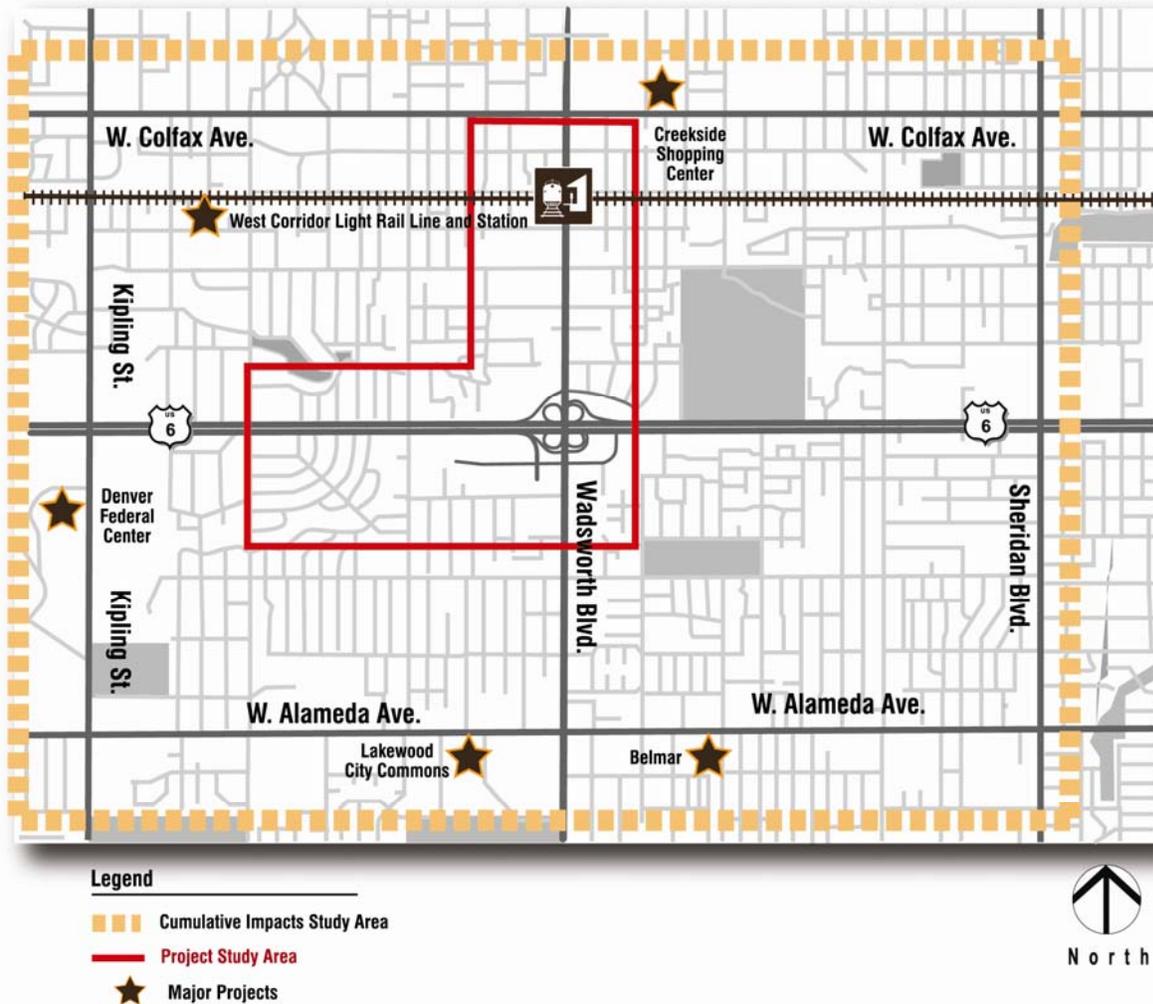
35 A key component of the cumulative impacts analysis is
36 the identification of past, present, and reasonably
37 foreseeable future actions that incrementally impact
38 resources affected by the Build Alternative.

