Chapter 3. The Environment

What's There Now, and What Resources Would Be Affected?

Human and Community Resources

What's There Now? - Existing Environment Summary

Which Human and Community Resources Would Not Be Affected?

- Emergency Services
- Farmland
- Visual Resources
- Recreation Resources
- Air Quality
- Properties of Religious or Cultural Significance to Native American Tribes
- Section 6(f) Resources

Which Human and Community Resources Would Be Affected?

- Right-of-Way Acquisitions and Relocations
- Socioeconomics
- Land Use
- Environmental Justice
- Hazardous Materials and Waste
- Utilities, Irrigation Ditches, and Railroads
- Historic Properties
- Section 4(f) Resources
- Noise

Natural Resources

What's There Now? - Existing Environment Summary

Which Natural Resources Would Not Be Affected?

- Threatened and Endangered Species and Species of Special Concern
- Floodplains
- Geology and Soils
- Paleontological Resources

Which Natural Resources Would Be Affected?

- Vegetation
- Wildlife
- Wetlands
- Water Quality

Construction Impacts

- Visual
- Air Quality
- Archaeological Resources
- Noise
- Paleontological Resources
- Wetlands
- Water Quality from Storm Water Runoff
- Threatened and Endangered Species

Impact Mitigation Summary

Chapter 3. The Environment: What's There Now, Project Effects, Commitments, and Mitigation

The Colorado Department of Transportation (CDOT) and Federal Highway Administration (FHWA) conducted a comparative analysis to examine key issues associated with the No Action and Action Alternatives for potential improvements to US 34 from US 287 east to Larimer County Road 3 (LCR 3). This chapter describes the direct and indirect impacts, commitments, and mitigation measures associated with these two alternatives, in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA).

The impacts discussed in this chapter are organized by resource and are based on conceptual design. The resource analysis is divided into two sections: **Human and Community Resources** and the **Natural Environment.** Each section begins with a brief discussion of what is there now, followed by a discussion of the resources that would not be affected by the Action Alternative. Then, resources that would be affected are identified, together with commitments and mitigation.

Construction impacts, the Preferred Alternative identification and an impact mitigation summary section are found at the end of this chapter.

This photo shows a concrete-lined portion of the Farmers Ditch at US 34 east of Hahn's Peak Avenue.

The Valley Apartments are one of the only multi-family residences on US 34.

Human and Community Resources

Human and community resources and issues described in this section include:

Resources Not Affected:

- Emergency services
- Farmland
- Visual resources
- Recreation resources
- Air quality
- Properties of religious or cultural significance to Native American tribes
- Section 6(f) resources

Resources Affected:

- Right-of-way acquisitions and relocations
- Socioeconomics
- Land use
- Environmental justice
- Hazardous materials and waste
- Utilities, irrigation ditches, and railroads
- Historic preservation
- Section 4(f) resources
- Noise

3.1 Human and Community Resources: What's There Now?

Humans have occupied Colorado's Front Range and plains for more than 12,000 years. Four prehistoric cultural stages took place in the foothills and Front Range of the Platte River basin: the Pre Projectile, the Paleoindian, the Archaic, and the Late Prehistoric (Chambellan et al. 2006). Five early settlement themes dominate the project area: exploration and the fur trade (1761 to 1859), farming and ranching (1858 to 1960), early transportation (1858 to 1960), the growth of Loveland (1870 to 1960), and tourism (1870 to 1960). Except for exploration and the fur trade, these settlement themes continue into the present.

Most of the US 34 study area is contained within Loveland city limits and within Loveland's growth management area (GMA), which is "an area into which urban development and annexation shall be directed" (Larimer County 2004). A small portion of the eastern end of the project study area between I-25 and LCR 3 along the south side of US 34 is located within the Johnstown city limits in Larimer County. Johnstown has recently annexed land on both sides of US 34 immediately east of LCR 3. Loveland is located entirely within Larimer County, while the majority of the town of Johnstown is located within Weld County.

The North Front Range Metropolitan Planning Organization (NFR MPO) considers US 34 to be a roadway in a network of Regionally Significant Corridors, providing access to adjacent businesses and downtown Loveland, as well as serving as a gateway to Rocky Mountain National Park. US 34 also connects numerous North Front Range communities and activity centers beyond the project study area.[1]

3.1.1 How many people live in the US 34 study area?

Larimer County population was estimated at 269,138 in 2004, with the seventh highest population in the state (DOLA, 2006). According to the Larimer County Planning Department (2006), the population for 2005

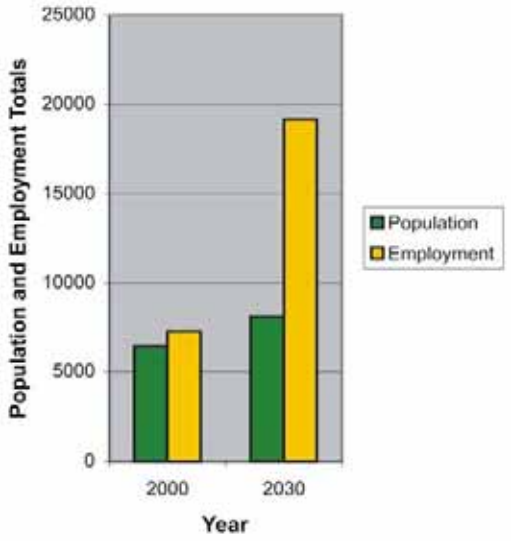
[1] The NFR MPO defines a Regionally Significant Corridor as "an important link in a multi-modal, regional network comprised of existing or new transportation corridors that connect communities and/or activity centers by facilitating the timely and safe movement of people, goods, information and services." Within that definition, US 34 is identified as a regionally significant roadway.

is estimated at 283,000, a 5.15 percent increase from the Colorado Demography Section's 2004 estimate (DOLA, 2004). The city of Loveland has grown rapidly over the past decades, leading to a 2005 population of 61,871, an increase of 2.92 percent since the city's 2004 estimate (City of Loveland 2006). The town of Johnstown's 2004 population of 6,122 reflects an increase of 13.7 percent since 2003. Estimates for 2005 are not available for Johnstown.

In the Larimer County portion of Johnstown adjacent to the US 34 corridor, the population was estimated at 86 for the year 2004. However, ongoing development associated with the 2534 development is expected to increase the Johnstown population in this general area (US Census Bureau 2000; DOLA, 2004).

Analysis of existing and proposed development trends immediately adjacent to US 34 indicates that the project corridor focus is on retail and business, not residential. Population information on the areas immediately adjacent to US 34 was obtained from the NFR MPO's traffic analysis zone (TAZ) data. Summing the information for the TAZs adjacent to US 34 revealed that 6,426 people lived in TAZs (generally census blocks or similar areas adjacent to US 34) in 2000, and 8,093 are projected to live there in 2030 (NFR MPO 2004). See Exhibit 3-1.

Exhibit 3-1
Population and Employment Growth Trends Adjacent to US 34
(Based on Traffic Analysis Zones)



3.1.2 How many people work adjacent to US 34?

Employment information on the areas immediately adjacent to US 34 was obtained from the NFR MPO's TAZ data. Summing the information for the TAZs adjacent to US 34 revealed that 7,247 people were employed in the study area in 2000, and 19,146 are projected to work there in 2030 (NFR MPO 2004). See Exhibit 3-1.

The study area for population and employment focuses on areas adjacent to the highway. For this mostly commercial/retail corridor, a 2030 population of 8,093 was forecast, while employment would increase to 19,146.

3.1.3 What kinds of businesses are located adjacent to US 34?

The largest employers in the Loveland-Johnstown area include the Big Thompson School District (Monroe Elementary, Ferguson High School, and Mountain View High School are adjacent to US 34); Wal-Mart Distribution Center (near US 34 and I-25); McKee Medical Center (north of US 34 at North Boise Avenue); the City of Loveland; and the Hach Company (City of Loveland 2005). Three of these employers are among the top 10 largest employers for all of Larimer County (NCEDC 2004a). Ongoing commercial, residential, and professional office developments will increase US 34 use for commuter travel.

Immediately adjacent to US 34 from west to east between US 287 and Boyd Lake Avenue are older small businesses mixed with a collection of fast food and newer big box commercial establishments. The Loveland Current Planning Division and Transportation Engineering Division (based on research of traffic impact analyses from 2000 to 2005) indicate that an additional 1 million square feet of office and retail

development have been added along US 34 between Redwood Drive and Boyd Lake Avenue, including (but not limited to) Skyline Center for Health, Wal-Mart, and Lowe's.

The US 34 project study area includes northern Colorado's largest retail project.

The 3,000-acre Centerra Development extends along the north side of US 34, east from Boyd Lake Avenue to LCR 3E, and includes a conference center, mixed-use retail/residential, retail, residential, light manufacturing, and professional office space. The area already includes an outlet mall, large retail stores, and the Medical Center of the Rockies. Significant new development associated with Centerra and 2534 is underway in the eastern project study area where land use has primarily been agricultural. The 2,000,000-square-foot Centerra retail center includes the 670,000-square-foot Promenade Shops at Centerra, which opened in October 2005. Centerra is northern Colorado's largest retail project.

The 540-acre 2534 project at the southeast corner of I-25 and US 34 in Johnstown includes more than 600,000 square feet of office and retail. This development includes the already completed Northern Colorado Rehabilitation Hospital. The 2534 project is a part of the larger Thompson Crossing Town Center commercial and residential development, which extends south of US 34 along I-25.

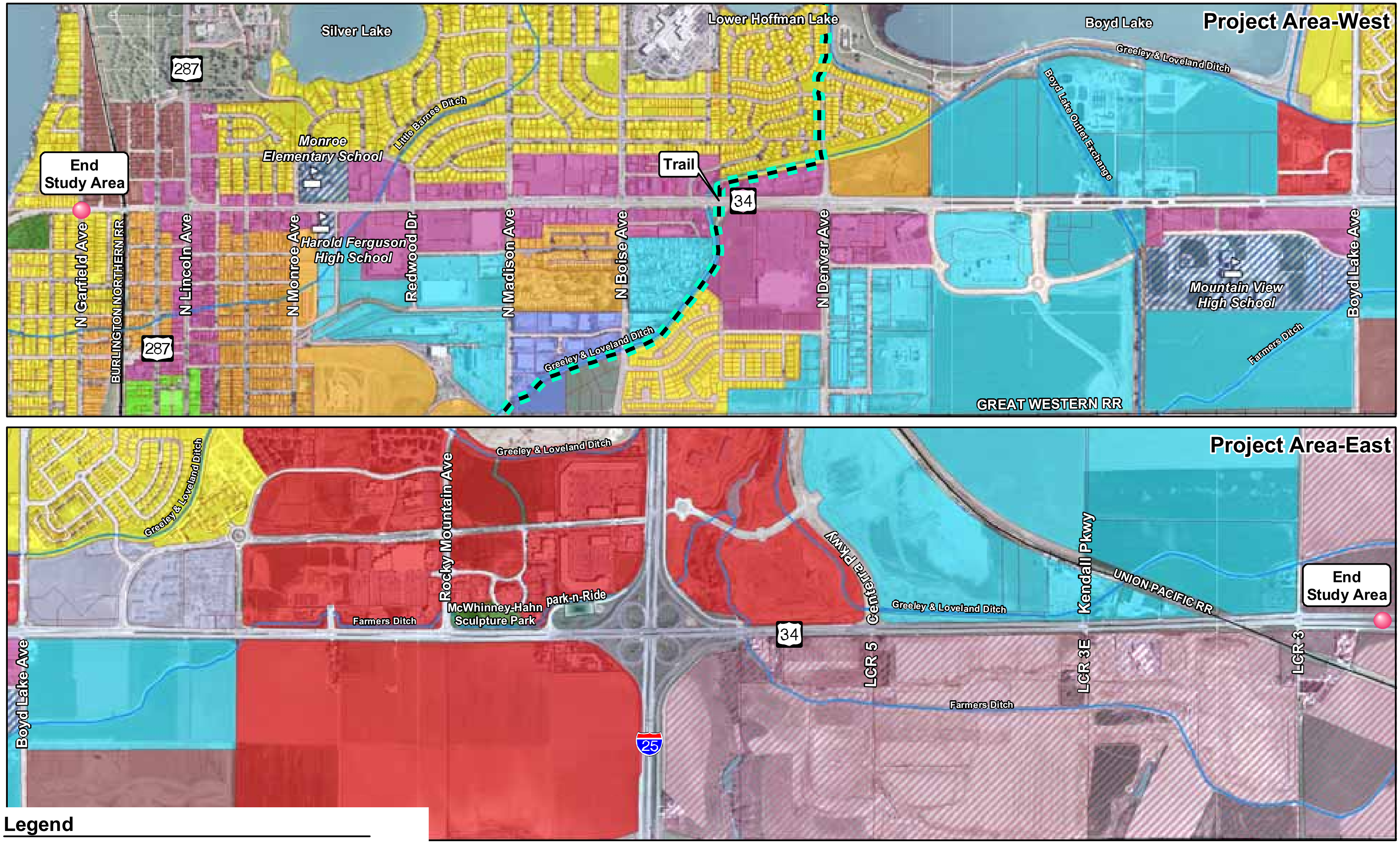
3.1.4 What are the existing and proposed land uses in the study area?

Existing and proposed land uses along US 34 include a regional activity center with corridor commercial and employment uses.

US 34 study area land uses are rapidly changing with remnants of rural residential or farm uses converting to activity center uses consistent with local land use plans. The *City of Loveland Land Use Plan Map* (Adopted May 2, 2000, updated through October 15, 2002) identifies the majority of US 34 between North Cleveland Avenue (US 287) and Rocky Mountain Avenue as "activity center mixed-use," featuring corridor commercial and employment land uses. The area surrounding Rocky Mountain Avenue, the I-25 interchange, and LCR 5 (Centerra Parkway/Thompson Parkway) is shown as a Regional Activity Center. Employment is shown along the north side of US 34, east of I-25 to the edge of Loveland's GMA at LCR 3.

The *Johnstown Area Comprehensive Plan* (November 2006) designates the area east of I-25 and south of US 34 as "commercial mixed-use." This area is dominated by the ongoing development of the 540-acre 2534 mixed-use community in Johnstown. Johnstown also annexed areas east of LCR 3 on both sides of US 34 as mixed-use developments, with a commercial focus adjacent to the highway. The Johnstown GMA boundary extends along the south side of US 34, east of I-25 to WCR 17 and includes the annexed area north of LCR 3. Exhibit 3-2 illustrates land use plans for both Loveland and Johnstown within the US 34 study area.

This is a view west at the Centerra entrance at Rocky Mountain Avenue and US 34.



Legend

- RTD park-n-Ride
- Railroads
- Trails
- Canals & Ditches
- Lakes
- Parcels

Defined Categories

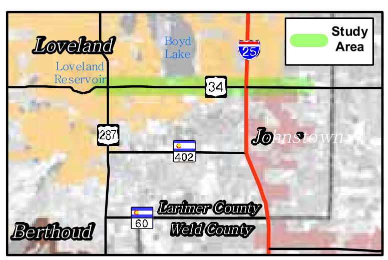
- Park
- School
- Industrial

Residential Mixed-Use

- High Density Residential
- Medium Density Residential
- Low Density Residential

Activity Center Mixed-Use

- Neighborhood Activity Center
- Regional Activity Center
- Downtown Activity Center
- Commercial/Employment (Johnstown)
- Corridor Commercial
- Employment



0 883 1,766 Feet

1 Inch = 1,766 Feet Or 1:21,200

Source: 2005 aerial photography provided by City of Loveland. Parks, schools, parcels, canal and ditches, lakes, roads, and railroads provided by City of Loveland. Land use mapping obtained from City of Loveland Land Use Plan Map as amended through 10-15-02 and Town of Johnstown Comprehensive Plan, April 1, 2001.

Map created February 23, 2007.

US 34 Environmental Assessment

US 287 to Larimer County Road No. 3

Exhibit 3-2

Land Use

3.1.5 What kinds of emergency services are located in the US 34 study area today?

The Loveland Fire and Rescue Department and the Johnstown Fire and Rescue Department respond to fire, medical, and other emergencies. Loveland Police, Johnstown Police, Larimer County Sheriff's Department, and the Colorado State Patrol provide law enforcement services within the US 34 study area. None of these providers have offices located adjacent to US 34.

A number of major medical facilities are located along or are under construction within the US 34 study area. The Skyline Center for Health between Lowe's and Wal-Mart on US 34 includes an urgent care facility. Access to the 98-bed McKee Medical Center at 2000 North Boise comes from US 34 and North Boise or North Madison. This facility employs more than 700 people.

The 570,000-square-foot Medical Center of the Rockies on a 91-acre campus at 2500 Rocky Mountain Avenue in Centerra was completed in early 2007. This facility employs more than 600 people. Access to this complex includes a connection from US 34 at Rocky Mountain Avenue. The recently constructed Northern Colorado Rehabilitation Hospital in the 2534 development, south and east of I-25 in Johnstown, gains access directly from US 34.

3.1.6 What parks and trails exist along US 34 today?

The McWhinney-Hahn Sculpture Park is the only park adjacent to US 34. The park is located north of US 34, west of the I-25 interchange. It is separated from US 34 by a concrete-lined segment of the Farmers Ditch. The Loveland Chamber of Commerce Visitor Center is located adjacent to the park.

One off-street paved trail crosses under US 34 at the Greeley and Loveland Ditch (also known as Chubbuck Ditch). This trail meanders south of US 34 to 1st Street and also extends north to run along the western side of Boyd Lake. A large concrete box underpass conveys this trail under US 34. A small link of this path also runs adjacent to US 34 on the south side to North Denver Avenue.

US 34 includes portions of on-street bikeway throughout. Exhibit 3-2 illustrates the location of park and trail resources along US 34.

3.1.7 Are there potentially contaminated hazardous materials/waste sites along US 34?

Past industrial and commercial activities may have contaminated soil and/or groundwater within the US 34 corridor. Government agencies maintain databases on potential usage, storage, treatment, and disposal of hazardous waste and petroleum products by location. Types of sites that could be contaminated include but are not limited to: existing or previous locations of gas stations that may contain leaking underground storage tanks (LUSTs), existing or previous locations associated with use of chemicals such as dry cleaners, and auto repair facilities, oil and gas wells, and electrical transformers. Contamination along the corridor could also include structures that contain lead-based paints or friable asbestos.

3.1.8 What utilities are located along US 34?

Utility infrastructure located in the project corridor includes electric power, communications (telephone lines, fiber-optic lines and cable television lines), water, sanitary and storm sewers, natural gas lines, and traffic

signal systems. Although many of these utilities are buried under pavement, area residents and highway users depend on their continuous availability.

3.1.9 Is air quality a concern along the US 34 corridor?

Air quality in the project corridor must be examined due to the urban environment and higher volumes of traffic. Advances in motor vehicle emission control technology have caused pollutants to drop even though the number of vehicles has increased. Air quality standards protect human health and welfare from the following pollutants associated with motor vehicles: ozone, nitrogen dioxide, particulate matter (PM_{10} and $PM_{2.5}$), and carbon monoxide (CO).

3.1.10 How noisy is the US 34 corridor?

Noise from traffic, construction, school playground activities, emergency service providers, deliveries, and other diverse activities of city dwellers is a normal part of life in the US 34 corridor.

Noise levels are measured in units called decibels (dB). Noise levels are generally "weighted" to reflect the fact that the human ear responds differently to sounds of various levels and frequencies. Weighted sound levels are expressed in units called A-weighted decibels or dB(A). All noise levels discussed in this EA are A-weighted. The human ability to perceive loudness and changes in noise levels are summarized in Exhibit 3-3; typical noise levels are shown in Exhibit 3-4.

Exhibit 3-3
Relationship Between Decibels and Perception of Loudness

Change in Sound Level	Typical Perception
+10 dB(A)	Twice as loud
+5 dB(A)	Readily perceptible increase
+3 dB(A)	Barely perceptible increase
0 dB(A)	No change
-3 dB(A)	Barely perceptible decrease
-5 dB(A)	Readily perceptible decrease
-10 dB(A)	Half as loud

Exhibit 3-4
Typical Noise Levels

Noise Source	Noise Level dB(A)
Amplified rock band	115–120
Commercial jet takeoff at 200 feet	105–115
Community warning siren at 100 feet	95–105
Busy urban street	85–95
Construction equipment at 50 feet	75–85
Freeway traffic at 50 feet	65–75
Normal conversation at 6 feet	55–65
Typical office interior	45–55
Soft radio music	35–45
Typical residential interior	25–35
Typical whisper at 6 feet	15–25
Human breathing	5–15
Threshold of hearing	0–5

3.2 Which Human and Community Resources Would Not Be Affected?

No impacts are associated with the resources in this section for either the No Action or Action Alternatives. In the case of the No Action Alternative, indirect effects of the resulting increased traffic congestion, safety issues, access problems, and slower speeds would occur. The inability of the No Action Alternative to meet the project purpose and need may indirectly affect the resources that rely on mobility, safety and 2030 travel demand requirements being met. Resources that are only affected by construction activities in a proposed highway right-of-way would not be affected by No Action.

The following resources would **not** be directly affected and would **not** require commitments and mitigation:

- Emergency services
- Farmland
- Visual resources
- Recreation resources
- Air quality
- Properties of religious or cultural significance to Native American tribes
- Section 6(f) resources

3.2.1 Emergency Services

Improved level of service (LOS) associated with the addition of travel lanes, center turn lanes, and auxiliary lanes would be expected to improve traffic flow. Key intersections for emergency services along US 34 include North Madison, North Boise, Rocky Mountain, and LCR 5.[2] Project improvements can be expected to result in faster travel time for emergency response vehicles when compared to the No Action Alternative for 2030. No mitigation measures would be required.

3.2.2 Farmland

Areas classified as prime, unique, statewide, or local-important farmlands require identification under the Farmland Protection Policy Act (FPPA 1981), which was enacted to minimize the extent to which federally funded projects contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.

Although portions of land in the US 34 corridor are composed of prime soil types, the farmland itself is not subject to FPPA. According to 1989 FHWA guidelines, "Prime farmland which is already in or committed to urban development is by definition farmland not subject to the FPPA." Although several small farms remain, all of the land adjacent to US 34 is committed to urban development based on approved land use plans and developments in progress. Because the corridor is not subject to the FPPA, no mitigation analysis is required.

[2] Local jurisdiction ability to upgrade cross streets to accept the US 34 traffic will affect intersection LOS. To obtain the overall project goals for LOS (see Exhibit 2-4 in Chapter 2 of this EA), North Boise Avenue would need to be designed to take double left turns (northbound) from US 34. It is understood that LOS would be compromised should upgrades not occur. Coordination between CDOT and the city of Loveland has continued throughout the project. This intersection will be revisited when US 34 goes into final design.

