

**US 50 West: Purcell Boulevard to Wills Boulevard (Milepost 309 to
Milepost 313) and McCulloch Boulevard Intersection
Improvements (Milepost 307)**

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Air Quality Technical Report

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List of Acronyms and Abbreviations

Ave.	Avenue
Blvd.	Boulevard
CDOT	Colorado Department of Transportation
CO ₂	carbon dioxide
EA	environmental assessment
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
GHG	greenhouse gas
MMT	million metric tons
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
PM _{2.5}	particulate matter smaller than 2.5 microns
PM ₁₀	particulate matter smaller than 10 microns
Rd.	Road
ROW	right-of-way
VMT	vehicle miles traveled

1. Introduction

The Colorado Department of Transportation (CDOT) is conducting an Environmental Assessment (EA) for proposed improvements to US Highway 50 (US 50) from Purcell Boulevard (Blvd.) to Wills Blvd. and the intersections of US 50 and Purcell Blvd., Pueblo Blvd., and McCulloch Blvd. (i.e., US 50 West EA) (**Figure 1** and **Figure 2**).

The Proposed Action includes elements of the recommended Preferred Alternative identified in the *US 50 West Planning and Environmental Linkages (PEL) Study (US 50 West PEL Study)* (2012a). The PEL recommended Preferred Alternative identified improvements to address peak-hour congestion and above average crash rates along US 50 from Swallows Road (Rd.) to Baltimore Avenue (Ave.) (**Figure 3**). Appendix A2, *US 50 West PEL Study* (CDOT, 2012a), and A3 of the EA, *US 50 West Implementation Plan* (CDOT, 2012b), include additional information on the PEL Preferred Alternative.

An air quality evaluation was conducted in support of the US 50 West EA.

1.1 Project Description

1.1.1 Proposed Action

The Proposed Action would include widening 3.4 miles of US 50 to include a third eastbound lane from Purcell Blvd. to Wills Blvd. The Proposed Action would also provide intersection improvements at the Purcell Blvd./US 50, Pueblo Blvd./US 50, and McCulloch Blvd./US 50 intersections (**Figure 1** and **Figure 2**). The intersection improvements at Purcell Blvd. and McCulloch Blvd. would modify the northbound to eastbound turn lane geometry to US 50, and add a channelizing curb island for improved traffic flow and pedestrian/bicycle refuge. Intersection improvements at Pueblo Blvd./US 50 would include an eastbound through lane, an eastbound deceleration lane and ramp onto Pueblo Blvd., and a northbound ramp and acceleration lane onto eastbound US 50. The proposed improvements would also include widening the eastbound bridge at Wild Horse Dry Creek (CDOT Structure K-18-CW). The bridge improvements would include extending the existing piers within the Wild Horse Dry Creek drainage area, adding a third eastbound lane, and incorporating a multi-use pedestrian/bicycle trail on the bridge to accommodate a proposed future multi-use trail on the southbound side of US 50. The multi-use trail would be a separate project to be built by others. The Proposed Action would also include drainage improvements and water quality features.