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 (O₃) or particulate matter less than 10 microns in diameter (PM₁₀), 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
Transportation		
<ul style="list-style-type: none"> ◆ 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. ◆ 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. ◆ 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. ◆ 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. ◆ 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. ◆ Cross street intersections with Wadsworth operate at unacceptable LOS; long delays (several minutes) at non-signalized intersections would get worse as traffic volumes increase. ◆ 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. 	<ul style="list-style-type: none"> ◆ An additional travel lane in each direction and access control measures, such as raised medians and driveway consolidation, would increase capacity on Wadsworth. ◆ 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. ◆ Transit operations at the 13th Avenue LRT station could be integrated with surrounding roadway operations. ◆ 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. ◆ 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. ◆ 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. ◆ Access to and conditions of bus stops would be improved with improved sidewalks. ◆ Reduced congestion, access control, fewer vehicle conflicts, and improving operational efficiency of outdated transportation facilities would improve safety. 	<ul style="list-style-type: none"> ◆ CDOT will continue to coordinate with the RTD and Lakewood regarding development plans at and around the 13th Avenue LRT station. ◆ CDOT will coordinate with RTD and Lakewood on the placement and aesthetics of bus stops and shelters. Bus shelters would be provided by others. ◆ CDOT will coordinate with RTD to ensure access to bus stops during construction. ◆ 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.

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
Pedestrian and Bicycle Facilities		
<ul style="list-style-type: none"> ◆ 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. ◆ 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. ◆ 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. ◆ Uncontrolled access and traffic congestion would continue to create unsafe conditions for pedestrians and bicyclists traveling along Wadsworth. ◆ 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. 	<ul style="list-style-type: none"> ◆ 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). ◆ 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. ◆ 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. ◆ 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. ◆ Pedestrian and bicycle improvements would meet or exceed mobility and safety standards for multi-use paths ◆ 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. ◆ Access control and reduced traffic congestion would improve safety for pedestrians and bicyclists traveling along Wadsworth. ◆ Pedestrian and bicycle routes could be disrupted during construction. 	<ul style="list-style-type: none"> ◆ 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. ◆ 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. ◆ Signage and designated pedestrian and bicycle routes will be provided during construction.

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
Noise		
<ul style="list-style-type: none"> ◆ High noise levels would persist in the northwest and southwest quadrants of the interchange where no noise walls are present. ◆ More than 100 residences would experience noise above CDOT Noise Abatement Criteria (66 dBA or higher). 	<ul style="list-style-type: none"> ◆ 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.) ◆ 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). ◆ 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. 	<ul style="list-style-type: none"> ◆ 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. ◆ 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. ◆ Noise analysis will be conducted during final design to confirm noise wall heights and alignments ◆ 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. ◆ 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.
Right-of-Way and Relocations		
<ul style="list-style-type: none"> ◆ No ROW acquisition, residential or business relocations, or permanent or temporary easements would be required. 	<ul style="list-style-type: none"> ◆ 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. ◆ 14 residences and 28 businesses would be displaced. ◆ 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. 	<ul style="list-style-type: none"> ◆ 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.

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
Socioeconomics		
<ul style="list-style-type: none"> ◆ 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. ◆ 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. ◆ Discontinuous and missing sidewalks would persist, perpetuating safety and mobility problems for pedestrians and bicyclists, particularly as traffic volumes increase. ◆ 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. 	<ul style="list-style-type: none"> ◆ Community cohesion would be enhanced by: <ul style="list-style-type: none"> - Better north-south and east-west pedestrian connections. - Improved access to neighborhoods and businesses in the project area through improved roadway operations (access, capacity, and safety) and addition of sidewalks. - Reduced neighborhood cut-through traffic due to improved capacity on Wadsworth, restoration/ reconnection of roadways, and separation of frontage road traffic from neighborhood streets. - Reduced noise levels, which are more compatible with residential neighborhood character. ◆ 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 ◆ 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. ◆ Consistent sidewalks provide improved pedestrian access to the Jefferson County Open School and planned Two Creeks Park. ◆ 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. 	<ul style="list-style-type: none"> ◆ CDOT will coordinate with emergency service providers to identify possible locations for emergency access breaks in the medians. ◆ 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.
Environmental Justice		
<ul style="list-style-type: none"> ◆ No disproportionately high and adverse impacts would occur in areas of minority or low-income populations. <ul style="list-style-type: none"> - No displacement of minority or low-income residents, businesses, or employees would be anticipated. - 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. - 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. 	<ul style="list-style-type: none"> ◆ No disproportionately high and adverse impacts would occur in areas of minority or low-income populations. <ul style="list-style-type: none"> - Property acquisitions and construction-related impacts would not be predominantly borne by minority or low-income residents. - 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. - Noise walls would reduce noise levels, benefiting the overall community, including minority and/or low-income households. - Bicycle and pedestrian facilities would improve connections to transit. 	<ul style="list-style-type: none"> ◆ No mitigation measures are necessary.