3.2.3 Visual Resources

During the process of assessing potential changes to the environment, it is important to consider how or if the proposed US 34 Action Alternative would change the visual appearance and character of the surrounding area.

See Chapter 1, Exhibit 1-2 for a photographic essay and description of the US 34 corridor.

Construction of the Action Alternative would alter the existing setting primarily through the addition of travel lanes, turn lanes, on-street bike paths, parkways, and sidewalks to areas of US 34 that do not include all of these features today. In addition to the highway improvements, the Burlington Northern Santa Fe Railroad (BNSF RR) Bridge west of North Cleveland Avenue and the Greeley and Loveland Ditch Bridge east of Cheyenne Avenue would be widened at the current locations. Other minor structural elements would include signal or streetlights, retaining walls, bridges, irrigation ditch conveyance structures, and signage.

Although the US 34 improvement project would widen the horizontal profile of the highway, the project would not affect visibility of adjacent businesses or mountain background views. All of these changes are anticipated to be subordinate to the existing urban landscape character within the setting. Generally, implementation of the Action Alternative would provide a consistency in highway design along the corridor where it does not exist today. No direct or indirect visual impacts have been identified, and no mitigation measures would be required.

3.2.4 Recreation Resources

The McWhinney-Hahn Sculpture Park would not be affected by the proposed improvements to US 34. Widening US 34 to six lanes would use the landscaped buffer south of the concrete-lined Farmers Ditch, which separates the park from US 34 today.

The McWhinney-Hahn Sculpture Park would not be affected by proposed US 34 improvements

The underpass that conveys an off-street trail east of the Greeley and Loveland Ditch between North Boise and North Denver avenues would be widened to accommodate the Action Alternative. The widening would not affect the trail's connectivity. A positive impact of the widening project would be to create trail/sidewalk connectivity to the west along the south side of US 34. Currently there is no way to cross the adjacent Greeley and Loveland Ditch on the south side, except to walk on the street. The widened structure would be designed to accommodate on-street pedestrian and bicycle needs. The proposed cross section for the improved US 34 includes bike lanes in both directions throughout the project.

No direct or indirect recreational resource impacts have been identified, and no mitigation measures would be required. Improved access for pedestrian and bicycle users is a benefit of the proposed improvements.

3.2.5 Air Quality

Loveland and Johnstown have a climate that is typical for mid-latitude high elevations and that is strongly affected by

See Appendix C for additional detail on air quality.

local and regional topographic features. In general, these communities experience low relative humidity, light precipitation, and abundant sunshine. The combination of low moisture and windy days can increase airborne particulates (windblown particulate emissions and fugitive dust).

3.2.5.1 What are the National Ambient Air Quality Standards?

The Clean Air Act of 1970 required the US Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for pollutants that pose a risk to public health. Standards were set for six "criteria" pollutants: sulfur dioxide, carbon monoxide (CO), ozone, lead, nitrogen dioxide, and particulate matter, both in particulates of 2.5 microns or less ($PM_{2.5}$) and in particulates of 10 microns or less (PM_{10}).

The State of Colorado has adopted the NAAQS for these pollutants. The Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD) monitors concentration of these pollutants. Geographic areas that violate a particular NAAQS pollutant standard are considered "nonattainment" areas for that pollutant. Violations are determined by a prescribed number of exceedances of the particular standard.

The APCD also monitors for visibility and for pollutants that do not have established national standards. These "noncriteria" pollutants include nitric oxide, total suspended particulates, arsenic, and sulfates.

Greenhouse gases (water vapor, carbon dioxide (CO_2), methane, and nitrous oxide) and emissions are discussed in *Climate Change & Colorado, A Technical Assessment* (CDPHE 1998 and November 2000 supplement). The APCD has developed several CO_2 reduction strategies and will be considering regional programs to reduce station, area, and mobile CO_2 sources.

3.2.5.2 How do the NAAQS apply to the US 34 project corridor?

Carbon Monoxide (CO)

Because Loveland and Johnstown are outside the Fort Collins and Greeley carbon monoxide attainment/maintenance areas and those urban growth areas, they are not required to conform to the requirements of the Fort Collins or Greeley air quality maintenance plans for CO. Hot-spot modeling is not required for this project because the area of proposed improvements is located outside the Fort Collins and Greeley CO attainment/maintenance areas.

US 34 is not located in a nonattainment or maintenance area for PM_{10} or CO; therefore, detailed analyses of impacts of these pollutants are not required.

The US 34 project area is part of the Early Action Compact designed to achieve and maintain the 8-hour ozone standard.

Ozone

In 2004 EPA designated the Denver metropolitan area as nonattainment for the 8-hour ozone standard. This area includes portions of Larimer and Weld counties, including Loveland and Johnstown.

An Early Action Compact (EAC) designed to achieve and maintain the 8-hour ozone standard has been developed for this nonattainment area. The EAC for ozone includes specific milestones that must be met to achieve the standard by December 31, 2007. The EAC was submitted to EPA in July 2004. The project study area is located within the EAC boundary in the southern portion of Larimer County. EPA has deferred

nonattainment designation for the region as long as EAC milestones are met. No further action is required for the proposed US 34 project.

Particulates (PM_{10} and $PM_{2.5}$)

Transportation conformity is required for federally supported transportation projects in areas that have been designated by EPA as not meeting a NAAQS. On March 10, 2006 EPA issued amendments to the Transportation Conformity Rule to address localized impacts of particulate matter: *$PM_{2.5}$ and PM_{10} Hot-Spot Analysis in Project-level Transportation Conformity Determinations for the New $PM_{2.5}$ and Existing PM_{10} NAAQS* (71 FR 12468). These rule amendments require assessment of localized air quality impacts for federally funded or approved transportation projects for PM_{10} and $PM_{2.5}$ nonattainment and maintenance areas.

Loveland and Johnstown are outside both the Fort Collins and Greeley air quality boundaries. This means that the US 34 project corridor is located outside air quality boundaries for any nonattainment or maintenance areas for NAAQS related to those communities. Both Fort Collins and Greeley are in attainment for PM_{10}. All areas within the state of Colorado are in attainment for $PM_{2.5}$. The amendments to the Transportation Conformity Rule do not apply to the US 34 project.

Re-entrained dust from road sanding is a prime contributor to PM_{10}. CDOT reduces street sanding emissions for highway corridors through the use of alternative de-icing compounds such as magnesium chloride, lower temperature "M-Caliber 1000 and 2000," and "Ice-slicer;" and rapid sand cleanup.

3.2.5.3 What are Mobile Source Air Toxics (MSATs)?

In addition to the NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (such as airplanes), area sources (such as dry cleaners) and stationary sources (for example, factories or refineries). The *FHWA Air Toxic Interim Guidance* (February 3, 2006) is used for analysis of mobile source air toxics (MSATs) for highway projects. The following discussion, as well as the discussion in the *Air Quality Technical Memorandum for Mobile Source Air Toxics* (Appendix C), is in accordance with the interim guidance.

MSATs are a subset of the 188 air toxics defined by the Clean Air Act and are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline. EPA's document No. EPA420-R-00-023 (December 2000) provides more information.

In the 2001 rulemaking, EPA identified six priority MSATs: benzene, acrolein, formaldehyde, acetaldehyde, 1, 3- butadiene, and diesel exhaust. EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. A detailed discussion of these MSATs is provided in Appendix C.

Evaluating the environmental and health impacts from MSATs on this proposed highway project would involve several key elements, including emissions modeling, dispersion modeling to estimate ambient concentrations resulting from the estimated emissions, exposure modeling to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

3.2.5.4 How does the analysis of MSATs apply to the US 34 project corridor?

In this document, FHWA has provided a qualitative analysis of MSAT emissions relative to alternatives and has acknowledged that the Action Alternative and the No Action Alternative may result in increased exposure to MSAT emissions in certain locations. However, the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

As discussed above, FHWA believes technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project (see Appendix C for more information). However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. This can provide a basis for identifying and comparing the potential differences among MSAT emissions—if any—from alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA titled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at **www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm.**

The vehicle miles traveled (VMT) estimated for the Action Alternative is slightly higher (approximately 10 percent) than that for the No Action Alternative because the additional capacity increases the efficiency of the highway and attracts some rerouted trips from elsewhere in the transportation network. For US 34, regardless of the alternative selected, the commercial/business center attraction, particularly along the east half of the corridor, is expected to bring in new trips from the entire region. Typically, the amount of MSATs emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each alternative.

The increase in VMT would lead to higher MSAT emissions for the Action Alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along other routes as user habits change. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds. According to EPA's MOBILE6 emissions model, emissions of all of the priority MSATs, except for diesel particulate matter, decrease as speed increases.

For US 34, it is possible that the congestion relief and associated increases in speed as a result of the additional capacity (lanes) would have more of an effect on reducing emissions than the offset due to an increase in VMT. In the case of the proposed improvements, increased capacity would mean the difference between a design year (2030) LOS F for the No Action Alternative versus a range of LOS B to D for the Action Alternative. The extent to which these speed-related emissions decreases would offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models.

The additional travel lanes contemplated as part of the Action Alternative would have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, there may be localized areas where ambient concentrations of MSATs could be slightly higher under the Action Alternative than the No Action Alternative. However, as discussed above, the magnitude and the duration of these potential increases compared to the No Action Alternative cannot be accurately quantified due to the inherent deficiencies of current models. In summary, if the highway is widened and, as a result, moves closer to receptors, the localized level of MSAT emissions for the Action Alternative could be higher relative to the

No Action Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSATs will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be substantially lower than those of today.

3.2.5.5 What effect will National Control Programs have on MSAT emissions reduction?

Regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 56 to 81 percent between 2005 and 2030. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future.

3.2.5.6 Will the US 34 project result in any air quality problems?

No air quality problems have been identified for the US 34 corridor. Motor vehicle emissions in the study area would not result in any exceedance of the NAAQS; therefore, no direct or indirect project air quality mitigation would be necessary.

3.2.6 Native American Consultation and Properties of Religious or Cultural Significance to Native American Tribes

As mandated by Section 106 of the National Historic Preservation Act (as amended) and revised Advisory Council on Historic Preservation regulations (36 CFR 800), FHWA contacted 15 federally recognized Indian tribes with established interest in Larimer County, Colorado. The tribes were invited to become consulting parties for the project (see Appendix A of this EA, Environmental Coordination), thus acknowledging the government-to-government relationship between the United States and sovereign tribal groups. Federal agencies must be sensitive to the fact that historic properties of religious and cultural significance to one or more tribes may be located on ancestral, aboriginal, or ceded lands outside modern reservation boundaries.

Consulting tribes are given an opportunity to voice concerns about cultural resources and how the proposed project might affect them. If it is found that a project would have an impact on cultural resources eligible for inclusion on the NRHP and 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 said impacts. By consulting interested parties in the Native American community, FHWA and CDOT strive to protect areas important to Native Americans.

3.2.6.1 What tribes were invited to participate?

The following tribes were invited by letter to participate as a consulting party:

- Ute Mountain Ute Tribe
- Southern Ute Indian Tribe
- Ute Tribe of the Uintah and Ouray Agency ("Northern" Ute)
- Cheyenne and Arapaho Tribes of Oklahoma
- Comanche Tribe of Oklahoma
- Kiowa Tribe of Oklahoma
- Cheyenne River Sioux Tribe
- Crow Creek Sioux Tribe
- Oglala Sioux Tribe
- Rosebud Sioux Tribe
- Standing Rock Sioux Tribe
- Northern Arapaho Tribe
- Northern Cheyenne Tribe
- Apache Tribe of Oklahoma
- Shoshone Tribe

Two tribes wrote back and asked to be included as consulting parties for the project: the Comanche Tribe of Oklahoma and the Cheyenne River Sioux Tribe. These tribes will continue to receive information pertinent to the NEPA documentation process for the duration of the US 34 EA project. Consulting tribes raised no additional issues concerning proposed highway improvements or locations considered to have cultural or religious significance.

By initiating, encouraging, and facilitating Native American consultation, FHWA and CDOT have fulfilled their legal obligations in this regard as stipulated in the Section 106 and Advisory Council regulations.

3.2.7 Section 6(f) Resources

There are no Section 6(f) properties as defined by Section 6(f)(3) of the Land and Water Conservation Fund Act in the US 34 project corridor.

3.3 Which Human and Community Resources Would Be Affected and What Commitments and Mitigation Would Occur?

3.3.1 Right-of-Way Acquisition and Relocations

The information in this section is based on conceptual design; the actual number of relocations would be known when final design is complete. Measures to further reduce the number of relocations would be implemented as part of final design.

The following resources would directly affected and would require commitments and mitigation:

- Right-of-way acquisition and relocations
- Socioeconomics
- Land use
- Environmental justice
- Hazardous materials/waste
- Utilities, irrigation ditches and railroads
- Historic properties
- Section 4(f) resources
- Noise

3.3.1.1 How will this project affect property, homes, or businesses?

No Action Alternative

There would be no right-of-way acquisitions or residential/ commercial relocations under the No Action Alternative.

Action Alternative

The Action Alternative was designed to avoid and minimize impacts on existing properties to the greatest extent possible. Implementation of the Action Alternative would require acquisition of 3 homes and 18 business structures. The locations of these acquisitions are shown on Exhibit 3-5 and Exhibit 3-6. For the right-of-way, 4.17 acres of residential and agricultural property and 12.62 acres of commercial property would need to be acquired.

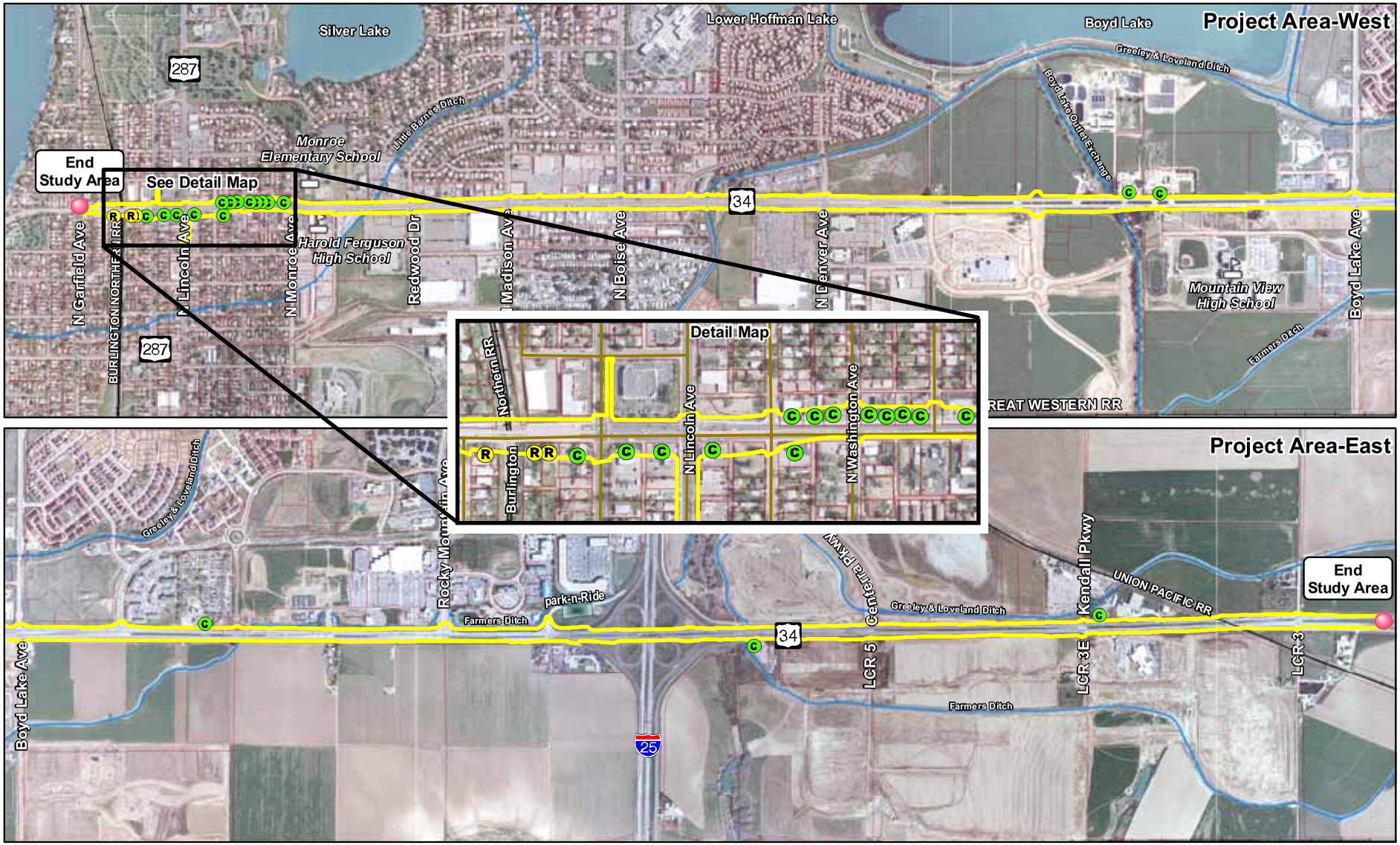
Eighteen businesses, including one unit of the Gateway Motel, identified in Exhibit 3-5, would be directly affected. Thirteen of these, located between North Garfield and North Monroe avenues, are unavoidable due to the narrow US 34 cross section in this area and/or the constraints required by law to avoid impacts on the historic Estate Services (Columbine Camp, 5LR 9881) located at North Washington and US 34. Impacts on some structures may be minimized during final design for the properties located east of Sculptor Drive.

Project impacts on residential properties would occur to three single-family residences. All residents affected by relocation would be provided with the CDOT relocation package. All individuals using the improved highway would experience the benefits of enhanced mobility and safety.

Exhibit 3-5
Anticipated Structure Relocations by Property Type and Address

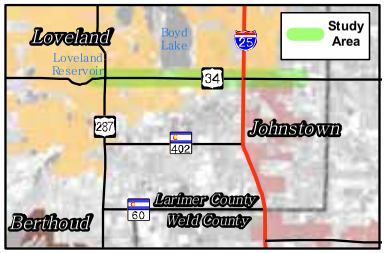
Property Type and Location	Street Address
N Garfield to N Cleveland	
Residential – south side	104 E 14th Street
Residential – south side	108 E Eisenhower
Residential – south side	1344 N Arthur
Johnson Commercial –south side	1351 N Cleveland
N Cleveland to N Lincoln	
Carls Jr. – south side	1340 N Cleveland
Good Times – south side	1355 N Cleveland
N Lincoln to N Jefferson	
Dairy Queen – south side	300 E Eisenhower
N Jefferson to N Washington	
Mantle Commercial – south side	400 E Eisenhower
Anstett Commercial – north side	425 E Eisenhower
Gateway Motel – north side	417 E Eisenhower
Goodwin Commercial – north side	401 E Eisenhower
N Washington to N Monroe	
Collins Muffler Shop (Anstett) – north side	541 E Eisenhower
Morgan Bros Rental – north side	533 E Eisenhower
Morgan Commercial – north side	531 E Eisenhower
The Brake Shop – north side	505 E Eisenhower
The Rest LLC – north side	617 E Eisenhower
Sculptor Drive to Boyd Lake Ave	
Loveland Tall Pines – north side	3167 Hwy 34
J-B Investments – north side	3227 E Eisenhower
McWhinney Boulevard to Hahn's Peak Drive	
Loveland Essential Group LLC – north side	4469 E Eisenhower
East of I-25	
Convenience Plus Partners – south side	5581 E Hwy 34
Gracon Corporation – north side	7221 E Hwy 34

Ownership information Source: Larimer County Assessor, 2004 – 2006



Legend

- RTD park-n-Ride
- Railroads
- Canals & Ditches
- Schools
- Lakes
- Parcels
- Residential Structure Relocations (Action Alternative)
- Commercial Structure Relocations (Action Alternative)
- Construction Footprint (Toe of Fill Line)



0 883 1,766 Feet

1 Inch = 1,766 Feet Or 1:21,200

Source: 2005 aerial photography provided by City of Loveland. Parks, schools, parcels, canals and ditches, lakes, roads, and railroads provided by City of Loveland. Relocations determined by J.F. Sato and Associates.

Map created February 23, 2007.

US 34 Environmental Assessment

US 287 to Larimer County Road No. 3

Exhibit 3-6

Action Alternative Right-of-Way Impacts and Relocations

Mitigation Measures

The information in this section is based on conceptual design; the actual number of relocations and specifics on property acquisitions would be known when final design is complete. Measures to further reduce the number of relocations and amount of acquisition would be implemented as part of final design.

CDOT will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act), which provides for uniform and equitable treatment of all persons displaced from their homes, businesses, or farms. The Uniform Act is a form of compensation, not mitigation.

For any person(s) whose real property interests may be affected by this project, the acquisition of those property interests will comply fully with 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 insure 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 US Constitution provides that private property may not be taken for a public use without payment of "just compensation." All affected 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 right-of-way specialist will be assigned to each property owner to assist him or her with this process.

In certain situations, it may also be necessary to acquire improvements that are located within a proposed acquisition parcel. In those instances where the 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 far 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 shall be furnished with a general written description of the displacing agency's relocation program which provides at a minimum, detailed information related to eligibility requirements, advisory services and assistance, payments, and the appeal process. It shall 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 in detail by an assigned right-of-way specialist.

3.3.1.2 How will access to US 34 change?

Right-in and right-out access is permitted. The following existing accesses (that include left turns) along US 34 are under consideration for change:

- Gorom Avenue
- Heritage Ford
- Enterprise Rent-A-Car
- Albertson's Shopping Center (Waffle House, OfficeMax, Paper Warehouse, and others)
- Felker Sales and Services

How does the Colorado State Highway Access Code affect property owners along US 34? When will access be converted or changed?

- When safety needs require the change
- When US 34 goes to construction and the addition of a center median prohibits left turns
- When a new land use is proposed

Existing access at these locations would continue into the future until safety needs require a change, the improvement of US 34 results in a center median that prohibits left turns, a new land use is proposed, or the City of Loveland takes actions that would affect general access patterns in the area.

3.3.2 Socioeconomics

No Action Alternative

The No Action Alternative would not result in improved mobility, safety or access along the US 34 project corridor or to adjacent neighborhoods.

Action Alternative

The Action Alternative would reduce congestion and improve road conditions along US 34, thereby improving accessibility to businesses and neighborhoods in the study area. Safety conditions would also be improved with the Action Alternative, which also would improve access to local businesses and neighborhoods, although some changes would occur as a result of this project. Access changes may occur as a result of construction.