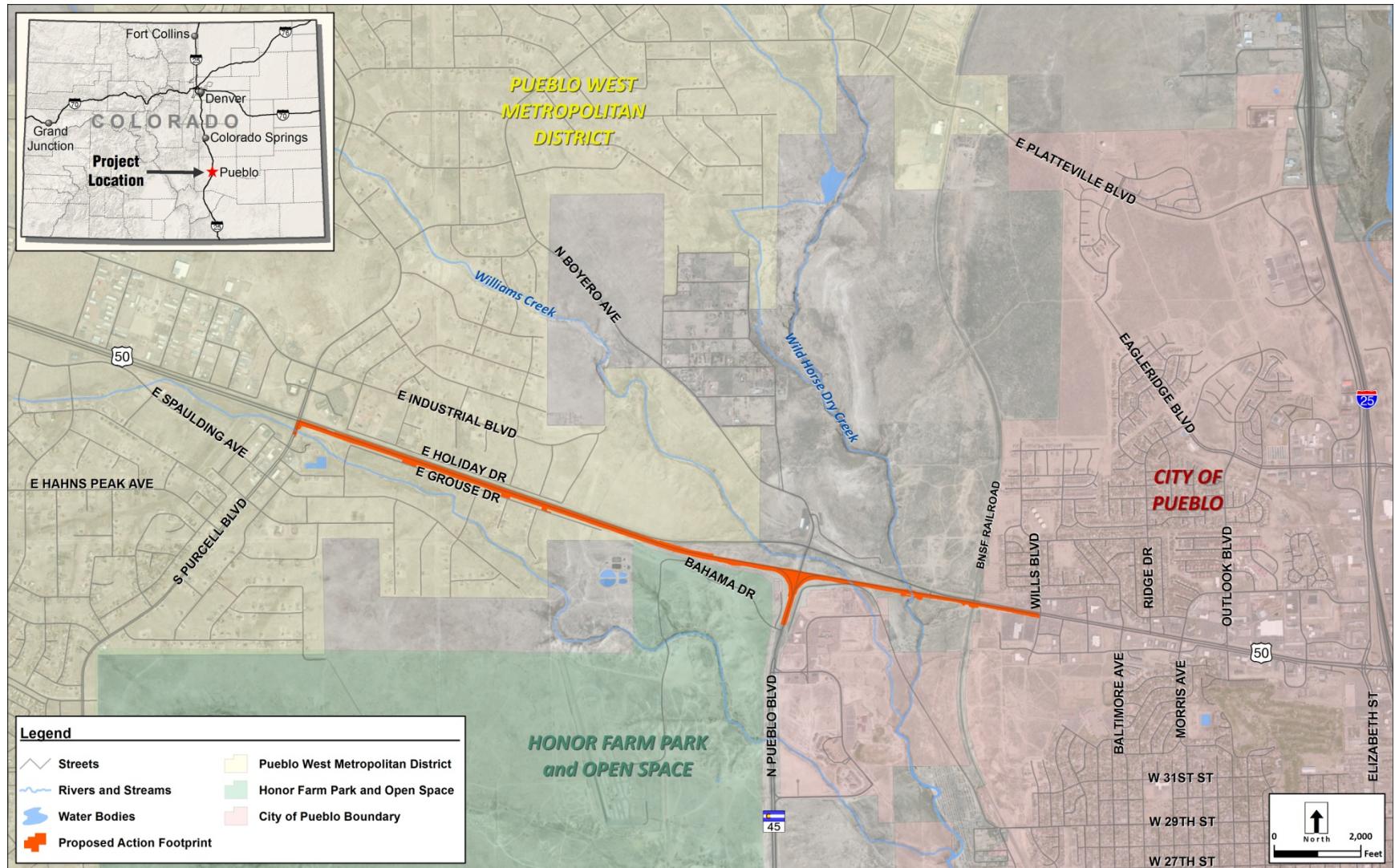
The proposed transportation and water quality improvements would be constructed within the existing CDOT right-of-way (ROW). Permanent easements for drainage would be required in three locations adjacent to CDOT ROW. The main text and figures of the EA provide additional detail about the Proposed Action, while Appendix A1 of the EA includes project drawings.

1.1.2 No Action Alternative

The No Action Alternative would include any transportation projects that have not been built, but for which funding has been committed. As identified in the *US 50 West PEL Study* (CDOT, 2012a), the No Action Alternative assumes that no major capacity improvements would occur along US 50 from Swallows Rd. to Baltimore Ave. (CDOT, 2012a). However, the No Action Alternative would include routine maintenance to keep the existing transportation network in good operating condition. The main text of the EA provides additional detail about the No Action Alternative.