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
Land Use		
<ul style="list-style-type: none"> ◆ The No Build Alternative would be inconsistent with the traffic and pedestrian safety and mobility goals presented in adopted land use and neighborhood plans. ◆ The existing interchange would be unable to accommodate traffic growth and planned land use changes in the study area. ◆ Additional travel lanes and sidewalks would not be added to Wadsworth, which could hamper future growth and implementation of planned land uses. 	<ul style="list-style-type: none"> ◆ 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. ◆ ROW acquisition would affect land use for some individual parcels: <ul style="list-style-type: none"> - Full property acquisitions would result in direct conversion of commercial and residential land to transportation, drainage, and water quality uses. - Partial property acquisitions would result in some nonconforming uses related to parking, landscaping, and setback requirements. ◆ 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. 	<ul style="list-style-type: none"> ◆ 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.
Historic Properties		
<ul style="list-style-type: none"> ◆ The No Build would result in No Historic Properties Affected. 	<ul style="list-style-type: none"> ◆ 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. ◆ 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). ◆ No Historic Properties Affected for one building individually eligible for the NRHP. 	<ul style="list-style-type: none"> ◆ 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. ◆ Any new historic documentation that is developed as part of the MOA will be provided to interested local historic preservation groups

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
Hazardous Materials		
<ul style="list-style-type: none"> ◆ There would be no effect on known hazardous material or waste sites. 	<ul style="list-style-type: none"> ◆ Construction impacts would affect seventeen sites of concern for environmental (petroleum-related) contamination. <ul style="list-style-type: none"> - Four properties with potential environmental contamination would be acquired. - Partial acquisition and construction activities (ground disturbance) would affect twelve properties with potential environmental contamination. ◆ Buildings and structures, such as traffic poles painted with lead based paint could be disturbed during construction ◆ Based upon the overall age of the transportation facilities and property acquisitions, asbestos-containing building materials would likely be present. 	<ul style="list-style-type: none"> ◆ 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. ◆ 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. ◆ Painted surfaces disturbed during construction or demolition and disposed of separately will be tested, handled, and disposed of properly. ◆ 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.

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
Floodplains		
<ul style="list-style-type: none"> ◆ Existing encroachments of US 6 and Wadsworth roadways on the floodplains associated with Lakewood Gulch, McIntyre Gulch, and Dry Gulch would persist. ◆ 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. ◆ Flooding immediately upstream and downstream of the McIntyre Gulch crossing of US 6 would continue. 	<ul style="list-style-type: none"> ◆ Conveyance and natural values of floodplains in the impact area would be improved. <ul style="list-style-type: none"> - 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. - 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. ◆ 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. ◆ The Build Alternative would remove CDOT roadways from the 100-year floodplain within the impact area. 	<ul style="list-style-type: none"> ◆ 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. ◆ During final design, CDOT will coordinate with the appropriate local and federal agencies to conduct hydraulic analysis and obtain necessary floodplain permits.
Water Resources/Quality		
<ul style="list-style-type: none"> ◆ Water from roadways that may contain petroleum, sediment, or other pollutants would continue to flow into streams/gulches untreated. 	<ul style="list-style-type: none"> ◆ An increase of approximately 3 acres of impervious (paved) surfaces would, without water quality treatment, increase pollutant runoff into receiving waterways. ◆ 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. 	<ul style="list-style-type: none"> ◆ 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. ◆ 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. ◆ A construction dewatering permit will be obtained. ◆ 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).

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
Wetlands and Waters of the United States		
<ul style="list-style-type: none"> ◆ No wetlands or WUS would be affected. ◆ Drainages would continue to be confined and channelized, providing little opportunity for wetlands to establish along riparian areas. 	<ul style="list-style-type: none"> ◆ 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. 	<ul style="list-style-type: none"> ◆ 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. ◆ A wetland finding will be completed during final design and will include a final assessment of impacts and a detailed plan for mitigation. ◆ Unavoidable impacts to wetlands resulting from the Build Alternative will be mitigated on a one-for-one basis
Cumulative Impacts		
<ul style="list-style-type: none"> ◆ 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.) 	<ul style="list-style-type: none"> ◆ 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. 	<ul style="list-style-type: none"> ◆ No mitigation necessary.