This alternative would require the acquisition of 18 business structures (including one unit of the Gateway Motel) and three single-family residences (Exhibit 3-5).

Pedestrian and bicycle safety and access would be improved with the addition of the bicycle lanes and sidewalks along the roadway.

Mitigation

Mitigation measures would be the same as for right-of-way, as described in Section 3.3.1.1.

3.3.3 Land Use

No Action Alternative

No land use conversion to highway use would occur under the No Action Alternative.

Action Alternative

The direct land use impact of the Action Alternative would be in areas where right-of-way acquisition is required. In these areas, the current land use would be changed to a roadway use. The total right-of-way acquisition required for the Action Alternative is approximately 4.17 acres of residential and agricultural property and 12.62 acres of commercial right-of-way (Exhibit 3-6).

The City of Loveland anticipates the improvements as defined by the Action Alternative and they are consistent with local planning.

Mitigation

Mitigation for the changes in land use would be through compensation to the landowners during the right-of-way acquisition process, as discussed in Section 3.3.1.1.

3.3.4 Environmental Justice

3.3.4.1 What is Environmental Justice?

Presidential Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations,* was signed on February 11, 1994, and published in the Federal Register on February 16, 1994. The purpose of the EO is to determine whether the construction and operation of projects with federal involvement would result in disproportionate impacts on minority and low-income populations. Two other orders also address environmental justice: DOT Order 5610.2 (*Order to Address Environmental Justice in Minority Populations and Low-Income Populations*), and FHWA Order 6640.23 (*FHWA Action to Address Environmental Justice in Minority Populations and Low-Income Populations*).

The purpose of the environmental justice regulations is to ensure that minority and low-income populations do not receive "disproportionately high and adverse effects" as a result of federal actions. If such effects are predominately borne by a minority or low-income populations, or if those populations would suffer greater or more severe impacts than others, then the effects are considered disproportionate and adverse.

This EA has been carried out in accordance with the definitions and guidance cited.

CDOT has published the following guidance to incorporate environmental justice mandates for all of its projects in Colorado when undertaking the documentation requirements of NEPA: *CDOT's Title VI and Environmental Justice Guidelines, Rev. 3* (CDOT 2005).

All people should have the opportunity to participate in public processes by receiving information, attending meetings, or providing input into public decisions. Environmental justice is a federal requirement that says, in addition to good outreach and general public participation, projects should ensure that all groups – including minority and low-income populations – have adequate notice and the ability to meaningfully participate, as well as equitable benefits. In addition, it requires that any adverse effects should not be disproportionate to these traditionally underserved groups.

CDOT guidance includes the following definitions. A **minority** individual is one who identifies himself or herself as belonging to at least one of the following groups: Black, Hispanic, Asian, American Indian or Alaskan Native, or Hawaiian or Other Pacific Islander. A **low-income** person is defined as a person whose household income represents 30 percent or less of a county's area median income (AMI30), as established

by the US Department of Housing and Urban Development (HUD). A minority and/or low-income population is any readily identifiable group of minority and/or low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be affected by a proposed CDOT program, policy, or activity.

Two questions form the basis for analysis of environmental justice issues:

- Does the potentially affected area include minority and/or low-income populations?
- If there are minority and/or low-income populations who would be affected, are the adverse environmental impacts likely to fall disproportionately on either population?

3.3.4.2 What method was used to identify low-income and minority populations?

For this project, the following methodology was used to identify any low-income and minority populations in the project area, and the potential for disproportionate impacts on these populations:

- Census tracts and block groups adjacent to US 34 were identified.
- Demographic information was gathered for each block group.
- Council on Environmental Quality (CEQ) guidance states that the environmental justice requirements would apply to populations that have minority and/or low-income populations in the specific study area over 50 percent, or "meaningfully greater" than the minority or low-income population percentage in the general population or other appropriate unit of geographic analysis (for example, at the county level) (CEQ 1997).
- The Larimer County average minority population is 12.5 percent of the total population (US Census Bureau 2000). Within the study area, a minority population of 13.3 percent has been identified by summing populations in adjacent census block groups. Although this is not meaningfully greater than the county minority population, blocks adjacent to US 34 that include larger (than 12.5 percent) minority populations were examined.
- The county's area median income at 30 percent (AMI30), as obtained from HUD, is $13,680 (HUD 1999) for a household size of 2.55, which is the average household size in Larimer County as of 1999 (US Census Bureau 2000). In Larimer County, 11.5 percent of households have incomes below $14,999, the closest category to $13,680 that is listed in the census (US Census Bureau 2000). Within the project study area, 11.7 percent of the households are within this category. Although this is not meaningfully greater than the county low-income population, the US 34 analysis was expanded to examine the block group level.

3.3.4.3 What minority and low-income populations reside in the project area?

Exhibit 3-7 tabulates the minority and low-income population totals for each block group. Exhibit 3-8 displays these block groups and identifies the block groups that have minority and low-income populations above the thresholds previously stated (11.5 percent for low-income populations, and 12.5 percent for minority populations). Two block groups have both low-income populations and minority populations higher than the threshold, and two additional block groups have minority populations higher than the threshold:

The project area houses a total population of 9,808 (US Census Bureau, 2000), living in eight block groups located in four different census tracts:

- Census Tract 17.04, Block Groups 1 and 2
- Census Tract 17.05, Block Group 3
- Census Tract 17.06, Block Groups 1, 2, 4, and 5
- Census Tract 18.04, Block Group 4

[TAZ data shows a 2000 population of 6,426 in the adjacent census blocks.]

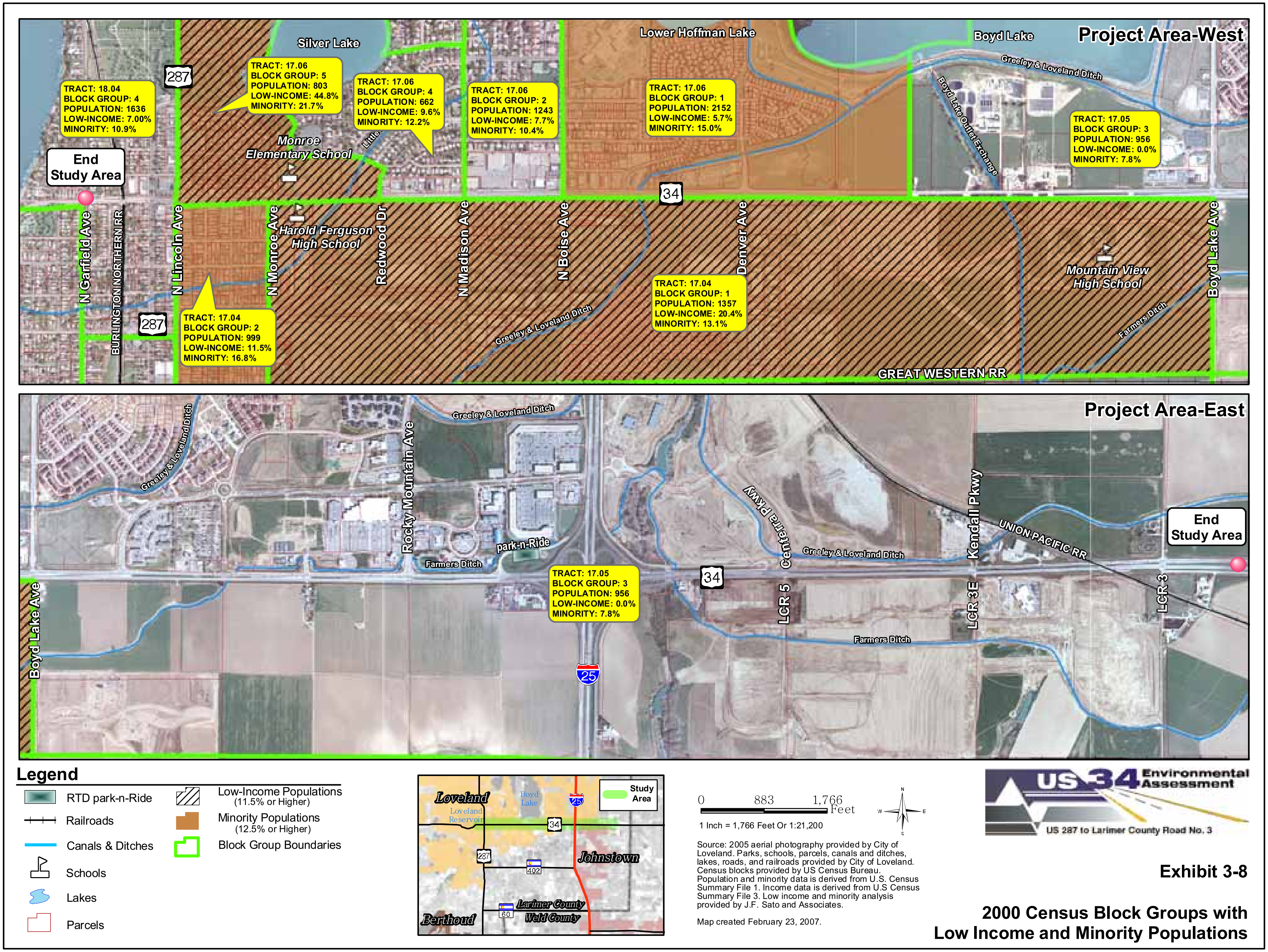
- Tract 17.06, Block Group 5 includes a population of 803, of which 360 are considered low-income (44.8 percent), and 174 are classified as minorities (21.7 percent).
- Tract 17.04, Block Group 1 includes a population of 1,357, of which 277 are considered low-income (20.4 percent), and 178 are classified as minorities (13.1 percent).
- Tract 17.04, Block Group 2 includes a population of 999, of which 168 are classified as minorities (16.8 percent).
- Tract 17.06, Block Group 1 includes a population of 2,152, of which 323 are classified as minorities (15 percent).

Exhibit 3-7
Minority and Low-Income Populations in the US 34 Study Area

Census Tract, Block Group	Total Population	Total Minority Population[a]	Percent of Total Population	Total Low-Income Persons[b]	Percent of Low-Income Persons
Tract 17.04, Block Group 1	1,357	178	13.1%	277	20.4%
Tract 17.04, Block Group 2	999	168	16.8%	114	11.5%
Tract 17.05, Block Group 3	956	75	7.8%	0	0.0%
Tract 17.06, Block Group 1	2,152	323	15.0%	123	5.7%
Tract 17.06, Block Group 2	1,243	129	10.4%	95	7.7%
Tract 17.06, Block Group 4	662	81	12.2%	64	9.6%
Tract 17.06, Block Group 5	803	174	21.7%	360	44.8%
Tract 18.04, Block Group 4	1,636	179	10.9%	114	7.0%
Study Area Totals	**9,808**	**1307**	**13.33%**	**1148**	**11.7 %**
Larimer County	**251,494**	**31,335**	**12.5%**	**28,922**	**11.5%**

[a] *US Census 2000 Summary File 1, Table P8 Total Population, Hispanic or Latino by Race.*

[b] *Low-income person is defined as a person whose household income is less than 30 percent of a county's area median income (AMI30), as established by the US Department of Housing and Urban Development (HUD).*



Source: 2005 aerial photography provided by City of Loveland. Parks, schools, parcels, canals and ditches, lakes, roads, and railroads provided by City of Loveland. Census blocks provided by US Census Bureau. Population and minority data is derived from U.S. Census Summary File 1. Income data is derived from U.S Census Summary File 3. Low income and minority analysis provided by J.F. Sato and Associates.

Map created February 23, 2007.

Exhibit 3-8

2000 Census Block Groups with Low Income and Minority Populations

3.3.4.4 Are there any known low-income or minority residences or businesses adjacent to US 34?

Most of the development adjacent to US 34 is business or commercial, including several motels and hotels and a few rural/farm properties. Of the block groups identified with low-income or minority populations that exceed the Larimer County average, all are located between North Lincoln Avenue and Boyd Lake Avenue.

There are no single or multi-family residences adjacent to US 34 within these census block groups except for the Valley Apartments (8 units) in Tract 17.04, Block Group 2, and several rural residential/farm properties in Tract 17.04, Block Group 1, and Tract 17.06, Block Group 1.

A file search of the Colorado Office of Economic Development and International Trade database for minority and women-owned businesses identified 35 registered businesses in the Loveland zip codes of 80537 and 80538, none of which were located along US 34.

Outreach included mailings to all adjacent property owners, as well as public open house notifications through local elementary school newsletters. For additional outreach information, see Chapter 5 of this EA, Public Involvement.

3.3.4.5 Will any low-income and minority residences or businesses be directly affected by the US 34 project?

No Action Alternative

The No Action Alternative would not resolve mobility and safety requirements on US 34 and would not meet the 2030 travel demand and growth needs; low-income and minority populations in the vicinity of US 34 are expected to experience the same lack of benefits as the population as a whole. No adverse environmental impacts are likely to fall disproportionately on either population under the No Action Alternative.

Action Alternative

Minority and low-income populations are limited to four Census Blocks adjacent to US 34. Most of the adjacent land use in these areas is commercial. Three residential relocations are from Tract 18.04, which has less than the Larimer County average of minority or low-income population. No disproportionately high or adverse impact has been identified. Property owners were individually invited to attend two public open houses (see Chapter 5).

The Action Alternative would relieve congestion along US 34, thereby improving accessibility to community resources, businesses, and residences for employees, customers and residents in the study area.

This alternative would require the relocation of 18 business structures, associated with a total of 21 owners and/or tenants. None of these locations were identified in the Colorado Office of Economic Development and International Trade database.

A phone survey was conducted on February 15 and 16, 2007 to provide additional information on the potentially affected business owners along US 34. A total of 21 owners and tenants were identified. Three did not have available phone numbers (including one vacant location), four did not return calls or were not available, one refused the survey, one property was owned by the City of Loveland, and twelve participated in the survey.

Half the businesses had been established for 17 years or longer. The interviewed businesses included 90 full time and 46 part time staff, including 77 skilled positions and 59 unskilled positions. Most of the unskilled positions were associated with the fast-food industry. No minority owners were identified; one minority manager was noted.

Of the employees identified, approximately 17 percent were considered to have a minority background, all but two with Latino backgrounds. Eighty-two percent of those with minority backgrounds were employed at two fast-food establishments. Seventy-eight percent of the employees were said to live in the city of Loveland or Larimer County. Most of the businesses identified the majority (75 percent or more) of their customers as coming from Loveland.

Relocation impacts would be borne by all the businesses and associated employees and, therefore, would not constitute a disproportionately high and adverse impact to minority-owned businesses or minority employees.

Project impacts on other resources could affect populations and businesses in the corridor; however, this project results in minimal effects on most other resources as identified in the resource discussions within this document. Minor to no impacts would occur on air, water, soil, natural resources, aesthetics, community cohesion, community economic vitality, and availability of services and facilities, as discussed within this document. Noise impacts are identified in Section 3.3.9, and are not disproportionate to any particular population.

Mitigation Measures

All property acquisition would follow the procedures outlined in the CDOT *Right of Way Manual*. CDOT follows the Federal Uniform Relocation and Real Property Acquisition Act of 1970 (Public Law 91-646), as amended in 1987 (Public Law 100-17), 1991 (Public Law 102-240) and 1997 (Public Law 105-117). The purpose of the act is "To provide for uniform and equitable treatment of persons displaced from their homes, businesses, or farms by Federal and federally assisted programs and to establish uniform and equitable land acquisition policies for Federal and federally assisted programs." For additional discussion, see Section 3.3.1.1.

3.3.5 Hazardous Materials/Waste

This section summarizes the findings of the *Modified Environmental Site Assessment* (MESA) report prepared for the project area by Kumar and Associates in 2005 (and updated in 2006). The report complies with American Society for Testing and Materials (ASTM) standard E 1527-00, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, and the CDOT scope of work for MESA reports. This report is intended to identify environmental conditions that indicate an existing, past, or material threat of a release of hazardous substances or petroleum products into structures on the properties or into the soils, groundwater, or surface waters that could be affected by the No Action Alternative or the Action Alternative.

3.3.5.1 Why is it necessary to consider hazardous materials and waste with a highway assessment?

The consideration of impacts on hazardous materials and waste sites is important from cost, liability, worker safety, and public health perspectives. The identification of any sites with contamination issues

allows for informed decisions and contingency planning should it be necessary to acquire or work in close proximity to these sites.

Government agencies were contacted and a database review was conducted to evaluate potential usage, storage, treatment, and disposal of hazardous waste and petroleum products at or near sites within the project corridor. Local agencies were contacted concerning records of spills or incidents involving hazardous substances or petroleum products that could have resulted in potential on-site contamination. The database review was conducted in general accordance with the current ASTM standard for Phase I Environmental Site Assessments (ESAs), except some additional records were reviewed.

The MESA results indicate a few sites in the US 34 corridor that may contain hazardous materials or waste:

- **Numerous historic gas stations, dry cleaners, and automobile repair facilities** were identified in the area of the US 287 and US 34 intersection and further east along the project corridor. Twelve addresses are associated with these sites: 1330, 1357, 1362, and 1412 North Lincoln Avenue (US 287); and 303, 408, 502, 541, 680, 804, 1117, and 1300 East Eisenhower Boulevard (US 34).
- **Four Leaking Underground Storage Tank (LUST) sites** were identified along the north side of US 34:
  - Craig's Conoco (1003 East Eisenhower Boulevard). This site has the potential to have an impact on the subsurface of the US 34 corridor.
  - Shell Service Station (1509 East Eisenhower Boulevard). This site does not appear to have an impact on the subsurface of the subject corridor.
  - U Pump It (1125 East Eisenhower Boulevard). Historic maps of the contaminated groundwater plume from the LUST at this site indicate that the contaminated plume traverses directly beneath US 34.
  - Schrader's Country Store (1301 East Eisenhower Boulevard). Historic maps of this site's contaminated groundwater plume indicate that it traverses directly beneath US 34.
- **Oil and Gas Well.** McDonough #16-2. Although the tank battery is located immediately adjacent to the south side of US 34 in the vicinity of Hahn's Peak Drive, this site is unlikely to have had an impact on the subsurface of the study area due to the general direction of groundwater flow to the southeast and east.
- **Electrical Transformers**. Numerous pole-mounted and pad-mounted electrical transformers were observed during the site visit on or adjacent to the US 34 corridor. The transformers appeared to be in good condition with no indications of leaks or fire damage.

How does the direction of surface water runoff and groundwater flow relate to US 34 and hazardous materials? The Big Thompson River is located approximately one-half mile south of US 34 at the east end of the corridor and 2 miles away at the west end. The Big Thompson River flows to the east and northeast in this area. Based on surface topography and subsurface conditions expected in the area, surface water runoff as well as shallow, unconfined groundwater in the project study area is expected to flow to the east and southeast toward and with the flow of the Big Thompson River. For contaminated soils that may be found in the project corridor, this means that areas located to the south of US 34 probably would not affect US 34 because flows are away from the highway.

3.3.5.2 Will the US 34 project create or remove any contaminated materials or sites?

No Action Alternative

The No Action Alternative would not disturb any hazardous materials or waste sites; however, contamination from four historic use locations and three LUST sites may already exist within US 34 right-of-way. The following four properties are located north of US 34 and it is possible that contamination, if any, from these sites could have migrated south and east under US 34: 303, 541, 1117, and 1509 East Eisenhower Boulevard. Three of the four LUST sites may have already contaminated the existing US 34 right-of-way: Craig's Conoco, U Pump It, and Schrader's Country Store.

Action Alternative

No right-of-way acquisition is anticipated from the five addresses associated with historic uses: 1330, 1362, and 1412 North Lincoln Avenue (US 287); and 502 and 680 East Eisenhower Boulevard (US 34).

Right-of-way may be acquired from the seven addresses for which historic uses indicate a potential for presence of hazardous materials: 1357 North Lincoln Avenue (US 287) and 303, 408, 541, 804, 1117, and 1300 East Eisenhower Boulevard (US 34).

Of these properties, three are located south of US 34 (408, 804, and 1300 East Eisenhower Boulevard). Although there is little probability of contaminant migration from these sites upgradient to US 34, acquisition of right-of-way from these properties may yield possible contamination of soil and groundwater on site. The following four properties are located north of US 34 and it is possible that contamination, if any, from these sites could have migrated south and east under US 34: 303, 541, 1117, and 1509 East Eisenhower Boulevard.

Three of the four LUST sites have the potential to have an impact on construction activities within the existing US 34 corridor, as well as influence possible right-of-way acquisition: Craig's Conoco, U Pump It, and Schrader's Country Store.

There is a potential for any of the 21 structure acquisitions (see Section 3.3.1.1) to contain lead-based paint and/or potentially friable asbestos.

Mitigation Measures

The following are sites of potential concern and include specific recommendations.

- **Seven historic gas stations, dry cleaners, and automobile repair facilities**. Completion of a Phase 1 ESA is required for any properties showing historic uses that could contribute to the presence of hazardous materials for which right-of-way would be required. That report would indicate past and current uses of that site and would determine if that site does or historically has affected the corridor. Note that right-of-way acquisition from all nine properties is anticipated, each of which would pose a level of risk that CDOT would acquire a contaminated property and the liability for cleanup associated with it. In addition, contamination from four of these properties may have migrated into the existing US 34 right-of-way.
- **Four LUST sites.** The groundwater monitoring reports for the LUST sites located at Craig's Conoco and the Shell Service Station should continue to be reviewed. These reports will provide information

pertaining to the extent of groundwater contamination and its potential migration beneath the study area. If project construction activities disturb subsurface soils or groundwater in the area of the U Pump It and Schrader's LUST sites at the North Madison Avenue intersection, pre-characterization of soils and groundwater for project personnel health and safety issues, as well as for materials management and dewatering issues, would be performed. Right-of-way acquisition is anticipated from all four LUST sites, each of which may pose a risk that CDOT would acquire a contaminated property and the liability for cleanup associated with it. In addition, contamination from three of these properties may have migrated into the existing US 34 right-of-way.

- **Oil and Gas Well**. If project right-of-way and subsequent construction activities disturb or come in close proximity to the McDonough #16-2 oil and gas tank battery location, pre-characterization of soils and groundwater for project personnel health and safety issues, as well as for materials management and dewatering issues, would be performed.
- **Electrical Transformers**. The Poudre Valley Rural Electric Association (REA) should be contacted if any of the transformers are to be disturbed during construction activities. Xcel Energy and the City of Loveland also have the potential to own transformers located along the project corridor. They too should be contacted if any of the transformers are to be disturbed during construction activities. If any of the transformers test positive for polychlorinated biphenyls (PCBs), the utility company of ownership would be responsible for handling and disposal.
- **Structures Containing Lead-Based Paints and/or Friable Asbestos.** If either or both of these hazardous materials are encountered, coordination with the CDPHE and other agencies that regulate these materials will occur.