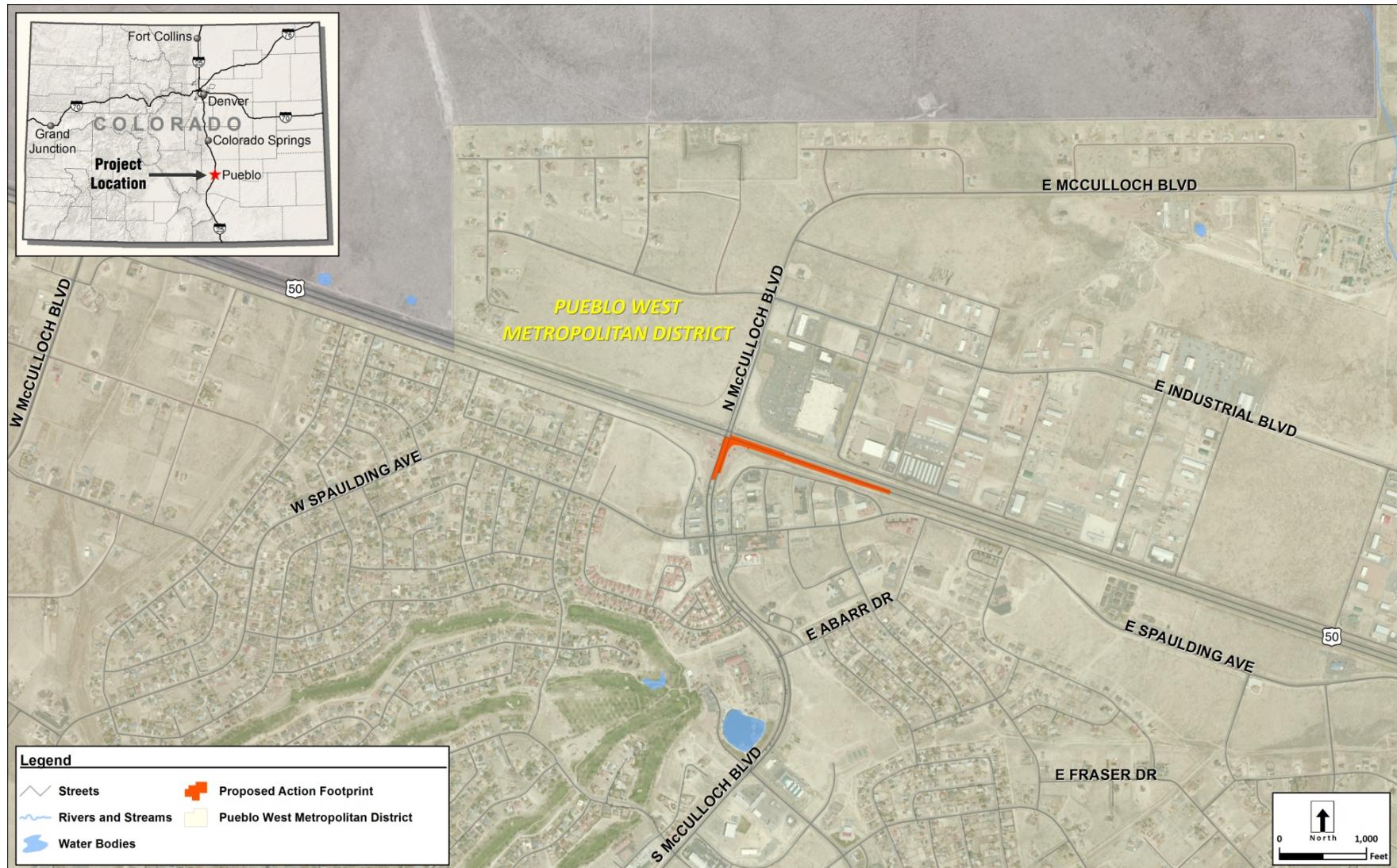
US 50 West Environmental Assessment

Figure 1. Proposed Action – Purcell Boulevard to Wills Boulevard



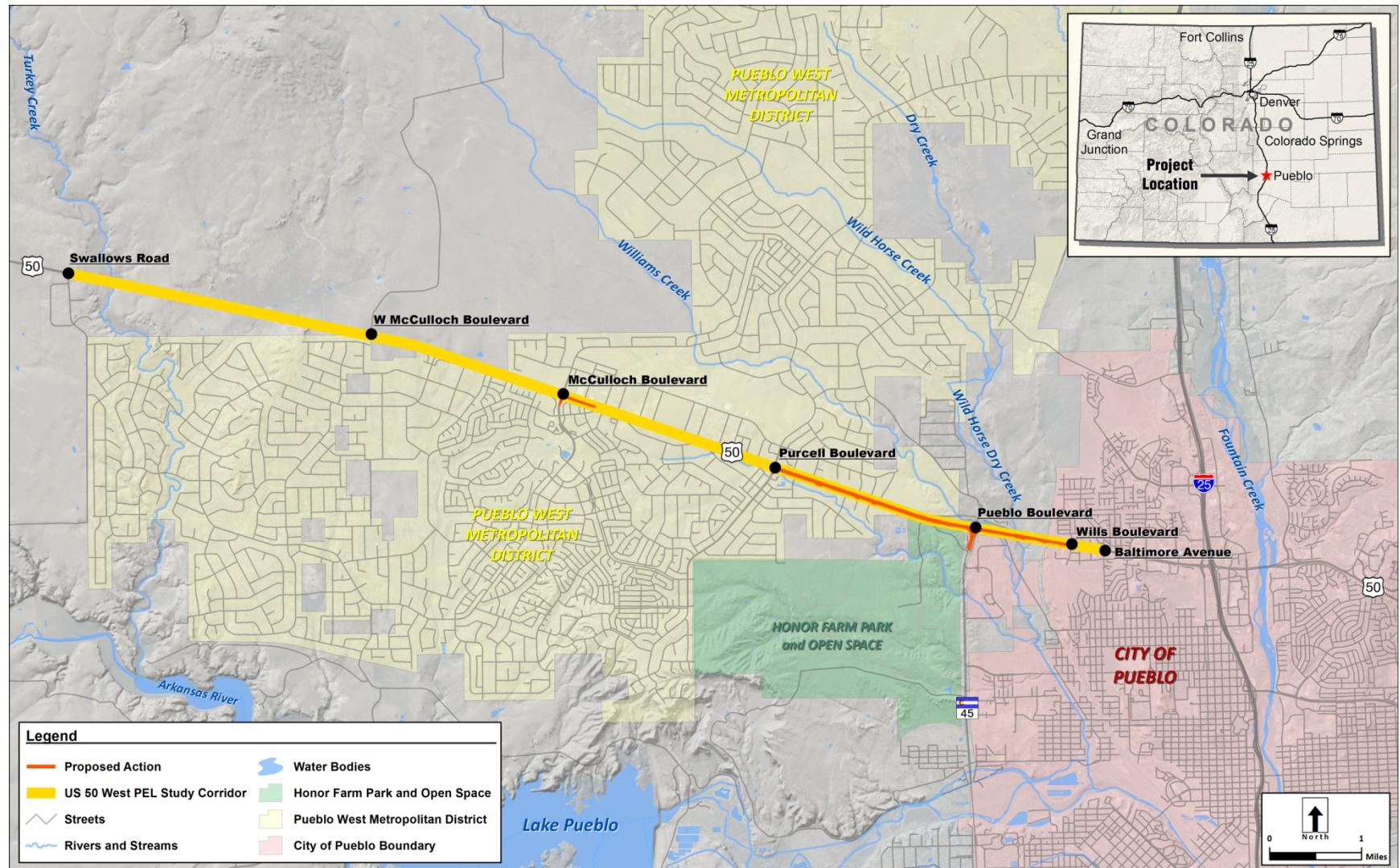
US 50 West Environmental Assessment

Figure 2. Proposed Action – McCulloch Boulevard/US 50 Intersection



US 50 West Environmental Assessment

Figure 3. US 50 West PEL Study Corridor



1 2. Air Quality Assessment

2 2.1 Criteria Pollutants

3 Pueblo County is in attainment for all criteria pollutants identified and monitored by the
4 U.S. Environmental Protection Agency (EPA) as important sources of human and environmental
5 health concern when they occur in ambient concentrations above the National Ambient Air Quality
6 Standards (NAAQS). These pollutants include carbon monoxide, particulate matter smaller than
7 10 microns (PM_{10}) or 2.5 microns ($PM_{2.5}$), nitrogen dioxide, sulfur dioxide, lead, and ground level
8 ozone. PM_{10} and $PM_{2.5}$ are currently monitored in Pueblo. Neither is above its respective NAAQS
9 limit. Because the Proposed Action would improve traffic flow, fewer emissions would be generated
10 when compared to the No Action Alternative, thus criteria pollutant concentrations are expected to
11 remain below the NAAQS.

12 2.2 Mobile Source Air Toxics

13 The purpose of the US 50 West Project is to improve the safety of the corridor, increase the
14 mobility and relieve traffic congestion on US 50, and maintain reasonable access to future growth.
15 This evaluation has been determined to generate minimal air quality issues for Clean Air Act criteria
16 pollutants and has not been linked with any special Mobile Source Air Toxics (MSAT) pollutant
17 concerns. As such, this project will not result in changes in traffic volumes, vehicle mix, or any other
18 factor that would cause an increase in MSAT project concerns. The project is not expected to
19 change the number or percentage of diesel trucks using the US 50 Corridor.

20 Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT emissions to
21 decline significantly over the next several decades. Based on regulations now in effect, an analysis of
22 national trends with EPA's MOVES2010b model forecasts a combined reduction of 83 percent in
23 the total annual emission rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel
24 are projected to increase by 102 percent. This will reduce the background level of MSATs and the
25 possibility of even minor MSAT emissions from this project.

26 2.3 Fugitive Dust

27 Fugitive dust (also known as sand re-entrainment) is generated when surface sediments (sand) are
28 incorporated into a fluvial flow (air) when cars drive over the roadway surface. Fugitive dust is
29 typically only a concern in PM_{10} non-attainment or maintenance areas. The Proposed Action would
30 be in a PM_{10} attainment area as described in **Section 2.1**. The overall amount of sand re-entrainment
31 depends on several factors, including the vehicle miles traveled (VMT) and the frequency of sanding.
32 The VMT for the No-Action Alternative is expected to be the same as the VMT for the Proposed
33 Action in the study area; therefore, no additional fugitive dust would be generated as a result of a
34 VMT increase from the Proposed Action. The Proposed Action would increase the paved surface of
35 US 50, but any increase in sand re-entrainment from that would be inconsequential.

2.4 Greenhouse Gases

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

Recognizing this concern, FHWA is working nationally with other modal administrations through the U.S. Department of Transportation Center for Climate Change and Environmental Forecasting to develop strategies to reduce transportation's contribution to GHGs—particularly CO_2 emissions—and to assess the risks to transportation systems and services from climate changes.

At the state level, several programs are underway in Colorado to address transportation GHGs. The Colorado Climate Action Plan (Ritter, 2007) includes measures to adopt vehicle CO_2 emissions standards and to reduce vehicle travel through transit, flex time, telecommuting, ridesharing, and broadband communications. CDOT issued Policy Directive 1901 on air quality (CDOT, 2009). This Policy Directive was developed with input from other agencies, including the State of Colorado's Department of Public Health and Environment, EPA, FHWA, the Federal Transit Administration, the Denver Regional Transportation District, and the Denver Regional Air Quality Council. This Policy Directive addresses unregulated MSAT and GHGs produced from Colorado's state highways, interstates, and construction activities.

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

- Developing truck routes/restrictions with the goal of limiting truck traffic in proximity to facilities, including schools, with sensitive receptor populations.
- Continuing to research pavement durability opportunities with the goal of reducing the frequency of resurfacing and/or reconstruction projects.
- Developing air quality educational materials, specific to transportation issues, for citizens, elected officials, and schools.
- Offering outreach to communities to integrate land use and transportation decisions to reduce growth in VMT, such as smart growth techniques, buffer zones, transit-oriented development, walkable communities, access management plans, etc.
- Committing to research additional concrete additives that would reduce the demand for cement.
- Expanding Transportation Demand Management efforts statewide to better use the existing transportation mobility network.
- Continuing to diversify the CDOT fleet by retrofitting diesel vehicles, specifying the types of vehicles and equipment contractors may use, purchasing low-emission vehicles, such as

hybrids, and purchasing cleaner burning fuels through bidding incentives where feasible. Incentivizing is the likely mechanism for this.

- Funding truck parking electrification (Note: Mostly via exploring external grant opportunities).
 - Researching additional ways to improve freight movement and efficiency statewide.
 - Committing to incorporate ultra-low sulfur diesel for non-road equipment statewide.
 - Developing a low-volatile organic compounds emitting tree landscaping specification.

Because climate change is a global issue, and the emissions changes due to project alternatives are very small compared to global totals, the GHG emissions associated with the alternatives were not calculated. Because GHGs are directly related to energy use, the changes in GHG emissions would be similar to the changes in energy consumption presented in the EA.