If additional hazardous materials are encountered before or during construction of the Action Alternative, CDOT's *Section 250, Environmental Health and Safety Management* specification would be used. If necessary, a health and/or safety plan and materials management plan would be prepared and implemented to mitigate potential health and safety hazards to workers and the public. Pre-characterization of soils and groundwater for project personnel health and safety, materials management, and dewatering is required before disturbance of subsurface soils or groundwater by highway construction activities at sites of potential concern. Depending on the results of the pre-characterization of test results, coordination with various agencies and permitting may be required. If the test samples are deemed hazardous, a materials management plan would be developed that describes the specifics of the hazardous waste permitting and compliance issues.

3.3.6 Utilities, Irrigation Ditches, and Railroads

3.3.6.1 What utilities are located in the US 34 study area?

Most of the US 34 study area is within the city of Loveland. Loveland Water and Power provides distribution and treatment for water and wastewater and distribution of power within the city limits.

A small portion of the US 34 study area overlaps the town of Johnstown. The Low Point Sanitation District will serve the portion of Johnstown that is located in Larimer County. This area includes the Thompson Crossing Town Center commercial and residential development, which includes the new 2534 commercial development located at the southeast corner of I-25 and US 34. Work is currently underway constructing the wastewater plant and installing the water and sewer lines to serve this area.

Phone service providers vary, although Qwest is responsible for most of the phone lines along US 34. Xcel Energy provides natural gas to the US 34 study area.

Numerous utilities are currently located either above ground or underground along US 34, depending on the age of the adjacent development.

3.3.6.2 What irrigation ditches does US 34 cross?

US 34 crosses the following irrigation ditches: Little Barnes Ditch, the Boyd Lake Outlet Exchange (also known as Boyd Lake Outlet Ditch), Greeley and Loveland Ditch (also known as the Chubbuck Ditch) and two crossings of the Farmers Ditch. Through agreements with the ditch companies, the local municipalities and developers run stormwater through these ditches. Additional information on ditches can be found in Section 3.6.4, Water Quality, and Section 3.3.7, Historic Preservation.

3.3.6.3 What railroads does US 34 cross?

US 34 crosses over the Burlington Northern and Santa Fe Railroad (BNSF RR) at the west end of the project study area. The BNSF RR currently runs eight trains per day.

US 34 also crosses the Union Pacific Railroad (UPRR) at-grade at the east end of the project study area. The east-west line of the UPRR runs between LaSalle and Milliken and then from Milliken into Fort Collins crossing US 34. There are currently two freight trains per day on the portion of the UPRR line that crosses US 34, with one additional grain train per week. There is the future possibility of two additional daily trains crossing this location.

3.3.6.4 What impacts will the project have on utilities, irrigation ditches, and railroads?

No Action Alternative

Utilities, irrigation ditches, and railroads would not be affected or changed under the No Action Alternative except as related to ongoing local projects.

Action Alternative

Utilities currently located along US 34 would be relocated as needed under the sidewalk or parkway strip, or elsewhere within the right-of-way. Due to the extensive development adjacent to US 34 along the west portion of the corridor, utilities would be located to minimize impacts on adjacent properties.

Irrigation ditch crossings would be affected as follows:

- **Little Barnes Ditch.** The ditch is open on the south side and piped on the north side between North Monroe Avenue and Redwood Drive. The existing pipe would be extended.
- **Boyd Lake Outlet Exchange Ditch.** This ditch is open and grass-lined on both sides of US 34 between Sculptor Drive and Mountain Lion. The existing structure would be extended and the retaining wall on the south side would be reconstructed.
- **Greeley and Loveland Ditch** (also known as the Loveland and Greeley Ditch or the Chubbuck Ditch). This ditch is open, heavily vegetated and bridged across by US 34 between North Boise and North

Denver avenues. The existing structure over the Greeley and Loveland Ditch would be expanded to accommodate the widened US 34.

- **Greeley and Loveland Ditch.** This segment, located east of I-25 and in the project area for the I-25 improvements, would not be affected by improvements associated with this EA.
- **Farmers Ditch.** This segment is located in the vicinity of US 34 and Hahn's Peak Drive. The existing ditch structure under US 34 (a day-lighted box) would be extended as appropriate to provide the transition between the concrete-lined ditch on the north and the grass-lined ditch on the south.
- **Farmers Ditch.** This segment is located immediately east of I-25. The existing ditch structure under US 34 (a day-lighted box) would be extended as appropriate to provide the transition between the piped ditch on the north and the grass-lined ditch on the south.

Railroads would be affected as follows:

- **BNSF.** The bridge over the BNSF would be widened as a part of the US 34 project. No impacts on the BNSF are anticipated.
- **UPRR.** The at-grade crossing of the UPRR would be widened. No impacts on the UPRR are anticipated.

Mitigation Measures

Coordination with county and city officials and local utility owners would minimize disruption of service. Coordination would also be necessary with the appropriate ditch companies and railroads to minimize disruption during construction. For additional discussion, see Section 3.6.4, Water Quality.

3.3.7 Historic Preservation

Cultural resources can be either prehistoric and/or historic and may also be archaeological. These resources are nonrenewable and are protected under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (16 USC 470) as amended, as well as revised Advisory Council on Historic Preservation regulations (36 CFR 800).

Authorized under the NHPA, the National Register of Historic Places (NRHP) is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect historic and archaeological resources. Properties listed in the NRHP include districts, sites, buildings, structures, and objects over 50 years old that are significant in American history.

Prehistoric resources may include the remains of artifacts and/or features representing one or more events. Examples of artifacts include ceramics, bone, chipped stone, chipped volcanic glass, metal, perishable fiber, and wood. Examples of features include stone, wood, earth, and mortar.

The City of Loveland also has a historic preservation program. The Loveland Historic Register is a list of properties within the municipal limits that have been designated as landmarks by the City Council because they exhibit unique architectural, social, cultural, geographic, or environmental significance. Properties on the Loveland Historic Register are eligible for preservation incentives, provided any changes made to them comply with the Secretary of Interior's Standards for Rehabilitation. There are no properties adjacent to US 34 listed on the Loveland Historic Register at this time.

3.3.7.1 How is a property determined eligible for listing on the National Register of Historic Places?

To be eligible for the NRHP, typically, a historic property must be 50 years old or older and meet one or more of the following integrity and significance requirements per 36 CFR 60.04:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and:
>
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) that are associated with the lives of persons significant in our past; or
>
> (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) that have yielded, or may be likely to yield, information important in prehistory or history.

3.3.7.2 What is the project Area of Potential Effect (APE)?

A flexible Area of Potential Effect (APE) was identified for the project. The project cultural resource inventory was conducted at Class I, II, and III levels. Literature searches for the entire APE were conducted at the Colorado Historical Society's Office of Archaeology and Historic Preservation (OAHP) in 2002 and 2005.

What are the different cultural resource survey classes?

Class I. A Class I survey or literature search involves the thorough review and synthesis of the existing literature concerning a survey area.

Class II. Any type of sample survey that involves less than a 100 percent survey of a project area is considered a Class II survey. This type of survey is often done to locate obvious features such as historic districts, buildings, structures, and objects.

Class III. A Class III survey involves 100 percent pedestrian coverage of a project area. Generally this involves walking transects at a set interval or coverage of the area along contour lines. This type of survey provides detailed information of historic and archaeological sites.

Colorado Cultural Resource Survey Manual, Volume I: The Steps published by the Colorado Historical Society's Office of Archaeology and Historic Preservation Office (page 16) revised in 2005

Direct impacts are anticipated to be contained within 100 feet of either side of the existing edge of pavement. An intensive field inventory or pedestrian survey (Class III survey) was conducted within the APE covering a total of approximately 90 acres. Areas containing potentially sensitive historic resources whose boundaries intersected with this area of direct impact, but may have extended as much as one-quarter mile beyond, were also examined (Class II Survey). The State Historic Preservation Officer (SHPO) agreed with CDOT's APE definition in correspondence dated June 26, 2006. Exhibit 3-9 illustrates the APE and general location of NRHP eligible historic properties along US 34.

No NRHP eligible archaeological resources were found in the course of this pedestrian survey (field survey conducted on foot), and no further work is recommended in the inventoried part of the project area. However, for a number of properties where permission to enter was not obtained by the writing of this EA, a

Class III inventory would be required for the Action Alternative to comply with Section 106 after right-of-way acquisition.

Appendix A of this document includes CDOT, SHPO, and consulting party correspondence. Correspondence confirms eligibility and effects determinations agreed upon between CDOT and the SHPO.

3.3.7.3 Would the project have any effects on NRHP eligible archaeological properties?

No NRHP eligible archaeological resources are present in the APE. Due to a lack of landowner-authorized right-of-entry, a small number or properties located along the project corridor will or may require intensive Class III archaeological inventory prior to construction in order to fully comply with Section 106 requirements. If extensive ground disturbance in any of these unsurveyed areas should occur in the interim as a result of private development unrelated to the proposed US 34 transportation improvements, no survey would be required.

Except for the Hill Farm (5LR11188) and Lauver Farmstead (5LR11297), none of the historic components for these properties are otherwise NRHP eligible. The following sites would require a full Class III survey for archaeological resources prior to construction subject to the condition noted above:

5LR11188	Hill Farm	5LR11295	Severson House
5LR11189	Vet Clinic Property	5LR11297	Lauver Farmstead
5LR11190	McCreery Property		

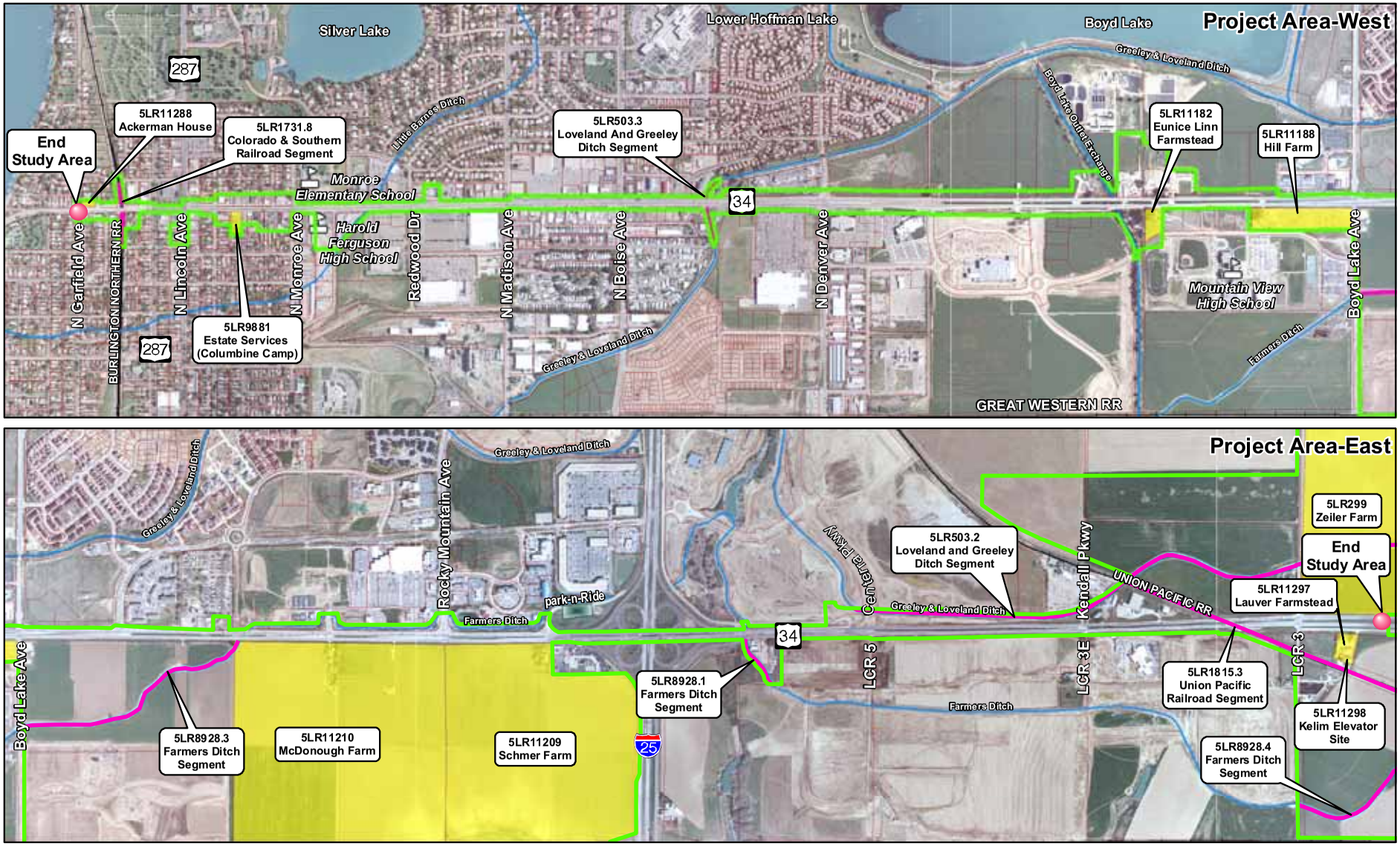
If archaeological resources are identified prior to construction of the Action Alternative as a result of the completion of this Class III survey, data recovery and documentation would be pursued as required by the NHPA and all other applicable state and federal regulations.

3.3.7.4 What are the inventory results?

Sixteen NRHP eligible properties, including multiple segments of the same ditches, have been identified in the US 34 APE as shown in Exhibit 3-10 and described below. The NRHP eligible properties are described in order of occurrence from west to east along US 34. The SHPO concurred with CDOT's eligibility determinations in correspondence dated August 21, 2006, and December 4, 2006.

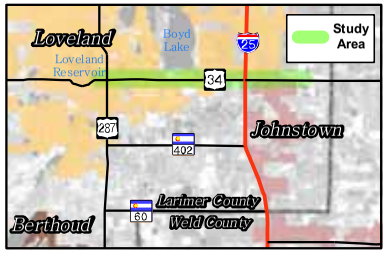
- **Ackerman House (5LR11288)**. This one-story bungalow-type brick house on the corner of US 34 and North Garfield Avenue faces west. This house is eligible for the NRHP under Criterion c as an example of a local variant of the bungalow and for its role in representing Loveland's 20th century architectural heritage.

- **Colorado & Southern Railroad Segment (5LR1731.8).** Currently known as the Burlington Northern and Santa Fe Railroad, this segment (between East 13th Street and East 15th Street in Loveland) is a part of the mainline that enters Colorado near Trinidad and runs north to Wyoming. The entire resource is considered eligible to the NRHP based on the seven previously recorded eligible segments (all in Larimer County). The current segment is representative of the railroad line generally contributing to the overall continuity and significance of that rail line.



Legend

- RTD park-n-Ride
- Railroads
- Canals & Ditches
- Schools
- Lakes
- Parcels
- Eligible Historic Linear Sites
- Eligible Historic Properties
- APE Boundary *(Extends outside study area to include complete parcels)*



0 883 1,766 Feet

1 Inch = 1,766 Feet Or 1:21,200

Source: 2005 aerial photography provided by City of Loveland. Parks, schools, parcels, canals and ditches, lakes, roads, and railroads provided by City of Loveland. Eligible historic property information provided by CDOT.

Map created February 23, 2007.

US 34 Environmental Assessment

US 287 to Larimer County Road No. 3

Exhibit 3-9

APE and NRHP Eligible Historic Properties

Map Document: (V:\WP\projects\WS\349\maps\W07013_Document\Map\W07013_fig3-1_APE_NRHP_HistoricProperties.mxd)
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Exhibit 3-10
Eligible Historic Properties in the US 34 APE

Resource number	Resource Description
5LR11288	Ackerman House
5LR1731.8	Colorado and Southern Railroad Segment
5LR9881	Estate Services (Columbine Camp)
5LR503.3	Loveland and Greeley Ditch Segment
5LR11182	Eunice Linn Farmstead
5LR11188	Hill Farm
5LR8928.3	Farmers Ditch Segment
5LR11210	McDonough Farm
5LR11209	Schmer Farm
5LR8928.1	Farmers Ditch Segment
5LR503.2	Loveland and Greeley Ditch Segment
5LR8928.4	Farmers Ditch Segment
5LR1815.3	Union Pacific Railroad Segment
5LR11297	Lauver Farmstead
5LR11298	Kelim Elevator Site
5LR11299	Zeiler Farm

- **Estate Services (Columbine Camp) (5LR9881).** During the late 1930s, the 400 to 600 blocks of East 14th Street in Loveland became a choice location for tourist camps, with the construction of several multi-unit motor court motels to cater to the automobile traffic heading to and from Rocky Mountain National Park. Estate Services (Columbine Camp) is the only one remaining today. While some of the doors and windows have been replaced, and the eight-unit motor court has been refurbished into a small retail and office building, Estate Services (Columbine Camp) still retains the feeling and association of a late 1930s-era auto camp. It is eligible to the NRHP under Criterion a.

- **Loveland and Greeley Ditch Segment .3 (aka Greeley and Loveland Ditch) (5LR503.3).** The entire ditch extends from its point of diversion at Wilson Avenue in Loveland east to Greeley, a distance of 55 miles. The ditch segment – sometimes called the Chubbuck Ditch – is an active soil-lined irrigation ditch. The ditch segment is eligible under Criterion a for its associations with the late 19th century corporate irrigation and land development that took place in much of northeastern Colorado, a significant pattern in the region. The site is also eligible under Criterion c as representative of the engineering and construction of large-scale canals that were built on the Colorado plains during the late 19th century by private companies.

- **Eunice Linn Farmstead (5LR11182).** This farmstead is located on the south side of US 34 on a fairly level plain east of the Boyd Lake Outlet Exchange Ditch. This site, dating to 1900, retains a fairly complete inventory of buildings typical of a local farmstead from the early 20th century and well represents the rural agriculture of the period. The site is eligible under Criterion c.

- **Hill Farm (5LR11188).** The land was originally patented by David Barnes in 1899 and the house was built in 1906. Based on the known background and curbside information, the house is NRHP eligible under Criterion c as an example of early 20th century rural architecture.

The Hill Farm House (5LR11188) is eligible for inclusion in the NRHP.

- **Farmers Ditch Segment .3 (5LR8928.3).** The overall ditch is 11.2 miles long running from the point of diversion on the Big Thompson River west of Railroad Avenue in Loveland east to the vicinity of Johnstown, Colorado. The ditch segment south of US 34 at Hahn's Peak is representative of the early water resource development and the maturation of irrigation in the Loveland area by small groups, a significant pattern of local history. This segment has not been affected by recent development along US 34 and I-25, and it supports the eligibility of the ditch for inclusion in the NRHP. This segment retains its integrity of setting and feeling as well as showing its

method and materials of construction. This portion of the ditch retains its earthen lining. It is eligible to the NRHP under Criteria a and c.

- **McDonough Farm (5LR11210).** Originally dating to the early 1900s, this active farm site is NRHP eligible under Criterion c for the barn, which is a good example of early 20th century barn architecture in the area.

- **Schmer Farm (5LR11209).** This active farm site, dating to the early 1900s, remains a fairly complete example of a Larimer County farm from the period. The site is eligible under Criterion a for is associations with 20th century Loveland area farming, including sugar beet raising. It is also eligible for NRHP inclusion under Criterion c as representative of the architecture typically associated with Loveland area farms during the first half of the 20th century.

- **Farmers Ditch Segment .1 (5LR8928.1).** US 34 crosses this segment of Farmers Ditch just east of the I-25 interchange. This 984-foot segment of the Farmers Ditch retains its integrity and is eligible to the NRHP under Criteria a and c.

- **Loveland and Greeley Ditch Segment .2 (aka Greeley and Loveland Ditch) (5LR503.2).** This segment within the APE, just east of I-25, has not been modified; however, portions of the segment lie in an area that is being developed for commercial and residential purposes. This segment is eligible to the NRHP under Criteria a and c for its association with Larimer County agriculture and as a representative example of water engineering practices from the late 19th century. The segment retains sufficient integrity to support the overall eligibility of the entire ditch.

- **Farmers Ditch Segment .4 (5LR8928.4).** This ditch segment is located south of US 34 between Larimer County Road 3 and the eastern boundary of the APE. This segment is eligible to the NRHP under Criteria a and c.

- **Union Pacific Railroad Fort Collins Branch Segment 3 (5LR1815.3).** This resource is a segment of a single track standard gauge railroad line that runs from Greeley to Fort Collins via La Salle and was originally 24.5 miles in length. The railroad is eligible under Criterion a for its association with the spread of Colorado's Front Range rail network during the late 19th century and the competitive railroad building in the area at that time. It is also eligible for its association with the spread of farming and ranching and the settlement of the area in the late 19th century.

- **Lauver Farmstead (5LR11297).** This farmstead dates from 1938 through the mid-1950s. The farmstead still conveys the historic theme of agriculture under Criterion a, and the main house is NRHP eligible under Criterion c as an example of a Craftsman-style bungalow.

- **Kelim Elevator Site (5LR11298).** The elevators, built between 1945 and the mid-1960s, appear to have functioned as a central point of collection for wheat farming run by one farmer and later one family. No other elevators dating from the 1940s have been recorded in Larimer County, and only one other elevator has been recorded in the county from the 1960s. Despite the general abandonment of the site, the Kelim Elevator Site is eligible under Criterion c as a good example of a grain elevator dating from the mid-1940s.

- **Zeiler Farm (5LR11299).** Although most of the farm buildings have been moved from their original location along the boundaries of the old US 34, they are still within the historic boundary of the Zeiler

farm. The farm has maintained its land base and continues to display its associations with 20th century Larimer County agriculture. CDOT has determined that the Zeiler Farm is NRHP eligible under Criterion a.

3.3.7.5 What effects will the project have on NRHP eligible historic properties?

No Action Alternative

Implementation of the No Action Alternative would not affect historic properties.

Action Alternative

Exhibit 3-11 describes the effects for the Action Alternative. The SHPO concurred with CDOT's effects determinations in correspondence dated August 21, 2006, and December 4, 2006.

Exhibit 3-11
Eligible Historic Resources – Effects Summary

Resource Number	Resource Description	Recommended Effect Determination
5LR11288	Ackerman House	No Historic Properties Affected Outside US 34 impact area
5LR1731.8	Colorado and Southern Railroad Segment	No Adverse Effect US 34 Structure Widening Only
5LR9881	Estate Services (Columbine Camp)	No Historic Properties Affected Through CSS - avoidance
5LR503.3	Loveland and Greeley Ditch Segment	No Historic Properties Affected US 34 Structure Widening Only
5LR11182	Eunice Linn Farmstead	No Historic Properties Affected Through CSS – cross section reduction
5LR11188	Hill Farm	No Historic Properties Affected Through CSS – cross section reduction
5LR8928.3	Farmers Ditch Segment	No Adverse Effect Through CSS - cross section reduction
5LR11210	McDonough Farm	No Historic Properties Affected Through CSS – cross section reduction
5LR11209	Schmer Farm	No Historic Properties Affected Through CSS – cross section reduction
5LR8928.1	Farmers Ditch Segment	No Adverse Effect US 34 Structure Widening Only
5LR503.2	Loveland and Greeley Ditch Segment	No Historic Properties Affected Outside US 34 impact area
5LR8928.4	Farmers Ditch Segment	No Historic Properties Affected Outside US 34 impact area
5LR1815.3	Union Pacific Railroad Segment	No Adverse Effect Through CSS – cross section reduction
5LR11297	Lauver Farmstead	No Historic Properties Affected Outside US 34 impact area
5LR11298	Kelim Elevator Site	No Historic Properties Affected Outside US 34 impact area
5LR11299	Zeiler Farm	No Historic Properties Affected Outside US 34 impact area

Indirect Effects

The following discussion addresses potential visual and noise effects on historic properties resulting from this project. Due to the rapidly expanding urban nature of this corridor, the project is not expected to compromise historic properties with ambient visual and noise conditions related to residual development.

Visual Effects

Construction along US 34 would alter the existing setting through the addition of travel and turn lanes, on-street bike lanes, parkway, and sidewalk areas that do not currently exist. The project would expand the horizontal profile of the highway but would not affect visibility of adjacent businesses or mountain background views. CDOT has determined that there would be no compromise to NRHP eligibility or site integrity from highway-related visual changes.

Noise Effects

Ambient noise in the project corridor is related to the current urban/commercial nature of the area. The setting for all identified NRHP eligible properties includes this ambient noise. Ambient noise in the corridor is related to the current urban/commercial nature of the area. The setting for all identified NRHP eligible properties includes this ambient noise.

As a result of the US 34 noise analysis (also see Section 3.3.9), the following historic properties were identified in areas subject to noise impacts under *CDOT Noise Analysis and Abatement Guidelines:*

- 5LR 11288 – Ackerman House (Receptor R 63)
- 5LR 9881 – Estate Services (Columbine Camp) (north of Receptor 55, 66-dB(A) contour line crosses middle of property)
- 5LR 11182 – Eunice Linn Farmstead (Receptor R27)
- 5LR 11188 – Hill Farm (Receptor R22)
- 5LR 11210 – McDonough Farm (Receptor R14)
- 5LR11209 – Schmer Farm (Receptor R7)

A 1- to 2-decibel level increase in noise is forecast by 2030 for these locations. This level of noise increase is barely perceptible and is not expected to compromise NRHP eligibility or site integrity for any of these properties. Highway-related shifts in noise are not expected to compromise NRHP eligibility or site integrity for these properties.

Mitigation Measures

No mitigation is required. However, the commitment to the use of context sensitive solutions (CSS) in design is applicable to US 34 design adjacent to all NRHP eligible properties. Should extensive ground disturbance in these areas occur from other sources such as private development prior to final design and construction, the CSS design would be reconsidered.

3.3.8 Section 4(f) Resources

3.3.8.1 What is Section 4(f)?

Section 4(f) of the DOT Act of 1966 (49 USC 303) states that the Secretary of Transportation cannot approve the acquisition of publicly owned land from a park, recreation area, or wildlife refuge, or land from

a national, state, or local historic site unless no feasible and prudent alternative exists. These properties are commonly referred to as 4(f) properties.

On August 10, 2005, the President signed into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Major provisions of Section 6009 of SAFETEA-LU include the first substantive revision of Section 4(f) legislation since passage of the US Department of Transportation Act of 1966.

> The requirements of Section 4(f) of the Department of Transportation Act will be considered satisfied with respect to a Section 4(f) resource if it is determined that a transportation project would have only a "*de minimis* impact" on the 4(f) resource. The Agencies with jurisdiction must concur in writing with the determination. For historic properties the *de minimis* criteria are defined as "no adverse effect" or "no historic properties affected" under Section 106 of the National Historic Preservation Act.

How do *de minimis* impacts relate to the US 34 project? For historic properties the *de minimis* criteria are defined as "no adverse effect" or "no historic properties affected" under Section 106 of the National Historic Preservation Act. See Section 3.3.7, Historic Preservation.

The *Guidelines for Determining De Minimis Impacts to Section 4(f) Resources* (December 13, 2005) state:

> Section 4(f) requires that the State Historic Preservation Officer (SHPO) and/or THPO (Tribal Historic Preservation Officer), and Advisory Council on Historic Preservation (ACHP) if participating, must concur in writing in the Section 106 determination of "no adverse effect" or "no historic properties affected." The request for concurrence in the Section 106 determination should include a statement informing the SHPO or THPO and ACHP, if participating, that the FHWA or Federal Transit Administration intends to make a *de minimis* finding based upon their concurrence in the Section 106 determination. The FHWA Division Administrator for Colorado is responsible for determining that this project meets the criteria and procedures set forth in the federal regulations.

3.3.8.2 Are there any Section 4(f) properties in the US 34 study area?

Sixteen NRHP eligible historic properties described in Section 3.3.7 are all considered Section 4(f) resources. The trail described in Section 3.1.6 is also considered a Section 4(f) resource. Impacts on Section 4(f) resources are described below.

No Action Alternative

No Section 4(f) resources would be affected by the No Action Alternative.

Action Alternative

De minimis effects have been identified for the following historic properties due to findings of No Adverse Effect under Section 106:

- **5LR1731.8 Colorado and Southern Railroad Segment.** The entire resource is considered eligible to the NRHP based on the seven previously recorded eligible segments (all in Larimer County). The US 34 bridge that spans this segment cannot accommodate proposed additional lane width and sidewalks, and will therefore be replaced with a wider structure. There is no information presently available on the location of new piers and supports, but the new bridge will remain on its present alignment. CDOT has determined that there will be no adverse effect to this segment of historic railroad.

- **5LR8928.3 Farmers Ditch Segment.** This 2,900-foot-long segment was determined eligible to the NRHP in August 2006. Construction will extend an existing box culvert approximately 6 to 8 feet in order to convey the ditch under the new highway alignment and include an attached sidewalk. The box culvert now measures 4 feet high and 14 feet wide. Construction will increase the culvert's width by 30 feet. Improvements to the culvert will not directly impact the ditch and will result in no adverse effect to the ditch.
- **5LR8928.1 Farmers Ditch Segment.** This 984-foot long segment maintains enough integrity to support the overall eligibility of the entire Farmers Ditch Canal and was determined officially eligible to the NRHP in August 2006. This segment is southeast of the I-25 interchange. Project construction will extend an existing pipe under US 34 by approximately 6 to 8 feet. The work will not directly impact the ditch and CDOT has determined there will be no adverse effect to the ditch.
- **5LR1815.3 Union Pacific Railroad Segment.** The Fort Collins branch of the Union Pacific Railroad was determined NRHP eligible in 2001 and this segment contributes to the overall eligibility of the line. The project intersects an at-grade railroad crossing and will extend the highway's width. The existing edges of pavement currently measure 110 feet wide, but the project will require 25 feet on the highway's north side to accommodate a merge lane from LCR 3. Construction will also require 10 feet for a new sidewalk to minimize disturbance to the railroad on both sides. CDOT has determined that there will be no adverse effect to this segment resulting from construction.

No impacts have been identified for the trail described in Section 3.1.6.

Mitigation Measures

No mitigation measures are required. FHWA concurrence letters on *de minimis* impacts are located in Appendix A, Environmental Coordination.

On January 9, 2007 and January 29, 2007 the Federal Highway Administration (FHWA) concurred with the finding that the effects of this proposed improvement constituted a *de minimis* impact and the requirements of 23 USC 138 and 49 USC 303 have been satisfied. See Appendix A.

3.3.9 Noise

This project is subject to *CDOT Noise Analysis and Abatement Guidelines* (December 1, 2002; see **www.dot.state.co.us/environmental/CulturalResources/NoiseGuidelines.asp**). CDOT guidelines are consistent with FHWA guidelines (23 CFR 772) and have been approved by FHWA for use on federal-aid projects. The Traffic Noise Model, TNM v2.5, (TNM) was used to predict existing and future noise levels along US 34, as well as to predict the noise reduction provided by any recommended mitigation per the *Evaluation of the FHWA Traffic Noise Model (TNM) For Highway Traffic Noise Prediction in the State of Colorado* (CDOT 2006).

3.3.9.1 What are noise sensitive areas in relation to US 34?

Noise sensitive areas are residences, businesses, schools, parks, and churches that may be adversely affected by traffic noise. Analysis includes both developed lands and undeveloped lands for which development is planned, designed, and programmed. The US 34 noise analysis consisted of identifying existing noise levels, predicting noise levels from both the No Action and Action Alternatives, and comparing noise levels to CDOT impact thresholds, as shown on Exhibit 3-12. The feasibility and reasonableness of noise mitigation measures were analyzed for each location where noise thresholds were

reached or exceeded. The following sections summarize noise analysis procedures and results. For additional information, refer to the *US 34 Noise Analysis Technical Memorandum* (Hankard Environmental Inc., January 26, 2007). Exhibit 3-12 shows CDOT's criteria for noise abatement; these are the noise impact threshold levels for which mitigation consideration must take place, based on the types of existing activities that are present.

Exhibit 3-12
CDOT Noise Abatement Criteria Hourly A-Weighted Sound Level in Decibels [dB(A)]

Activity Category	$L_{eq}(h)$[a]	Description of Activity Category
A	56 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	66 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	71 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	—	Undeveloped lands.
E	51 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

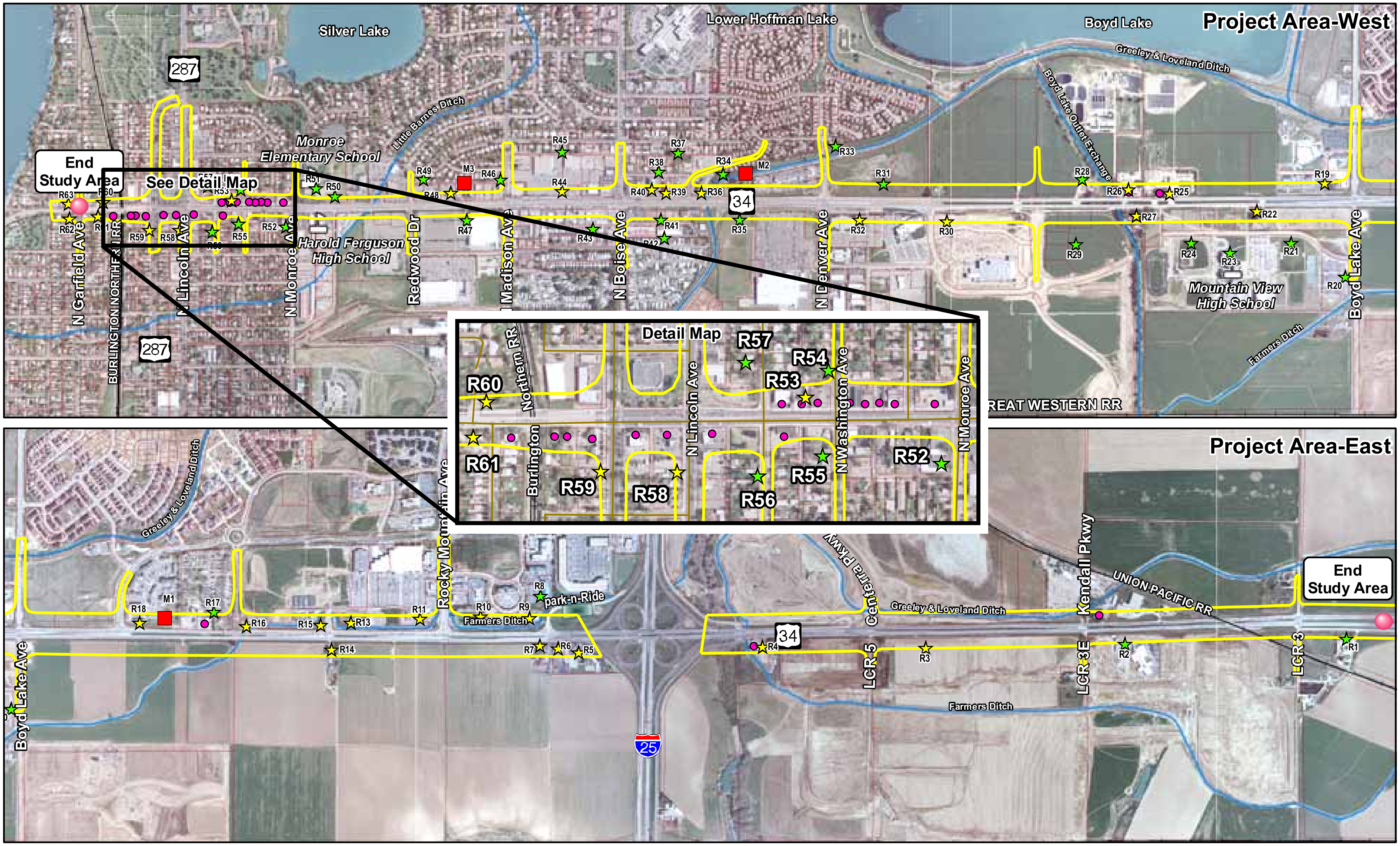
[a] *L_{eq} is the hourly A-weighted equivalent level for the "loudest hour" of the day in the design year.*

Noise measurements were conducted for US 34 between US 287 and LCR 3 on March 23 and 24, 2005. Noise levels were measured at three locations: M1, M2, and M3 as shown in Exhibit 3-13. Measurements were conducted using a Larson Davis Model 820 Sound Level Meter (ANSI Type 1). The windscreen-protected microphone was located 5 feet above the ground. The meter was set to continuously monitor the A-weighted equivalent noise level and log the average 5-minute L_{eq}, or equivalent steady-state sound level. A comparison of measured and predicted noise levels is provided in Exhibit 3-13. In all cases the predictions using the noise model are about 1 dB(A) louder than the measured levels. The desired model accuracy is ± 3 dB(A), which was achieved at all three locations.

Exhibit 3-13
Measured and Predicted Noise Levels [L_{eq} dB(A)]

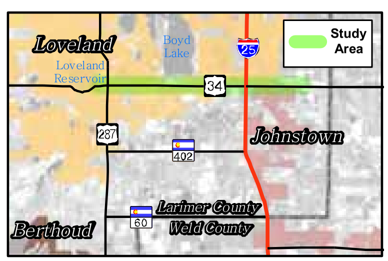
Site	Time	Measured Level in dB(A)	Predicted Level in dB(A)	Difference (Predicted Minus Measured)
M1 (311 McWhinney Blvd)	4:05 – 4:35 PM March 23, 2005	61.8	62.8	1.0
M2 (1988 N Cheyenne Ave)	7:55 – 8:20 AM March 24, 2005	52.5	53.6	1.1
M3 (1108 15th St – west of Madison Ave)	8:35 – 9:00 AM March 24, 2005	53.2	54.1	0.9
		Average Difference:		1.0

Loudest hour noise levels would be reached during the peak hour. Existing loudest hour traffic noise levels in the US 34 corridor range from 53 to 72 dB(A), with an overall average level of 64 dB(A). Congestion limits how much noise is generated, as the loudest hour occurs when a substantial volume of traffic is able to travel at free-flow speeds. Exhibit 3-14 displays the noise measurement and receptor locations on a map of the project corridor.



Legend

- RTD park-n-Ride
- Railroads
- Canals & Ditches
- Schools
- Lakes
- Parcels
- 66 dBA Noise Level Contour
- Structure Relocations (Action Alternative)
- Noise Receptors Impacted By 66 dBA Noise Level Contour
- Noise Receptors Not Impacted By 66 dBA Noise Level Contour
- Noise Measurement Locations



0 883 1,766 Feet

1 Inch = 1,766 Feet Or 1:21,200

Source: 2005 aerial photography provided by City of Loveland. Parks, schools, parcels, canals and ditches, lakes, roads, and railroads provided by City of Loveland. Relocations determined by J.F. Sato and Associates. Noise receptor information provided by Hankard Environmental.

Map created February 23, 2007.

US 34 Environmental Assessment

US 287 to Larimer County Road No. 3

Exhibit 3-14

Noise Measurements and Receptor Locations

3.3.9.2 What are the areas of direct noise impact along US 34?

A home or business located within the project study area is considered "impacted" by noise under CDOT guidelines when either of two conditions exist: 1) when the predicted design-year loudest-hour noise level equals or exceeds 66 dB(A) for Category B receivers (residences, motels and hotels) and 71 dB(A) for Category C receivers (commercial), or when the design-year noise level is predicted to exceed the existing levels by 10 dB(A) or more.

Subsequent to the identification of noise measurement locations, noise levels were predicted for a total of 63 noise receptors for each condition under study (Existing, No Action and Action). A noise receptor can represent a single building, multiple structures, or an area. Exhibit 3-14 illustrates the location of these receptors in the project corridor, and Exhibit 3-15 provides receptor descriptions, locations, activity categories, predicted levels and impacts.

No Action Alternative

Eleven residential areas (approximately 18 single family homes and 12 multi-family homes), 5 hotels, and 3 commercial areas are predicted to be impacted by noise under the No Action Alternative. All of these noise impacts are due to meeting or exceeding the maximum noise level in the Noise Abatement Criteria (see Exhibit 3-12). In some cases the existing condition already exceeds the Noise Abatement Criteria. Noise mitigation will not be considered under the No Action Alternative, as there is no proposed action.

Action Alternative

Under the Action Alternative, 11 residential areas (approximately 18 single family homes and 12 multi-family homes), 5 hotels, and 6 commercial areas are predicted to be impacted by noise. All of these noise impacts are due to meeting or exceeding the maximum noise level in the Noise Abatement Criteria (see Exhibit 3-12). The largest predicted noise level increase under the Action Alternative is 7 dB(A), and this occurs at the church off of South Boyd Lake Avenue. The overall average increase across the entire noise study area is 2 dB(A). Noise mitigation analyses for each impacted area are discussed in Section 3.3.9.3.

The 66 dB(A) noise contour line for the Action Alternative is shown graphically in Exhibit 3-14. All of the area between the roadways and the contour has a predicted noise level equal to or greater than 66 dB(A). The 71-dB(A) contour line is contained between the 66-dB(A) contour and US 34 and is not shown.

Exhibit 3-15
Predicted Loudest Hour Noise Levels and Impacts by Receptor

No.	Description	Activity Category	Predicted Levels			Increase	Impacts?
			Existing 2005	Action 2030	No Action 2030	Action 2030	Action 2030
R1	Mixed Use (SE of LCR 3)	C	62	65	64	3	
R2	Northern CO Rehab Hospital (SE of LCR 3E)	B	63	65	64	2	
R3	New Bank (SE of LCR 5)	C	64	66	65	2	
R4	Gas Station (SE of I-25)	C	68	70	69	2	
R5	Best Western (SW of I-25)	B	67	69	68	2	Yes (B)
R6	Gas Station (SW of I-25)	C	70	71	70	1	Yes (C)
R7	Schmer Farm (SW of I-25)	B	71	72	72	1	Yes (B)
R8	Hampton Inn (NW of I-25)	B	58	59	58	1	
R9	International House of Pancakes (NW of I-25)	C	65	67	65	2	

No.	Description	Activity Category	Predicted Levels			Increase	Impacts?
			Existing 2005	Action 2030	No Action 2030	Action 2030	Action 2030
R10	Visitor Center & Chamber of Commerce (NW of I-25)	C	64	66	64	2	
R11	Chili's & Johnny Carinos Restaurants (NW of Rocky Mtn)	C	65	68	66	3	
R12	removed	--	--	--	--		
R13	Black Eyed Pea and Good Times Restaurants (NE of Fall River)	C	68	71	69	3	Yes (C)
R14	McDonough Farm (S of Fall River)	B	68	70	69	2	Yes (B)
R15	Mimi's Café (NW of Fall River	C	70	72	71	2	Yes (C)
R16	Bank (NE of Hahn's Peak)	C	71	73	72	2	Yes (C)
R17	Loveland RV Village and Campground	B	62	65	64	3	
R18	The Reserve Apartments (NE of McWhinney)	B	70	72	71	2	Yes (B)
R19	Bank and Offices (NW of Boyd Lake Ave)	C	65	67	66	2	
R20	Church (SW of Boyd Lake Ave)	B	56	63	62	7	
R21	Mountain View HS (MVHS): Fields (S of US 34)	B	57	59	58	2	
R22	Hill Farm (in front of MVHS)	B	71	73	71	2	Yes (B)
R23	MVHS (S of US 34)	B	57	60	58	3	
R24	MVHS: Ballfield (S of US 34)	B	58	60	58	2	
R25	J-B Investments Commercial (3227 US 34)	C	72	73	73	1	Yes (C)*
R26	Loveland Tall Pines (3167 US 34)	C	69	71	70	2	Yes (C)
R27	Residence (3228 US 34) south side	B	69	71	70	2	Yes (B)
R28	Residence (3053 US 34) north side	B	62	64	63	2	
R29	Lowe's (SE of Sculptor)	C	58	60	59	2	
R30	Skyline Urgent Care (SW of Sculptor)	C	65	67	65	2	
R31	Retail Shops (NW of Denver)	C	64	66	65	2	
R32	Old Metro Lux Theaters (SE of Denver)	C	65	68	66	3	
R33	Residential Neighborhood (NE of Denver)	B	60	60	59	0	
R34	Residential Neighborhood (NE of Cheyenne)	B	59	60	59	1	
R35	Offices and Commercial (SW of Denver)	C	62	65	64	3	
R36	Comfort Inn (NE of Cheyenne)	B	68	71	70	3	Yes (B)
R37	Multi-Family Residential (NE of Boise off 16th)	B	54	56	55	2	
R38	Residential Duplexes (NE of Boise off 15th)	B	57	58	57	1	
R39	Super 8 (NW of Cheyenne)	B	68	69	68	1	Yes (B)
R40	Quality Inn (NE of Boise)	B	66	67	66	1	Yes (B)
R41	Commercial/Retail/Restaurant (SE of Boise)	C	62	64	62	2	
R42	Residential Area (SE of Boise off Sandstone Dr)	B	56	57	57	1	
R43	Residential Area (SW if Boise off Sylmar Pl)	B	58	59	58	1	
R44	Commercial/Retail (north side Madison – Boise)	C	67	67	66	0	
R45	Residential (north side off 16th)	B	53	54	53	1	
R46	Apartments (north side 15th and Madison)	B	65	65	65	0	
R47	Sam's Club (SW of Madison)	C	63	64	62	1	
R48	Highway Motel (NW of Redwood)	B	65	66	65	1	Yes (B)
R49	Residential Area (NE off 16th and Redwood)	B	58	59	58	1	
R50	Monroe Elementary: Fields (NE of Monroe)	B	64	65	65	1	
R51	Monroe Elementary School (NE of Monroe)	B	60	62	60	2	
R52	Rosebud Motel (SW of Monroe)	B	59	59	59	0	
R53	Gateway Motel (north side Jefferson – Washington)	B	66	72	67	6	Yes (B)*
R54	Residential (behind Gateway Motel)	B	59	65	62	6	
R55	Mobile Home Park (south side Jefferson – Washington)	B	62	62	63	0	
R56	Residences (SW of Jefferson)	B	60	61	60	1	

No.	Description	Activity Category	Predicted Levels			Increase	Impacts?
			Existing 2005	Action 2030	No Action 2030	Action 2030	Action 2030
R57	Residences (NE of Lincoln)	B	60	61	60	1	
R58	Residences (SW of Lincoln)	B	66	67	65	1	Yes (B)
R59	Residences (SW of Cleveland)	B	65	66	65	1	Yes (B)
R60	Residences north side Garfield – BNRR tracks	B	67	68	67	1	Yes (B)
R61	Residences (south side Garfield - BNRR tracks)	B	68	69	68	1	Yes (B)
R62	Residences (SW of Garfield)	B	66	67	67	1	Yes (B)
R63	Residences (NW of Garfield)	B	67	69	67	2	Yes (B)

**Property acquired as part of this project*

Source: Hankard Environmental Inc. US 34 Noise Impact Analysis, *Jan. 26, 2007*

3.3.9.3 What areas along US 34 may need to be considered for noise mitigation measures?

CDOT's guidelines establish noise abatement criteria, design requirements, and cost-effectiveness requirements for noise mitigation. These guidelines state that noise mitigation should be considered for any receptor or group of receptors for which predicted traffic noise levels (using future traffic volumes and highway conditions) approach or exceed CDOT's Noise Abatement Criteria (NAC) shown in Exhibit 3-12. CDOT defines the approach level as 1 dB(A) less than the values shown in Exhibit 3-12. Thus, a noise impact for Category B receptors (residences) occurs when the future noise levels reach or exceed 66 dB(A).