12 **Table 1** presents the relationship of current and projected Colorado highway emissions to total
13 global CO₂ emissions. Colorado highway emissions are expected to increase by 4.7 percent between
14 now and 2035. The benefits of the fuel economy and renewable fuels programs in the 2007 Energy
15 Bill are offset by growth in VMT; the draft 2035 statewide transportation plan predicts that
16 Colorado VMT will double between 2000 and 2035. **Table 1** also illustrates the relatively small size
17 of the project corridor compared to total Colorado travel activity.

Table 1. Carbon Dioxide Emissions Data

Global CO ₂ Emissions, 2005, in Million Metric Tons (MMT) ¹	Colorado Highway CO ₂ Emissions, 2005, in MMT ¹	Projected Colorado 2035 Highway CO ₂ Emissions, in MMT ¹	Colorado Highway Emissions, Percent of Global Total (2005) ¹	Project Corridor Vehicle Miles Traveled (VMT), Percent of Statewide VMT (2005)
27,700	29.9	31.3	0.108	0.2

¹ Data provided by FHWA Resource Center (CDOT, 2010)

2.5 Construction Impacts

Overall construction of the Proposed Action will last less than 5 years, but construction may last several months at any one location. Construction activities may be sources of temporary air quality impacts from fugitive dust or equipment emissions. Adjoining properties in the study area would be near construction activities when the Proposed Action is built. Construction emissions differ from regular traffic emissions in several ways:

- Construction emissions last only for the duration of the construction period.
- Construction activities generally are short term, and depending on the nature of the construction operations, could last from seconds (for example, a truck passing) to months (for example, constructing a bridge).
- Construction can involve other emission sources, such as fugitive dust from ground disturbance.
- Construction emissions tend to be intermittent and depend on the type of operation, location, and function of the equipment, and the equipment usage cycle; traffic emissions are present in a more continuous fashion after construction activities are completed.
- Construction emissions tend to be from mobile sources with diesel engines.

Construction emission impacts will be minimized somewhat because much of the project improvements do not abut sensitive areas such as residences. Even so, people in neighboring areas could be exposed to construction-related emissions. The Proposed Action would be similar in nature to other highway projects and the construction emissions should be representative of projects of this type and magnitude. These types of projects generally do not cause meaningful air quality impacts.

1 3. Mitigation

2 Standard emission minimization measures for construction activities are recommended.
3 Construction emission impacts will be minimized somewhat because the Proposed Action is located
4 away from sensitive areas such as residences. Even so, neighboring areas could be exposed to
5 construction-related emissions and particular attention will be given to minimizing total emissions
6 near sensitive areas such as homes. To address the temporary elevated air emissions that may be
7 experienced during construction, standard construction mitigation measures shall be incorporated
8 into construction contracts where feasible. These include following best management practices and
9 relevant CDOT construction specifications, such as:

- 10 □ Maintain equipment on a regular basis. Equipment will be subject to inspection by the
11 project manager to ensure maintenance.
- 12 □ Systematically control fugitive dust through the implementation of CDOT's Standard
13 Specifications for Road and Bridge Construction, particularly Sections 107.24, 209 and 250,
14 and Air Pollution Control Division's Air Pollutant Emission Notification requirements.
- 15 □ Prohibit excessive idling of inactive equipment or vehicles.

16 Other emission reduction actions may include:

- 17 □ Locate stationary equipment as far from sensitive receivers as possible (when conditions
18 allow).
- 19 □ Implement stricter dust control measures near schools during school hours.
- 20 □ Retrofit older construction vehicles to reduce emissions.

21 4. References

- 22 Colorado Department of Transportation (CDOT), 2009. *CDOT Policy Directive 1901, CDOT Policy on*
23 *Air Quality*. May.
- 24 —. 2010. *CDOT Air Quality Analysis and Documentation Procedures*.
- 25 —. 2012a. *US 50 West PEL Study: Swallows Road to Baltimore Avenue*. June.
- 26 —. 2012b. *US 50 West Implementation Plan*. June.
- 27 Ritter, Governor Bill, 2007. *Colorado Climate Action Plan, A Strategy to Address Global Warming*.
- 28 November.