To be included in a project, a proposed noise mitigation measure must first be found to be feasible. Feasibility criteria include:

To be included in a project, a proposed noise mitigation measure must be first feasible, then reasonable.

- Mitigation measure must be predicted to achieve at least 5 dB(A) of noise reduction at front row receptors, and preferably 10 dB(A).
- The mitigation measure must not create any safety or maintenance issues such as reduced sight distances, shadowing of ice-prone areas, or interference with snow/debris removal.
- Noise barriers must be constructed in a continuous manner since gaps for driveways significantly degrade their performance.

If a mitigation measure is found to be feasible, then it is a analyzed for reasonableness as follows:

- The cost benefit index should not exceed $4,000 per decibel of reduction per benefited receptor.
- The predicted design-year noise levels should be equal to or exceed the Noise Abatement Criteria (shown in Exhibit 3-12).
- At least 50 percent of the affected property owners should approve of the proposed noise reduction measure.
- Land use in the affected area should be at least 50 percent Category B (see Exhibit 3-12).

Noise mitigation analysis was conducted for each of the areas considered impacted by noise. The feasibility and reasonableness of applying each of these measures to this project are as follows:

- Noise barriers are not considered feasible or reasonable at any of the commercial receptors located along the project corridor because all have direct access issues, none have any active outdoor use areas that would benefit from a barrier, and many usually prefer the direct visual exposure to the highway.
- Noise barriers are also not considered feasible or reasonable at any of the hotels or motels along this corridor due to direct access issues, the fact that many of the rooms are elevated and would not benefit from a barrier, lack of outdoor use, and the usual desire by operators for visibility from the highway.

Noise barriers are not considered **feasible or reasonable** for:

- Commercial receptors
- Hotels and motels
- Isolated residences
- Where driveways make large openings in the barrier

- Noise barriers are not reasonable for isolated residences due to excessive cost and the low number of homes protected.
- Any receptor that has direct access (a driveway) onto US 34 results in a large opening in the noise barrier to safely enter and exit the property. This eliminates most of the noise reduction benefit that a wall would provide, making a wall infeasible (that is, it would not achieve the minimum 5 dB(A) of noise reduction needed).

Mitigation Measures

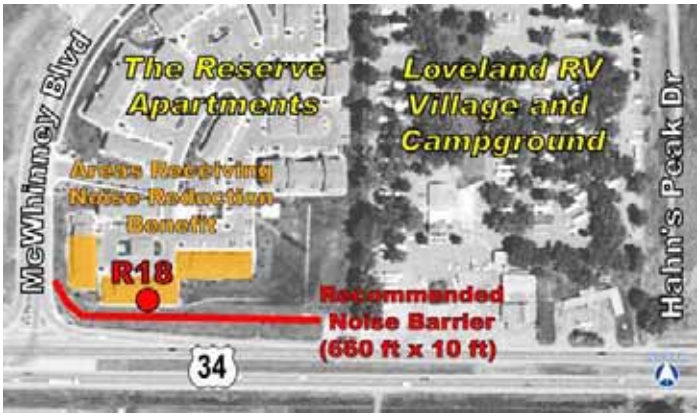
Residences between N. Garfield Avenue and the BNRR Bridge

After application of the above feasible and reasonable criteria, three receptors in the US 34 corridor required additional analysis. Receptors 60 and 61 at the far western end of the corridor represent residences located on both sides of US 34 between North Garfield Avenue and the BNRR bridge. The predicted noise levels for these homes under the Action Alternative (year 2030) are 68 to 69 dB(A), which is a 1-dB(A) increase over the existing levels. Although a noise wall is not considered feasible for either of these locations, some noise reduction could be provided by construction of a closed rail safety barrier on both sides of US 34 in association with the bridge improvements. The area would be re-examined during final design.

The Reserve Apartments

The Reserve Apartments (Receptor 18) are located on the north side of US 34 off McWhinney Blvd. Based on visual inspection, each building appeared to contain five ground-floor units each. The predicted noise level for these apartments under the Action Alternative (year 2030) is 72 dB(A), which is a 2-dB(A) increase over the existing levels. A 660-foot-long barrier was modeled along the proposed CDOT right-of-way, which is located on top of the existing terrain that currently provides some noise reduction. The easternmost 100 feet of the barrier diverts

Exhibit 3-16
Location of Noise Barrier Analyzed for the Reserve Apartments



from the CDOT right-of-way and wraps around to the north along McWhinney Blvd. Exhibit 3-16 shows where the barrier was placed in the model.

The amount of noise reduction, in dB(A), that would be achieved by the barrier was predicted for barrier heights ranging from 6 to 12 feet. Predictions were made using both the “wall” and “berm” barrier types in the TNM model. The desired noise reduction is 5 to 10 dB(A). The results were that a 10-foot-tall barrier is appropriate. The cost benefit ratios for either the wall or berm barriers modeled is less than CDOT’s standard of $4,000 per dB of noise reduction per benefited receptor. The cost of each modeled barrier was calculated using a unit cost of $30 per square foot for walls and $10 per cubic yard for berms. Noise reduction was calculated using TNM. The number of benefited receptors is calculated as the number of homes where at least 3 dB(A) of noise reduction was predicted, and for the 10-foot-tall barrier there are 14 benefited receptors. Based on this analysis, a 10-foot-tall barrier would be considered for this area in the approximate location shown in Exhibit 3-16. This analysis would be re-examined during the final design phase of the project.

Natural Environment

Natural environment resources and issues described in this section include:

- Threatened and endangered species and species of special concern
- Floodplains
- Geology and soils
- Paleontological resources
- Vegetation and Noxious Weeds
- Wildlife
- Wetlands
- Water quality

3.4 The Natural Environment: What's There Now?

3.4.1 What types of vegetation are found along US 34?

Except for several small farming activities along the south side between the Boyd Lake Outlet Exchange and I-25, where corn, wheat, sorghum, and other irrigated and non-irrigated crops are present, most of the vegetation is related to highway right-of-way and irrigation ditch edges or manicured landscaping associated with retail development. No threatened and endangered species or species of concern have been identified as likely to occur in the project corridor.

A stand of 80-year-old Colorado blue spruce (*Picea pungens*) trees is located in the US 34 median and on the north side of US 34 in the vicinity of the Boyd Lake Outlet Exchange irrigation ditch. As of 2006, 15 of these 50- to 60-foot trees have survived in the US 34 median.

3.4.2 Are any noxious weeds found along US 34?

Two species of noxious weeds, Canada thistle (*Cirsium arvense*), and field bindweed (*Convolvulus arvensis*), were found in the project area. Patches of these weeds were scattered along the US 34 right-of-way. The degree of infestation by noxious weeds in the project area is relatively light and manageable through integrated weed management, which includes prevention of additional infestations during construction.

The Canada thistle is found on the Colorado, Larimer County, City of Loveland, and CDOT weed lists. On the Colorado list, the Canada thistle is a List B species, those with discrete statewide distributions that are subject to eradication, containment, or suppression in portions of the state designated by the commissioner to stop the continued spread of these species.

Field bindweed is found on the Colorado Noxious Weeds List as a List C species, those that are widespread and well-established for which control is recommended but not required by the state. While not identified on the Larimer County list, field bindweed is also listed by the City of Loveland.

3.4.3 Is wildlife found in the US 34 study area?

Animals expected to occur along the project corridor are those typically associated with highly disturbed areas of Colorado's Front Range and those able to live in close proximity to human developments. Species of birds observed included several species of passerines, swallows, American kestrels, black-billed magpies, a great blue heron, several pigeons, mourning doves, robins, northern flickers, western meadowlarks, and red-winged black birds. The most common mammals expected to occur include deer

mice (*Peromyscus maniculatus*), harvest mice (*Reithrodontomys* spp.), house mice (*Mus musculus*), prairie voles (*Microtus ochrogaster*), meadow voles (*M. pennsylvanicus*), and other small rodents. Larger animals including striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), and to a lesser extent red fox (*Vulpes vulpes*) and coyote (*Canis latrans*) may also occur within the project study area. However, ongoing conversion of rural undeveloped lands to commercial and residential uses deters larger animals from occurring with regularity. Within the immediate vicinity of the earth-lined irrigation ditches and associated wetlands with contiguous stands of undisturbed or only moderately disturbed vegetation, animal usage is expected to be higher. No threatened and endangered species or species of concern have been identified as likely to occur in the project corridor.

3.4.4 What wetlands are found in the US 34 project study area?

Small wetlands are found in four areas along the US 34 corridor, in proximity to the Greeley and Loveland Ditch on both sides of US 34 near the pedestrian underpass, on both sides of US 34 at the Boyd Lake Outlet Exchange Ditch, on the south side of US 34 along the west side of the Farmers Ditch nears Hahn's Peak Drive, and on the north side of US 34 west of the UPRR crossing (see Exhibit 3-19).

3.4.5 What surface water exists in the project study area?

The US 34 project area is located within the Big Thompson Watershed, which extends from the Continental Divide at Longs Peak (14,251 feet) to its confluence with the South Platte River (4,800 feet) south of Greeley. The 900-square-mile watershed includes the Big Thompson River, the Little Thompson River, and all tributaries prior to joining the South Platte River, including several reservoirs and lakes. The upper watershed has a relatively low population density, while the lower portions support a combination of agricultural and urban areas including Loveland and Johnstown.

The primary water features within one-half mile of the project area are agricultural ditches and lakes. Most of the ditches are also used to convey stormwater. From west to east, US 34 crosses four irrigation ditches at six different locations. These ditches and crossings are described in Section 3.3.6, Utilities, Irrigation Ditches, and Railroads, and in Section 3.3.7, Historic Preservation. A series of lakes are located less than 1 mile north of US 34 between downtown Loveland and I-25: Lake Loveland, Silver Lake, Lower Hoffman Lake, Boyd Lake, and Equalizer Lake. None are immediately adjacent to US 34.

The Big Thompson River is generally parallel to and south of US 34 in the project area. The river comes within 1 mile of US 34 near the I-25 interchange. From there, it veers southeast to its confluence with the Little Thompson River about 12 miles downstream and its confluence with the South Platte River about 5 miles further downstream.

3.4.6 What groundwater is associated with the project study area?

Groundwater in the project area is associated with the alluvial and terrace deposits of the Big Thompson Watershed. According to the MESA (2005), soils along US 34 are expected to consist of a surface layer of sandy clay overlying sand and gravel, which in turn overlies Pierre Shale bedrock. Groundwater is approximately 10 to 15 feet below ground surface with some areas of shallower water in the vicinity of irrigation ditches. Shallow groundwater in the project area generally flows east/southeast toward the Big Thompson River. Groundwater flow direction can also be influenced by factors such as underground

structures, seasonal fluctuations, and soil and bedrock geology. Groundwater quality associated with contamination issues is discussed in Section 3.3.5, Hazardous Materials/Waste.

A search of the Colorado Division of Water Resources online database (DWR 2006) of permitted wells revealed a total of 24 wells within one-fourth mile of US 34 in the project area. Seven wells are abandoned, eleven are monitoring wells, five are domestic, one is irrigation, and the remaining wells are not identified as to use. Domestic wells tap the shallow upper groundwater zone and are less than 40 feet in depth, with water levels ranging from 6 to 19 feet below ground level.

3.4.7 Where does the water supply come from?

The Big Thompson Watershed is a conduit for the Colorado-Big Thompson trans-basin water diversion project. The project annually provides 230,000 acre-feet of water from the Colorado River, west of the Continental Divide, for Front Range municipal, industrial, and agricultural water users. The diverted water comprises more than two-thirds of the total flow of the Big Thompson system and is an irreplaceable source of municipal water for more than 750,000 Front Range residents. The watershed also provides critical agricultural supplies and is a recreational source of water. Local water supplies include a number of area lakes and reservoirs and upgradient segments and tributaries of the Big Thompson River. There are no mapped 100-year floodplains in the area of the project. The nearest public water supply sources to the project area include Boyd Lake and Silver Lake. Loveland obtains water directly from the Big Thompson River and from the Green Ridge Glade Reservoir. The treatment plant and water intakes are located along the Big Thompson River approximately 7 miles west of Loveland in the Rocky Mountain foothills.

3.4.8 What is the geology underlying US 34?

Geologic units underlying the US 34 corridor include a veneer of upper Pleistocene to upper Holocene eolium (loess and eolian sand) of unknown thickness and underlying bedrock of the Upper Cretaceous Pierre Shale. The Pierre Shale, a fossiliferous shale and sandstone with limestone concretions, is about 6,800 feet thick in the project area. It crops out in a belt as much as 20 miles wide from Loveland northward. The structure of the bedrock in the project area is generally characterized by gently east-dipping beds. The US 34 project corridor is located in an area of low seismic activity with no recent faulting and low topographic relief, and there are no known historic seismic epicenters located near the project area. No potentially fossiliferous exposures of bedrock Pierre Shale were found anywhere within the corridor.

3.4.9 What soils are present along US 34?

Surface soils are primarily derived from the Pierre Formation, resulting in slightly sandy loams. Pockets of sandy and gravelly loams are present due to mixing with alluvial material derived from the Big Thompson river migration. Due to the gradual terrain in the study area, the erosion potential is considered “slight.”

3.4.10 What mineral resources are found in the vicinity of US 34?

The Loveland Oil Field is still in production and underlies US 34 from just east of US 287 to LCR 3. According to the Colorado Oil and Gas Conservation Commission (COGCC) website database, Colorado Oil and Gas Information System (COGIS), six oil and gas wells were located adjacent to the subject corridor. Only one wellhead is located immediately next to the US 34 roadway, identified as McDonough #16-2. The wellhead and tank battery were observed on the south side of US 34 across from Centerra

Market Plaza and Rocky Mountain Avenue. The wellhead was operating approximately 300 feet south of the roadway within an agricultural field. Tom Fenno Production LLC currently operates the well, which has been in production since 1984. Three wells have been abandoned with commercial development overlying two former wells. Two wells were apparently never completed.

Aggregate producers in the Denver metropolitan area have been required to move farther from the market area to obtain new gravel resources because nearby resources are being depleted through mining or have been covered by competing land uses. According to the Colorado Division of Minerals and Geology database (at **http://mining.state.co.us,** May 2006) of permitted mines, five permits are reported within 1 mile of the project corridor. These permits are all associated with sand and gravel operations located along the Big Thompson River south of the corridor and within 1 mile west of I-25.

3.5 Which Natural Resources Would Not Be Affected?

No impacts are associated with the resources in this section for either the No Action or the Action Alternatives. In the case of the No Action Alternative, indirect effects of the resulting increased traffic congestion, safety issues, access problems, and slower speeds would occur. The inability of the No Action Alternative to meet the project purpose and need may indirectly affect the resources that rely on mobility, safety and 2030 travel demand requirements being met. Resources that are only affected by construction activities in a proposed highway right-of-way would not be affected by No Action.

The following resources would **not** be directly affected and would **not** require commitments and mitigation:

- Threatened and endangered species and species of special concern
- Floodplains
- Geology and soils
- Paleontological resources

3.5.1 Threatened and Endangered Species and Species of Special Concern

The Endangered Species Act of 1973 established measures for conservation of federally listed plant and animal species, including protection of critical habitat necessary for their continued existence (16 USC §§ 1531 *et seq*). Critical habitat is defined as designated areas of a listed species' habitat that are essential to the conservation of that species. Federally listed and state-listed threatened, endangered, and other sensitive species (including federally proposed species and candidates for federal listing), state species of concern, and species considered imperiled in the state were assessed for potential project impacts. These species are collectively referred to as TES species. In accordance with Section 7 of the Act, an informal consultation was conducted with the US Fish and Wildlife Service (USFWS) to obtain a list of species with potential to occupy the project area (see Appendix A for correspondence).

Exhibit 3-17 lists the individual TES species identified by the USFWS (letter dated March 9, 2005) that may occur within or near the vicinity of the US 34 project study area. It also summarizes the conclusions that none of these species are expected to be present in the US 34 study area.

The USFWS also lists an additional six federally endangered or threatened species that are known to occur along the Platte River system that could potentially be affected by project activities. These include the whooping crane (*Grus americana*), least tern (*Sterna antillarum*), Eskimo curlew (*Numenius borealis*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), and western prairie fringed

orchid (*Platanthera praeclara*). Project activities that could potentially affect these species as well as designated critical habitat for the whooping crane and piping plover include new and/or existing water depletions to the Platte River system. Because this project would not result in any water depletions or modifications to the Platte River system, none of these species are discussed further.

No candidate species or suitable habitat were identified in the US 34 study area based on field reconnaissance and communication with USFWS.

Because no TES species or species of special concern have been identified as likely to occur in the project corridor, no adverse effects are associated with the implementation of the Action Alternative. No mitigation is required. However, USFWS requires updated documentation on the TES plant species prior to implementation of construction activities. USFWS concurrence for Preble's meadow jumping mouse must also be renewed before construction. Additional evaluation and surveys, if warranted, would be performed prior to project construction for any new TES species identified

Exhibit 3-17
TES Species Identified by USFWS as Potentially Occurring in the Project Study Area

Species	Scientific Name	Status	Probability of Occurrence/ Potential to Be Affected
Bald eagle	*Haliaeetus leucocephalus*	FT, ST	No; due to absence of riparian habitat, any winter forage habitat, other food sources (such as prairie dog towns) and roosting trees/No adverse effects anticipated.
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	FT, ST	No; lack of suitable habitat/No adverse effect anticipated. Concurrence from USFWS dated September 27, 2005, can be found in Appendix A.
Black-footed ferret	*Mustela nigripes*	FE	No; lack of suitable habitat (no prairie dog towns observed)/No adverse effect
Ute ladies'-tresses orchid	*Spiranthes diluvialis*	FT	No; lack of suitable wet meadows and no individuals observed during site survey/No adverse effect anticipated. Concurrence from USFWS dated September 15, 2005, can be found in Appendix A.
Colorado butterfly plant	*Gaura neomexicana coloradensis*	FT	No; lack of undisturbed wet meadows and no individuals observed during site survey/No adverse effect anticipated. Concurrence from USFWS dated September 15, 2006, can be found in Appendix A.

FT = listed as federally threatened, ST = listed by Colorado as threatened; FE = listed as federally endangered

3.5.2 Floodplains

There are no mapped 100-year floodplains in the area of the project. No direct or indirect floodplain impacts are associated with the Action Alternative.

3.5.3 Geology and Soils

Although soils associated with Pierre Shale have a potential for volume change (swelling pressure) that can cause serious problems with engineered structures, soils in the project area are relatively competent, and compaction and swelling issues are not considered serious problems in the area. In addition, the Action Alternative is located in an area of low topographic relief and little disturbance is proposed. It is unlikely that the project would produce or be affected by slope instability or landslides. The project area contains relatively competent soils and is not expected to produce a substantial amount of erosion or to be adversely affected by erosion. The project would not directly affect area sand and gravel or oil and gas well operations. Local construction materials for the project may be available from the gravel pits or from other alluvial deposits of the Big Thompson River.

3.5.4 Paleontological Resources

As mapped by Colton (1978) and Scott and Cobban (1986), the study corridor contains two geologic units, including a veneer of upper Pleistocene to upper Holocene eolium (loess and eolian sand) of unknown thickness, which covers the entire surface of the study corridor, and underlying bedrock of the upper Cretaceous Pierre Shale, which underlies the eolium at a shallow depth within the study corridor. Holocene eolium is too young to contain fossils and has no paleontological sensitivity; upper Pleistocene eolium is known to contain uncommon and typically poorly preserved but often identifiable fossils, and has low paleontological sensitivity. The Pierre Shale contains locally abundant fossil marine invertebrates, and less common fossil terrestrial plants and marine and terrestrial vertebrates. It has high paleontological sensitivity.

No fossils were found within the US 34 study corridor during the field survey. No potentially fossiliferous exposures of bedrock Pierre Shale were found anywhere within the corridor.

The scope of the paleontology study included both pre-survey literature and museum record searches, as well as a field survey. No previously documented fossil localities from within the US 34 study corridor are recorded in the databases of the University of Colorado Museum (UCM) and the Denver Museum of Nature and Science (DMNS), and none were found in the scientific or technical literature. However, 36 previously recorded fossil localities occur within the Pierre Shale within 5 miles of the study corridor (Scott and Cobban, 1986; unpublished DMNS and UCM paleontological data), and numerous other Pierre Shale fossil localities have been recorded in Colorado and some adjacent states.

No fossils were found within the US 34 study corridor during the field survey. No potentially fossiliferous exposures of bedrock Pierre Shale were found anywhere within the corridor. The surface of the APE is topographically flat and previously disturbed by a combination of uses including existing roadways, commercial, agricultural, and ranching. Some parts of the corridor are landscaped, and soil, where it is visible on the surface, contains no fragments of bedrock.

Based on the paleontology study results and the projected low probability of construction impacts on high paleontological sensitivity bedrock outcrop, adverse impacts on scientifically significant paleontological resources during construction are unlikely. The potential need for impact mitigation during construction will be addressed during the final design phase of any future reconstruction project(s) within the study corridor.

3.6 Which Resources Would Be Affected and What Commitments and Mitigation Would Occur?

3.6.1 Vegetation and Noxious Weeds

No Action Alternative

No impacts on vegetation would occur from the No Action Alternative. Noxious weed infestation in the project corridor today is relatively light.

The following resources would directly affected and would require commitments and mitigation:

- Vegetation and noxious weeds
- Wildlife
- Wetlands
- Water quality

Action Alternative

The Action Alternative would have direct impacts on vegetation from clearing, excavation and grading. Impacts on the mature spruce trees in the median and at the north edge of US 34 near the Boyd Lake Outlet Exchange would be avoided; however, numerous shrubs and approximately 12 trees would be removed along the US 34 corridor as a result of this project.

Impacts on noxious weeds could occur from soil disturbing activities. Construction would disturb areas already inhabited by weeds as well as areas that currently have minor weed cover. In these areas, there is a potential for accelerated weed infestation. Temporary work areas would also be susceptible to weed invasion.

Mitigation Measures

All CDOT revegetation Best Management Practices (BMPs) and guidelines would be followed to ensure adequate revegetation of the study area. All disturbed areas would be seeded in phases throughout construction. Mitigation measures are anticipated to include the following activities:

What are Best Management Practices (BMPs)?
BMPs are common sense actions, schedules of activities, prohibitions, and practices applicable to a variety of resources. For example, for water quality issues, BMPs are used to control erosion and sedimentation and minimize pollution of stormwater runoff and receiving waters both during and after construction.

- Limit the amount of disturbance of grading to 10 feet beyond the toe of slope. Project would follow CDOT standard specifications for amount of time that disturbed areas are allowed to be non-vegetated.
- Avoid existing trees, shrubs and vegetation, to the maximum extent possible. Schedule a preconstruction site visit to identify the vegetation that would be protected during construction, including fencing off vegetation and using sediment control BMPs where needed to prevent erosion impacts on root systems of plant materials.
- Implement temporary and permanent erosion and sediment control measures to limit erosion and soil loss. Slopes should be roughened at all times.
- Revegetate all disturbed areas with native grass and forb species. Seed, mulch and mulch tackifier would be applied in phases throughout construction.
- Remove topsoil heavily infested with noxious weeds from the site or bury it under a minimum of 5 feet of fill.

The Integrated Noxious Weed Management Plan located in Appendix E will be updated during the design phase immediately before the construction phase.

3.6.2 Wildlife

A number of federal and state statues, regulations, and policies are associated with protecting and assessing wildlife and wildlife habitat. The federal Migratory Bird Treaty Act of 1918, as amended, provides for the protection of migratory birds, including their nests and eggs. As a result, the construction effects on the tree and shrub habitat associated with the US 34 project corridor have been considered. The Fish and Wildlife Coordination Act of 1934, as amended, is a federal law that requires consultation with the United States Fish and Wildlife Service (USFWS) to prevent loss of and damage to wildlife resources for projects that may impound, divert, control, or otherwise modify the water of any stream or other water body. The Fish and Wildlife Conservation Act of 1980, as amended, is a federal law that includes a provision for the USFWS to determine the effects of environmental changes and human activities. This law is relevant to the assessment of the US 34 project's potential effects on wildlife and wildlife habitat.

The Colorado Division of Wildlife, under the authority of the Colorado State Revised Statutes 33-1, 33-4, and 24-4, protects non-game species and administers laws governing hunting and possession of wildlife.

Wildlife species that can adapt to the rapidly developing area would be expected to continue to use the riparian/irrigation ditch corridors, landscaped areas, and open space areas regardless of the highway construction project. Wildlife species that habituate such areas are likely to be unaffected by construction disturbances.

No Action Alternative

No wildlife impacts are associated with the No Action Alternative.

Action Alternative

Since the entire US 34 corridor is already disturbed, minimal impacts to wildlife are anticipated. Compliance with requirements of the Migratory Bird Treaty Act (MBTA) would apply for any tree or shrub removal along the corridor. Numerous shrubs and approximately 12 trees are expected to be removed.

Mitigation

Mitigation of wildlife impacts would include the following activities:

- Minimize disturbance to native plant communities
- Minimize tree removal
- Use erosion control techniques, such as silt fences, to protect surrounding areas that may be used by wildlife species
- Use wildlife-friendly erosion control blankets to minimize impacts on wildlife
- Follow requirements of the Colorado Department of Transportation Region 4, as follows: The MBTA protects all migratory birds, nests and eggs except English sparrow, European starling, rock dove, and resident game birds. For projects that could potentially result in the killing, taking, harassing, or harming of these birds, the following conditions must be adhered to:

Tree trimming/removal. Tree trimming and/or removal activities shall be completed before birds begin to nest or after the young have fledged. In Colorado most nesting and rearing activities occur between April 1 and August 31. However, since some birds nest as early as February, a nesting bird survey must be conducted by a biologist before any tree trimming or removal activities begin.

Bridge/box culvert work. Bridge or box culvert work that may disturb nesting birds must be completed before birds begin to nest or after the young have fledged. No bridge or box culvert work may take place between April 1 and August 31. If work activities are planned between these dates, nests must be removed (before nesting begins) and appropriate measures taken to assure no new nests are constructed. Failure to remove and keep nests from becoming established could postpone construction of the project.

Clearing/grubbing activities. Clearing and grubbing of vegetation that may disturb ground nesting birds must be completed before birds begin to nest or after the young have fledged. If work activities are planned between April 1 and August 31, vegetation must be removed and/or trimmed to a height of six inches or less prior to April 1. Once vegetation has been removed and/or trimmed, appropriate measures (such as repeated mowing/trimming) must be implemented to ensure vegetation does not grow more than six inches. Failure to maintain vegetation height of six inches or less could provide habitat suitable for nesting birds that could postpone construction of the project.

3.6.3 Wetlands

The presence of wetlands in the project area was determined from aerial photograph interpretation and confirmed in field investigations. Wetland determination methods followed 1987 US Army Corps of Engineers guidelines that specify vegetation, soil, and hydrology characteristics used to identify wetlands. Exhibit 3-18 summarizes wetlands by location and potential impacts. Exhibit 3-19 illustrates general wetland locations along the US 34 corridor.

Plant species for all wetlands were very similar and are considered typical Front Range ditch habitat. All wetlands were categorized as palustrine emergent. Dominant species were all in the herbaceous layer and included grasses, sedges, bulrush, cattail, and thistles. There was one wetland (#6) categorized as a shrub/scrub palustrine emergent wetland. This categorization resulted from vegetation being located in the channel bottom, sandbar willow being present, and adjacent vegetation being very weedy.

Additional wetland descriptions and maps of the ten wetlands recorded are found in Appendix F.

Functions and values for wetland sites were determined on the basis of their role in the ecological processes of each area according to Adamus et al. (1987). Most of the functional values for these wetlands were rated low. A few wetlands were rated low-to-medium for certain functions and some were rated medium for other functions. All ten wetlands were rated medium for sediment and toxin retention; seven were rated medium for streambank stabilization; two were rated medium for flood flow alteration and for fish habitat; and one was rated medium for nutrient removal. A rating of low-to-medium was given to four sites for wildlife habitat; two sites for visual quality; and one site for groundwater recharge.

Exhibit 3-18
US 34 Wetlands by Location and Potential Impacts of Action Alternative

Site	Location	Description[a]	Total Wetland Area (Sq. Ft.)	Permanent Impacts (Sq. Ft.)	Temporary Impacts (Sq. Ft.)
Jurisdictional and Non-jurisdictional to Section 404, Clean Water Act					
1	SW side of Greeley & Loveland Ditch East of Cheyenne Avenue	PEM, ditch hydrology	103	None	31
2	SE side of Greeley & Loveland Ditch East of Cheyenne Avenue	PEM, ditch hydrology	183	136	27
3	NE side of Greeley & Loveland Ditch East of Cheyenne Avenue	PEM, ditch hydrology	147	147	None
4	NW side of Greeley & Loveland Ditch East of Cheyenne Avenue	PEM, ditch hydrology	231	56	52
5	NE side of Greeley & Loveland Ditch East of Cheyenne Avenue	PEM, ditch hydrology	272	None	None
6	NW side of Boyd Lake Outlet Exchange Ditch	PEM/SS, ditch hydrology	388	None	None
7	SW side of Boyd Lake Outlet Exchange Ditch	PEM, ditch hydrology	1,840	37	277
8	SE side of Farmers Ditch near Hahn's Peak	PEM, ditch hydrology	346	None	None
9a,9b	NW of UPRR tracks	PEM, road culvert outlet	1,421	None[b]	None
10	NW of UPRR tracks	PEM, depression by ditch	9,063	None[b]	None
TOTALS			13,994	376	387

[a] Cowardin et al (1979) classification: PEM = palustrine emergent wetland; PEM/SS = palustrine emergent and scrub-shrub wetland

[b] Assumes construction a retaining wall to protect the wetlands at this location. Without a retaining wall, the following impacts would occur:

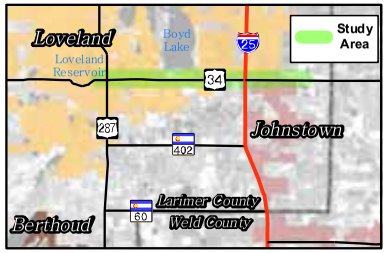
Permanent Impacts to Sites 9a/9b – 242 square feet, Temporary Impacts to Sites 9a/9b – 1,179 square feet

Permanent Impacts to Site 10 – none, Temporary Impacts to Site 10 – 544 square feet.

Changes in total permanent impacts would increase to 618 square feet, and changes in temporary impacts would increase to 2,110 square feet.

Legend

- RTD park-n-Ride
- Railroads
- Canals & Ditches
- Schools
- Lakes
- Parcels
- Wetland Areas



0 883 1,766 Feet

1 Inch = 1,766 Feet Or 1:21,200

Source: 2005 aerial photography provided by City of Loveland. Parks, schools, parcels, canals and ditches, lakes, roads, and railroads provided by City of Loveland. Wetland information provided by CDOT.

Map created February 23, 2007.

US 34 Environmental Assessment

US 287 to Larimer County Road No. 3

Exhibit 3-19

Wetlands

Map Document: O:\WP\projects\WLS\34\mxds\W070128_Document\Map\W070129_fig3-1_wetlands.mxd
2/23/2007 -- 2:20:07 PM

3.6.3.1 How will the project affect wetlands?

No Action Alternative

Under the No Action Alternative, no new kinds of impacts would affect the wetlands beyond those currently occurring, including runoff from agriculture, urban areas, Highway 34 and the railroad. No new kinds of impacts would affect the hydrology of the wetlands beyond what currently occurs, including water level fluctuations resulting from agricultural water demands in the supply ditches and from agricultural return flows.

Action Alternative

Permanent impacts from the Action Alternative would decrease the size of certain wetlands. The Action Alternative is projected to impact approximately 376 square feet of four different wetlands, out of a total of 13,994 square feet of wetlands. This assumes the construction of a retaining wall to protect wetlands 9a/9b and 10. Without the retaining wall, impacts increase to a total of 618 square feet.

Temporary impacts would total 387 square feet. Temporary impacts were calculated with a 10-foot buffer from the toe of fill line. This assume the construction of a retaining wall to protect wetlands 9a/9b and 10. Without the retaining wall, temporary impacts increase to a total of 2,110 square feet.

At the time of this wetland delineation, the US Army Corps of Engineers was not (and still is not) providing jurisdictional determinations. Before project construction, the wetland delineations for this corridor will be updated and a jurisdictional determination will be requested from the Corps of Engineers.

Mitigation Measures

The Action Alternative design would include avoidance and minimization of impacts on wetlands in the project corridor. Impacts on wetlands would be avoided and minimized as much as practical during the final design process. The design would comply with the policy of Executive Order 11990 regarding impacts on wetlands. The following specific BMPs from the *Erosion Control and Storm Water Quality Guide* (CDOT 2002) would be required during construction to reduce the potential for wetlands to be indirectly affected by sedimentation from accelerated erosion or by hazardous materials (such as fuel or equipment lubricants):

- All disturbed areas would be revegetated with native grass and forb species. Seed, mulch and mulch tackifier would be applied in phases throughout construction.
- Slopes would be roughened at all times.
- Check dams would be used where appropriate to slow the velocity of water through roadside ditches and in swales.
- Wetland areas not to be disturbed would be protected with fences and erosion logs to prevent encroachment of construction equipment and sediment.
- Wetlands subject to temporary impacts would be returned to pre-construction elevations and conditions with the goal of preserving the original wetland plant community to the extent this is practical.

Both jurisdictional and non-jurisdictional wetlands would be mitigated on a 1:1 basis.

Wetland areas temporarily impacted by construction activities would be restored as soon as possible following completion of the activity.

3.6.4 Water Quality

Water resources are integral to vegetation, wildlife, economic development, agriculture and recreational uses. The degradation of the quality of the water in the environment has a far-reaching impact on the ecological matrix. Water resources evaluated include streams, rivers, irrigation ditches, groundwater and floodplains.

3.6.4.1 What water quality concerns are important along US 34?

The Water Quality Control Commission (WQCC) and CDPHE have identified water quality impaired streams and streams with classifications and standards to protect these resources under Section 305(b) of the Clean Water Act (CWA). Waters are classified according to the uses for which they are presently suitable or intended to become suitable. Numeric water quality standards apply for protection of these designated uses. No streams or rivers are located adjacent to the US 34 project corridor; however, there are four irrigation ditches adjacent to or that intersect US 34 in the project corridor: Little Barnes Ditch, Boyd Lake Outlet Exchange Ditch, Greeley and Loveland Ditch, and Farmers Ditch. (See Section 3.3.6 for additional discussion on these ditches.)

No streams or rivers are located adjacent US 34; however, stormwater runoff from US 34 eventually finds its way to the Big Thompson River. The portion of US 34 between North Garfield and North Boise avenues is subject to intermittent flooding due to the inability of the existing stormwater system to handle storm events.

In 1986, the City of Loveland *Master Drainage Plan* and *Storm Drainage Criteria Manual* were initially completed and adopted. The drainage plan outlined improvements to the existing system and established criteria that developers must follow for new developments. Numerous master plan projects are located in the eastern urbanized area of the US 34 study area. The older urbanized area of US 34 (between North Garfield and North Boise avenues) is subject to intermittent flooding due to the inability of the existing stormwater system to handle 10-year storm events.

3.6.4.2 What water quality regulations apply to US 34 stormwater discharges?

Pre- and post-construction runoff discharges associated with US 34 are regulated under the National Pollutant Discharge Elimination System (NPDES) administered by the CDPHE Water Quality Control Division. The Colorado version of the NPDES is the Colorado Discharge Permit System (CDPS). The CDPS permit is required if one or more acres of disturbance is anticipated in a construction project.

What is an MS4 permit? MS4 permits generally include stormwater management program requirements such as maintenance of structural controls, new development and redevelopment planning program, industrial facilities program, construction sites program, and control of facility runoff program.

CDOT's New Development Program complies with Part I.B.1(b) of the CDOT municipal separate storm sewer system (MS4) permit, permit number COS–000005. The MS4 permit issued to CDOT requires that CDOT implement a program to reduce the discharge of pollutants from areas of new highway development and significant redevelopment after construction is complete.

On March 13, 2003, the City of Loveland received its MS4 CDPS permit and certification from the CDPHE Water Quality Control Division. The CDPS general permit authorizes Loveland to discharge stormwater

from portions of its MS4 located in urbanized areas to state waters, including but not limited to the Big Thompson River.

CDOT also has an MS4 permit (No. COS-000005) in effect February 1, 2007, authorizing new or existing discharges composed entirely of stormwater from CDOT's MS4 in urbanized areas. CDOT's permit includes the designation of "sensitive" waters that are generally coincident with CDPHE's Total Maximum Daily Load (TMDL) list. The Big Thompson River is not included on CDPHE's sensitive waters list.

CDOT's New Development/Redevelopment MS4 Stormwater Management Program calls for comprehensive planning procedures and controls to reduce the discharge of pollutants after new construction is complete. The urban section of US 34 (from US 287 to I-25) is covered under both the City and CDOT MS4 permits. The rural section (east of I-25) is covered under CDOT and Larimer County MS4 permits. As both Loveland and Johnstown expand, municipal authority is expected to replace county authority for MS4 permitting.

US 34 is covered under CDOT, City of Loveland, and Larimer County MS4 permits.

3.6.4.3 What effects will the US 34 project stormwater runoff have on water quality?

No Action Alternative

The No Action Alternative would have no direct impacts on water resources.

Action Alternative

The Action Alternative would increase the impervious surface area from 56 acres to 108 acres.

Mitigation Measures

The project will comply with the process outlined in Appendix I of the CDOT Drainage Design Manual (see Appendix G of this EA).

A Stormwater Management Plan (SWMP) will be completed during final design. It will address specific methods of reducing pollutants in stormwater runoff during construction. Stormwater BMPs for a site during construction would consist of five major elements:

1. **Implementation of BMPs for erosion control.** These include, but are not limited to, phased seeding with mulch and tackifier, the use of wildlife friendly erosion control blankets, the use of embankment protectors, the use of berm diversions or check dams, and outlet protection for storm sewer pipes.
2. **Implementation of BMPs for sediment control.** These include, but are not limited to, erosion bales or logs, silt fence, storm drain inlet and outlet protection, sediment traps, concrete washout and saw water containment basins, and stabilized construction entrances.
3. **Implementation of BMPs for materials handling and spill prevention.** These include, but are not limited to, stockpile management, material management, material use, and spill prevention and control.
4. **Implementation of BMPs for waste management.** These include, but are not limited to, concrete, hazardous, and contaminated waste management to ensure that solid or liquid wastes are not carried off the site by stormwater.

5. **Implementation of BMPs for pollution prevention.** These include treatment during dewatering and paving operations. It also includes the use of street sweeping and temporary waterway crossings.

Permanent BMPs will be designed to protect stormwater quality and reduce pollutant discharges after construction is complete. The following is a list of commitments and conceptual BMPs applicable to the US 34 project corridor. A determination of exact methods and locations of stormwater BMPs would be made during final design.

- **Conduct H&H study.** CDOT would conduct a hydrologic and hydraulic (H&H) study during final design for the western portion of the US 34 corridor as appropriate, depending on the level of completion of the Loveland drainage projects now in progress.
- **Use existing and/or design additional wet or sedimentation vaults.** Underground wet or sedimentation vaults capture and treat runoff. This type of structure has a grit chamber and removes debris, trash, and sediment from storm flows. The City of Loveland already has vaults along the US 34 corridor. Due to lack of open land for the western portion of the US 34 corridor, the design of additional vaults may be required. CDOT would coordinate this activity with the City and pursue maintenance agreements with the City.
- **Construct detention ponds.** CDOT would coordinate with the City to develop permanent BMPs near Mountain View High School where additional land may be available.
- **Coordinate to establish permanent BMPs.** CDOT has begun coordination and will continue to work with the City of Loveland, Town of Johnstown, and developers to develop and implement permanent BMPs to address the expansion of US 34 as developments progress from Boyd Lake Avenue east to LCR 3.

This photo shows a view northwest toward US 34 from the Greeley and Loveland Ditch.

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Construction

3.7 What Construction Impacts Are Associated With the US 34 Project?

Implementation of the Action Alternative would result in short-term impacts related to construction. The following discussion describes these potential impacts and associated mitigation measures.

The following resources would be affected during construction:

- Visual
- Air quality
- Historic preservation
- Noise
- Paleontological resources
- Wetlands
- Water quality from stormwater runoff
- Threatened and endangered species

3.7.1 Visual Resources

3.7.1.1 What types of temporary visual effects would project construction create?

Although construction impacts are short-term, they usually result in some of the most noticeable visual contrast. Construction operations are highly visible activities: excavation, equipment, dust, and traffic would likely attract the most attention. During the construction period, visual impacts would occur through the use of traffic control devices, dirt and construction material stockpiles and equipment storage.

3.7.1.2 What would be done to mitigate these effects?

Visual impacts would be minimized during the construction by limiting stockpiles and equipment storage to designated areas. Any traffic control devices would be removed promptly after use.

3.7.2 Air Quality

3.7.2.1 What types of air quality effects would project construction create?

Fugitive dust during earthmoving operations and stockpiling could occur. PM_{10} (particles less than 10 microns in diameter) dust particles are of particular concern because the particles travel further and are more likely to be inhaled.

Emissions from construction equipment can also contribute to air pollution. Gasoline and diesel engines emit exhaust, including particulate matter, carbon monoxide, sulfur dioxides, nitrogen oxides and other pollutants. Increased emissions would also result if congestion occurs as a result of construction closures or delays.

3.7.2.2 What would be done to mitigate these effects?

BMPs would be implemented to reduce the impact of potential particulates less than 10 microns during construction, including:

- Spraying exposed soil and soil surfaces with water, wetting agents, and/or soil binding agents
- Covering trucks carrying fine materials

- Minimizing mud tracking from the construction area
- Controlling speed limits for trucks traveling on roads with high silt loading in the construction area
- Performing proper maintenance on construction equipment

3.7.3 Historic Preservation

3.7.3.1 What additional archaeological investigations are required before construction begins?

For undisturbed or marginally disturbed parcels that would be directly affected by construction, and that were not previously surveyed for archaeological remains due to lack of landowner permission, intensive inventory would be completed prior to earth moving activities. The CDOT senior staff archaeologist will facilitate the survey and ensure that all appropriate Section 106 compliance actions are completed before issuing notice to proceed.

Should extensive ground disturbance in these unsurveyed areas occur from other sources such as private development prior to highway construction, no Class III survey would be required for that specific property.

3.7.3.2 What would be done if archaeological resources were discovered during construction?

If buried cultural materials were exposed during construction, the CDOT senior staff archaeologist would be notified immediately to ensure evaluation as required by NHPA and all other applicable state and federal regulations.

3.7.4 Noise

3.7.4.1 What kinds of noise would project construction create?

Construction activities would generate noise and vibration from diesel-powered excavation equipment such as dump trucks and bulldozers, backup alarms on certain equipment, compressors, and pile drivers.

3.7.4.2 What would be done to mitigate these effects?

In general, construction activities would be limited to daytime work hours. Construction equipment would be turned off during prolonged periods of nonuse and an effort would be made to combine noisy operations to occur during the same time period. Stationary equipment would be located as far away from receptors as feasible and curtains would be erected around stationary equipment in areas close to residences.

Additionally the contractor would be required to use mufflers on engines (or intake silencers, engine enclosures, and noise blankets) and quiet-use generators).

3.7.5 Paleontological Resources

3.7.5.1 How might construction affect unknown paleontological resources?

Buried paleontological resources could be exposed during project construction.

3.7.5.2 What would be done if paleontological resources were discovered during construction?

When the project design plans are finalized, the CDOT paleontologist would examine them and determine the extent of disturbance of Pierre Shale, if any, that may occur during construction. If monitoring were required, a monitoring and mitigation plan would be prepared based on the discipline report written for this project EA. If any subsurface bones or other potential fossils were found during construction, the CDOT staff paleontologist would be notified immediately to assess their significance and make further recommendations.

3.7.6 Wetlands

3.7.6.1 How many wetlands have been identified in the project construction impact area?

This project would have permanent impacts on a total of 376 square feet of wetlands (618 square feet without retaining wall) and temporary impacts on 387 square feet of wetlands (2,110 square feet without retaining wall).

3.7.6.2 What mitigation measures should be followed to protect remaining wetlands?

The following construction wetland mitigation measures are proposed to protect wetlands in temporary impact areas.

- All wetland areas and water bodies not impacted by the project would be protected from unnecessary encroachment by temporary fencing. Sediment control such as silt fence or erosion logs would also be used where needed to protect the area from sediment. Siltation control devices would be placed on the down-gradient side of construction areas to prevent soil from entering wetland areas.
- Staging of construction equipment, equipment refueling, or storage of construction supplies would not be allowed within 50 feet of a wetland.
- A stormwater management plan would be developed prior to and for inclusion in the construction bid plans. All bare fill or cut slopes adjacent to wetlands would be stabilized as soon as practicable.
- No fertilizers would be allowed on the project.
- Work areas would be limited to minimize construction impacts to wetlands.

3.7.7 Water Quality from Stormwater Runoff

3.7.7.1 What types of impacts would project construction have on water quality from stormwater runoff?

Potential impacts on water quality during construction include erosion, sedimentation, materials spills, waste impacts, and pollution associated with construction stormwater runoff.

3.7.7.2 What would be done to protect water quality?

A Stormwater Management Plan (SWMP) will be completed during final design. It will address specific methods of reducing pollutants in stormwater runoff during construction. Stormwater BMPs for a site during construction would consist of five major elements:

- **Implementation of BMPs for erosion control.** These include, but are not limited to, phased seeding with mulch and tackifier, the use of wildlife friendly erosion control blankets, the use of embankment protectors, the use of berm diversions or check dams, and outlet protection for storm sewer pipes.
- **Implementation of BMPs for sediment control.** These include, but are not limited to, erosion bales or logs, silt fence, storm drain inlet and outlet protection, sediment traps, concrete washout and saw water containment basins, and stabilized construction entrances.
- **Implementation of BMPs for materials handling and spill prevention.** These include, but are not limited to, stockpile management, material management, material use, and spill prevention and control.
- **Implementation of BMPs for waste management.** These include, but are not limited to, concrete, hazardous, and contaminated waste management to ensure that solid or liquid wastes are not carried off the site by stormwater.
- **Implementation of BMPs for pollution prevention.** These include treatment during dewatering and paving operations. It also includes the use of street sweeping and temporary waterway crossings.

3.7.8 Threatened and Endangered Species

3.7.8.1 What updates are needed prior to construction?

Based on current studies, no TES species or species of concern have been identified as likely to occur in the project corridor. USFWS requires updated documentation on the TES plant species prior to implementation of construction activities. USFWS concurrence for the Preble's meadow jumping mouse must also be renewed before construction. Additional evaluations and surveys, if warranted, will be conducted prior to construction for any new TES species identified subsequent to the current study.

Preferred Alternative Identification and Impact Mitigation Summary

3.8 Preferred Alternative – Action Alternative

The Action Alternative meets the project purpose and need by improving current and future traffic mobility, addressing safety issues associated with the existing US 34 alignment, and accommodating 2030 travel demand.

In addition, alignment of the Action Alternative would be engineered to minimize potential impacts on human and community resources and the natural environment through use of CSS.

The No Action Alternative would not meet mobility needs, would lead to increases in safety problems, and could not provide sufficient capacity to meet 2030 travel demand.

3.9 Impact Mitigation Summary

A summary of project mitigation is provided in Exhibit 3-20. With the identification of the Action Alternative as the Preferred Alternative, FHWA and CDOT are committed to the mitigation measures listed in Exhibit 3-20 to lessen or eliminate the negative environmental impacts associated with this alternative.

Exhibit 3-20
Mitigation Measures – Action Alternative

Resource Category	Mitigation or Commitment
Visual Resources (Construction Related)	Visual impacts would be minimized during the construction by limiting stockpiles and equipment storage to designated areas. Any traffic control devices would be removed promptly after use.
Air Quality (Construction Related)	BMPs would be implemented to reduce the impact of potential particulates less than 10 microns during construction, including: • Spraying exposed soil and soil surfaces with water, wetting agents, and/or soil binding agents • Covering trucks carrying fine materials • Minimizing mud tracking from the construction area • Controlling speed limits for trucks traveling on roads with high silt loading in the construction area • Performing proper maintenance on construction equipment

Resource Category	Mitigation or Commitment
Right-of-Way and Relocations (Project Related)	CDOT will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act), which provides for uniform and equitable treatment of all persons displaced from their homes, businesses, or farms. The Uniform Act is a form of compensation, not mitigation. The information in this section is based on conceptual design; the actual number of relocations and specifics on property acquisitions would be known when final design is complete. Measures to further reduce the number of relocations and amount of acquisition would be implemented as part of final design. For any person(s) whose real property interests may be affected by this project, the acquisition of those property interests will comply fully with the 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 insure 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 US Constitution provides that private property may not be taken for a public use without payment of "just compensation." All affected 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 right-of-way specialist will be assigned to each property owner to assist him or her with this process. In certain situations, it may also be necessary to acquire improvements that are located within a proposed acquisition parcel. In those instances where the 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 far 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 shall be furnished with a general written description of the displacing agency's relocation program which provides at a minimum, detailed information related to eligibility requirements, advisory services and assistance, payments, and the appeal process. It shall 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 in detail by an assigned right-of-way specialist.
Socioeconomics (Project Related)	Mitigation measures would be the same as for right-of-way.
Land Use (Project Related)	Mitigation for the changes in land use would be through compensation to the landowners during the right-of-way acquisition process.
Environmental Justice (Project Related)	All property acquisition would follow the procedures outlined in the CDOT Right of Way Manual. CDOT follows the Federal Uniform Relocation and Real Property Acquisition Act of 1970 (Public Law 91-646), as amended in 1987 (Public Law 100-17), 1991 (Public Law 102-240) and 1997 (Public Law 105-117). The purpose of the act is "To provide for uniform and equitable treatment of persons displaced from their homes, businesses, or farms by Federal and federally assisted programs and to establish uniform and equitable land acquisition policies for Federal and federally assisted programs." For additional discussion, see Section 3.3.1.1.

Resource Category	Mitigation or Commitment
Hazardous Materials/Waste (Project Related)	The following are sites of potential concern and include specific recommendations: • **Seven historic gas stations, dry cleaners, and automobile repair facilities.** Completion of a Phase 1 Environmental Site Assessment is required for any properties showing historic uses that could contribute to the presence of hazardous materials for which right-of-way would be required. That report would indicate past and current uses of that site and would determine if that site does or historically has affected the corridor. Note that right-of-way acquisition from all nine properties is anticipated, each of which would pose a level of risk that CDOT would acquire a contaminated property and the liability for cleanup associated with it. In addition, contamination from four of these properties may have migrated into the existing US 34 right-of-way. • **Four LUST sites.** The groundwater monitoring reports for the LUST sites located at Craig's Conoco and the Shell Service Station should continue to be reviewed. These reports will provide information pertaining to the extent of groundwater contamination and its potential migration beneath the study area. If project construction activities disturb subsurface soils or groundwater in the area of the U Pump It and Schrader's LUST sites at the North Madison Avenue intersection, pre-characterization of soils and groundwater for project personnel health and safety issues, as well as for materials management and dewatering issues, would be performed. Right-of-way acquisition is anticipated from all four LUST sites, each of which may pose a risk that CDOT would acquire a contaminated property and the liability for cleanup associated with it. In addition, contamination from three of these properties may have migrated into the existing US 34 right-of-way. • **Oil and Gas Well.** If project right-of-way and subsequent construction activities disturb or come in close proximity to the McDonough #16-2 oil and gas tank battery location, pre-characterization of soils and groundwater for project personnel health and safety issues, as well as for materials management and dewatering issues, would be performed. • **Electrical Transformers.** The Poudre Valley Rural Electric Association (REA) should be contacted if any of the transformers are to be disturbed during construction activities. Xcel Energy and the City of Loveland also have the potential to own transformers located along the project corridor. They too should be contacted if any of the transformers are to be disturbed during construction activities. If any of the transformers test positive for PCBs, the utility company of ownership would be responsible for handling and disposal. • **Structures Containing Lead-Based Paints and/or Friable Asbestos.** If either or both of these hazardous materials are encountered, coordination with the Colorado Department of Public Health and Environment (CDPHE) and other agencies that regulate these materials will occur. If additional hazardous materials are encountered before or during construction of the Action Alternative, CDOT's Section 250, Environmental Health and Safety Management specification would be used. If necessary, a health and/or safety plan and materials management plan would be prepared and implemented to mitigate potential health and safety hazards to workers and the public. Pre-characterization of soils and groundwater for project personnel health and safety, materials management, and dewatering is required before disturbance of subsurface soils or groundwater by highway construction activities at sites of potential concern. Depending on the results of the pre-characterization of test results, coordination with various agencies and permitting may be required. If the test samples are deemed hazardous, a materials management plan would be developed that describes the specifics of the hazardous waste permitting and compliance issues.
Utilities, Irrigation Ditches, and Railroads (Project Related)	Coordination with county and city officials and local utility owners would minimize disruption of service. Coordination would also be necessary with the appropriate ditch companies and railroads to minimize disruption during construction.

Resource Category	Mitigation or Commitment
Historic Preservation (Project Related)	No mitigation is required. However, the commitment to CSS design is applicable to US 34 design adjacent to all NRHP eligible properties. Should extensive ground disturbance in these areas occur from other sources such as private development prior to final design and construction, the CSS design would be reconsidered.
Historic Preservation (Construction Related - Archaeological Resources)	If buried cultural materials were exposed during construction, the CDOT senior staff archaeologist would be notified immediately to ensure evaluation as required by NHPA and all other applicable state and federal regulations.
Section 4(f) Resources (Project Related)	No mitigation measures are required. FHWA concurrence letters on *de minimis* impacts are located in Appendix A, Environmental Coordination. On January 9, 2007 and January 29, 2007, the Federal Highway Administration (FHWA) concurred with the finding that the effects of this proposed improvement constituted a *de minimis* impact and the requirements of 23 USC 138 and 49 USC 303 have been satisfied.
Noise (Project Related)	**Residences between N. Garfield Avenue and the BNRR Bridge:** After application of feasible and reasonable criteria, three receptors in the US 34 corridor required additional analysis. Receptors 60 and 61 at the far western end of the corridor represent residences located on both sides of US 34 between North Garfield Avenue and the BNRR bridge. The predicted noise levels for these homes under the Action Alternative (year 2030) are 68 to 69 dB(A), which is a 1-dB(A) increase over the existing levels. Although a noise wall is not considered feasible for either of these locations, some noise reduction could be provided by construction of a closed rail safety barrier on both sides of US 34 in association with the bridge improvements. The area would be re-examined during final design. **The Reserve Apartments** (Receptor 18) are located on the north side of US 34 off McWhinney Blvd. Based on visual inspection, each building appeared to contain five ground-floor units each. The predicted noise level for these apartments under the Action Alternative (year 2030) is 72 dB(A), which is a 2-dB(A) increase over the existing levels. A 660-foot-long barrier was modeled along the proposed CDOT right-of-way, which is located on top of the existing terrain that currently provides some noise reduction. The easternmost 100 feet of the barrier diverts from the CDOT right-of-way and wraps around to the north along McWhinney Blvd. The amount of noise reduction, in dB(A), that would be achieved by the barrier was predicted for barrier heights ranging from 6 to 12 feet. Predictions were made using both the "wall" and "berm" barrier types in the TNM model. The desired noise reduction is 5 to 10 dB(A). The results were that a 10-foot-tall barrier is appropriate. The cost benefit ratios for either the wall or berm barriers modeled is less than CDOT's standard of $4,000 per dB of noise reduction per benefited receptor. The cost of each modeled barrier was calculated using a unit cost of $30 per square foot for walls and $10 per cubic yard for berms. Noise reduction was calculated using TNM. The number of benefited receptors is calculated as the number of homes where at least 3 dB(A) of noise reduction was predicted, and for the 10-foot-tall barrier there are 14 benefited receptors. Based on this analysis, a 10-foot-tall barrier would be considered for this area. This analysis would be re-examined during the final design phase of the project.
Noise (Construction Related)	In general, construction activities would be limited to daytime work hours. Construction equipment would be turned off during prolonged periods of nonuse and an effort would be made to combine noisy operations to occur during the same time period. Stationary equipment would be located as far away from receptors as feasible and curtains would be erected around stationary equipment in areas close to residences. Additionally the contractor would be required to use mufflers on engines (or intake silencers, engine enclosures, and noise blankets) and quiet-use generators).
Paleontological Resources (Construction Related)	When the project design plans are finalized, the CDOT paleontologist would examine them and determine the extent of disturbance of Pierre Shale, if any, that may occur during construction. If monitoring is required, a monitoring and mitigation plan would be prepared based on the discipline report written for this project EA. If any subsurface bones or other potential fossils are found during construction, the CDOT staff paleontologist would be notified immediately to assess their significance and make further recommendations.

Resource Category	Mitigation or Commitment
Vegetation and Noxious Weeds (Project Related)	All CDOT revegetation Best Management Practices (BMPs) and guidelines will be followed to ensure adequate revegetation of the study area. All disturbed areas will be seeded in phases throughout construction. Mitigation measures are anticipated to include the following activities: • Limit the amount of disturbance of grading to 10 feet beyond the toe of slope. Project will follow CDOT standard specifications for amount of time that disturbed areas are allowed to be non-vegetated. • Avoid existing trees, shrubs and vegetation, to the maximum extent possible. Schedule a preconstruction site visit to identify the vegetation that will be protected during construction. • Implement temporary and permanent erosion control measures to limit erosion and soil loss. Slopes should be roughened at all times. • Revegetate all disturbed areas with native grass and forb species. Seed, mulch and mulch tackifier would be applied in phases throughout construction. • Remove topsoil heavily infested with noxious weeds from the site or bury it under a minimum of 5 feet of fill. The Integrated Noxious Weed Management Plan located in Appendix E will be updated during the design phase immediately before the construction phase.
Wildlife (Project Related)	Mitigation of wildlife impacts would include the following activities: • Minimize disturbance to native plant communities • Minimize tree removal • Use erosion control techniques, such as silt fence, to protect surrounding areas that may be used by wildlife species • Use wildlife-friendly erosion control blankets to minimize impacts on wildlife • Follow requirements of the Colorado Department of Transportation Region 4, as follows: The MBTA protects all migratory birds, nests and eggs except English sparrow, European starling, and rock dove and resident game birds. For projects that could potentially result in the killing, taking, harassing, or harming of these birds, the following conditions must be adhered to: **Tree trimming/removal.** Tree trimming and/or removal activities shall be completed before birds begin to nest or after the young have fledged. In Colorado most nesting and rearing activities occur between April 1 and August 31. However, since some birds nest as early as February a nesting bird survey must be conducted by a biologist before any tree trimming or removal activities begin. **Bridge/box culvert work.** Bridge or box culvert work that may disturb nesting birds must be completed before birds begin to nest or after the young have fledged. No bridge or box culvert work may take place between April 1 and August 31. If work activities are planned between these dates, nests must be removed (before nesting begins) and appropriate measures taken to assure no new nests are constructed. Failure to remove and keep nests from becoming established could postpone construction of the project. **Clearing/grubbing activities.** Clearing and grubbing of vegetation that may disturb ground nesting birds must be completed before birds begin to nest or after the young have fledged. If work activities are planned between April 1 and August 31, vegetation must be removed and/or trimmed to a height of six inches or less prior to April 1. Once vegetation has been removed and/or trimmed, appropriate measures (such as repeated mowing/trimming) must be implemented to ensure vegetation does not grow more than six inches. Failure to maintain vegetation height of six inches or less could provide habitat suitable for nesting birds that could postpone construction of the project.
Wetlands (Project Related)	The Action Alternative design would include avoidance and minimization of impacts on the project corridor wetlands. Impacts on wetlands would be avoided and minimized as much as practical during the final design process. The design would comply with the policy of Executive Order 11990 regarding impacts to wetlands. The following specific BMPs from the *Erosion Control and Storm Water Quality Guide* (CDOT 2002) would be required during construction to reduce the potential for wetlands to be indirectly affected by

Resource Category	Mitigation or Commitment
	sedimentation from accelerated erosion or by hazardous materials (such as fuel or equipment lubricants): • All disturbed areas would be revegetated with native grass and forb species. Seed, mulch and mulch tackifier would be applied in phases throughout construction. • Slopes would be roughened at all times. • Check dams would be used where appropriate to slow the velocity of water through roadside ditches and in swales. • Wetland areas not to be disturbed would be protected with fences and erosion logs to prevent encroachment of construction equipment and sediment. • Wetlands subject to temporary impacts would be returned to pre-construction elevations and conditions with the goal of preserving the original wetland plant community to the extent this is practical. Both jurisdictional and non-jurisdictional wetlands would be mitigated on a 1:1 basis. Wetland areas temporarily impacted by construction activities will be restored as soon as possible following completion of the activity.
Wetlands (Construction Related)	The following construction wetland mitigation measures are proposed to protect wetlands in temporary impact areas. • All wetland areas and water bodies not impacted by the project would be protected from unnecessary encroachment by temporary fencing. Sediment control such as silt fence or erosion logs would also be used where needed to protect the area from sediment. Siltation control devices would be placed on the down-gradient side of construction areas to prevent soil from entering wetland areas. • Staging of construction equipment, equipment refueling, or storage of construction supplies would not be allowed within 50 feet of a wetland. • A stormwater management plan would be developed prior to and for inclusion in the construction bid plans. All bare fill or cut slopes adjacent to wetlands would be stabilized as soon as practicable. • No fertilizers would be allowed on the project. • Work areas would be limited to minimize construction impacts to wetlands.
Water Quality (Project Related)	The project will comply with the process outlined in Appendix I of the CDOT Drainage Design Manual (see Appendix G of this EA). A Stormwater Management Plan (SWMP) will be completed during final design. It will address specific methods of reducing pollutants in stormwater runoff during construction. Stormwater BMPs for a site during construction would consist of five major elements: 1. Implementation of BMPs for erosion control. These include, but are not limited to, phased seeding with mulch and tackifier, the use of wildlife friendly erosion control blankets, the use of embankment protectors, the use of berm diversions or check dams, and outlet protection for storm sewer pipes. 2. Implementation of BMPs for sediment control. These include, but are not limited to, erosion bales or logs, silt fence, storm drain inlet and outlet protection, sediment traps, concrete washout and saw water containment basins, and stabilized construction entrances. 3. Implementation of BMPs for materials handling and spill prevention. These include, but are not limited to, stockpile management, material management, material use, and spill prevention and control. 4. Implementation of BMPs for waste management. These include, but are not limited to, concrete, hazardous, and contaminated waste management to ensure that solid or liquid wastes are not carried off the site by stormwater. 5. Implementation of BMPs for pollution prevention. These include treatment during dewatering and paving operations. It also includes the use of street sweeping and temporary waterway crossings. Permanent BMPs will be designed to protect stormwater quality and reduce pollutant

Resource Category	Mitigation or Commitment
	discharges after construction is complete. The following is a list of commitments and conceptual BMPs applicable to the US 34 project corridor. A determination of exact methods and locations of stormwater BMPs would be made during final design. • **Conduct H&H study.** CDOT would conduct a hydrologic and hydraulic (H&H) study during final design for the western portion of the US 34 corridor as appropriate, depending on the level of completion of the Loveland drainage projects now in progress. • **Use existing and/or design additional wet or sedimentation vaults.** Underground wet or sedimentation vaults capture and treat runoff. This type of structure has a grit chamber and removes debris, trash, and sediment from storm flows. The City of Loveland already has vaults along the US 34 corridor. Due to lack of open land for the western portion of the US 34 corridor, the design of additional vaults may be required. CDOT would coordinate this activity with the city and pursue maintenance agreements with the city. • **Construct detention ponds.** CDOT would coordinate with the city to develop permanent BMPs near Mountain View High School where additional land may be available for detention ponds. • **Coordinate to establish permanent BMPs.** CDOT has begun coordination and will continue to work with the City of Loveland, Town of Johnstown, and developers to develop and implement permanent BMPs to address the expansion of US 34 as developments progress from Boyd Lake Avenue east to LCR 3.
Water Quality (Construction Related)	See SWMP discussion above under Water Quality (Project Related).
Threatened and Endangered Species (Construction Related)	Based on current studies, no TES species or species of concern have been identified as likely to occur in the project corridor. USFWS requires updated documentation on the TES plant species prior to implementation of construction activities. USFWS concurrence for the Preble's meadow jumping mouse must also be renewed before construction. Additional evaluations and surveys, if warranted, will be conducted prior to construction for any new TES species identified subsequent to the current study.

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