## 3.10 AIR QUALITY

The federal Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for air pollutants that pose a risk to public health and welfare. In accordance with the CAA, the EPA has established standards for six criteria pollutants: carbon monoxide (CO), ozone, particulate matter less than 10 microns in diameter ($PM_{10}$) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), nitrogen oxide, sulfur dioxide, and lead. The EPA designates an area as being in attainment if the levels of these criteria air pollutants meet the established NAAQS standards.

In addition to the criteria air pollutants for which there are NAAQS, the EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources (such as, cars, trucks, and buses), non-road mobile sources (such as, airplanes and lawnmowers), and stationary sources (such as, factories, refineries and power plants), as well as indoor sources (such as, building materials). Some air toxics are also released from natural sources such as volcanic eruptions and forest fires.

Mobile Source Air Toxics (MSATs) are a subset of the 189 air toxics defined by the CAA. The seven priority MSATs are acrolein, benzene, 1,3-butadiene, diesel particulate matter (PM) plus diesel exhaust organic gases, formaldehyde, naphthalene, and polycyclic organic matter. MSATs 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 toxic compounds are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics result from engine wear or from impurities in oil or gasoline.

Historically and currently, Pueblo is in compliance with all air quality standards. Because Pueblo County is currently in attainment for the NAAQS for CO, nitrogen oxide, $PM_{10}$, and ozone, no micro-scale (project area) or regional air quality conformity analysis was required or performed for the New Pueblo Freeway project. A conformity analysis is required to be conducted in a nonattainment area or maintenance area to demonstrate that a project will not increase concentrations of nonattainment pollutants and will not interfere with the area becoming in attainment.

### 3.10.1 Affected Environment

In the 1980s, the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division managed the collection of CO data in Pueblo. This monitoring was discontinued in 1986 because the measured values were well below the CO NAAQS.

Currently, the CDPHE Air Pollution Control Division maintains $PM_{10}$ and $PM_{2.5}$ monitors in downtown Pueblo. Criteria pollutant levels, including $PM_{10}$, were measured at an industrial site (the Evraz Rocky Mountain Steel Mills) located in the southeast portion of the City and very near to the southern portion of the study corridor. **Exhibit 3.10-1** presents the data available for $PM_{10}$ monitoring in Pueblo. The 24-hour $PM_{10}$ standard of 150 micrograms per cubic meter ($\mu g/m^3$) can be exceeded no more than once per year. The value shown in the table is the highest second-high value measured in any year during the period of record. Although the annual $PM_{10}$ standard was revoked in December 2006, the monitor values are presented in **Exhibit 3.10-1** as a historical record of $PM_{10}$ concentrations.

As indicated in the table, measured $PM_{10}$ concentrations at the Evraz Rocky Mountain Steel Mills during the years 1999 through 2003 were well below the NAAQS.

The meteorological characteristics of the study area contribute to the current air quality conditions in Pueblo. Pueblo's climate is semi-arid and marked by large daily temperature variations ranging from an average temperature of 29 degrees Fahrenheit in January to an average temperature of 77 degrees Fahrenheit in July. According to the National Weather Service, average annual precipitation for Pueblo is 11 inches.

### 3.10.2 Environmental Consequences

Pueblo County is currently in attainment of the NAAQS for all criteria pollutants; therefore, no regional air quality conformity analysis or project/micro-scale analysis was required or performed for this project. Although not required for conformity purposes, a qualitative analysis was

**EXHIBIT 3.10-1**
Monitored $PM_{10}$ Data

| Monitoring Site | Period of Record | 24-Hour Value[1] micrograms per meter cubed (µg/m³) | Annual Value[2] (µg/m³) |
|---|---|---|---|
| Air Pollution Control Division Main Monitor: 211 D Street | 1999 to 2002 | 57 | 25 |
| Air Pollution Control Division Evraz Rocky Mountain Steel Mills: 1411 Santa Rosa | May to December 2002 | 64 | 26 |
| Evraz Rocky Mountain Steel Mills: 1141 Santa Fe | September to December 2002 | 40 | 21 |
| Evraz Rocky Mountain Steel Mills: Site 1 | September 2002 to August 2003 | 71 | 32 |
| Evraz Rocky Mountain Steel Mills: Site 2 | September 2002 to August 2003 | 59 | 26 |
| National Ambient Air Quality Standard | | 150 | 50 |

Source: CH2M HILL, 2010g.
µg/m³ = micrograms per cubic meter
$PM_{10}$ = particulate matter less than 10 microns in diameter
NAAQS = National Ambient Air Quality Standard

[1] High second-high concentration measured at the site. The NAAQS allows the standard to be exceeded no more than once per year; therefore, the second highest value for each year of the period of record is reported. This concentration is compared to the 24-hour NAAQS in accordance to the Clean Air Act.

[2] The annual $PM_{10}$ NAAQS of 50 µg/m³ was revoked in December 2006. Values are presented for historical record of $PM_{10}$ monitoring in the area.

performed for CO and $PM_{10}$ because these pollutants are of particular concern for transportation projects.

### 3.10.2.1 Carbon Monoxide

Carbon monoxide is evaluated for transportation projects because high localized concentrations of this pollutant can occur near heavily traveled intersections. The CO analysis approach compares the level of service (LOS) of signalized intersections in the project area. Level of service is a measure of how well a signalized intersection operates using the letters A through F, with A being least congested and F being most congested. The project as a whole would have the overall effect of improving intersection operations in the project area.

With the increase in traffic in 2035, the Existing I-25 Alternative and Modified I-25 Alternative (Preferred Alternative) are projected to improve operations compared to the No Action Alternative. The percent LOS for each alternative is presented in **Exhibit 3.10-2**.

Based on the current attainment status of Pueblo, as well as the generally improved traffic congestion in 2035 compared to the No Build Alternative, neither Build Alternative is expected to cause or contribute to a new violation of the CO NAAQS.

**EXHIBIT 3.10-2**
Intersection Level of Service Percent Summary for the Analysis Year 2035

| Level of Service | No Action Alternative | Existing I-25 Alternative | Modified I-25 Alternative (Preferred Alternative) |
|---|---|---|---|
| LOS A to C | 73% | 81% | 82% |
| LOS D | 14% | 11% | 10% |
| LOS E | 4% | 5% | 3% |
| LOS F | 8% | 4% | 5% |

Source: CDOT Project Team, 2010.
Note: Values are rounded to nearest whole number and therefore may not add up to 100 percent.

### 3.10.2.2 Particulate Matter

$PM_{10}$ is of particular concern with vehicle exhaust, especially from diesel engines. As previously discussed, Pueblo is an attainment area for $PM_{10}$, with recently measured levels well below the NAAQS. Several of the monitoring stations were located at or near the Evraz Rocky Mountain Steel Mills. Although local effects of activities at the steel mill probably influenced data collected from these monitoring stations, the measured levels remained well below the NAAQS. As a result, NAAQS for $PM_{10}$ are not expected to be exceeded under the Build Alternatives, and the $PM_{10}$ exceedances under the No Action Alternative are expected to be minimal.

### 3.10.2.3 Mobile Source Air Toxics

MSATs are hazardous air pollutants that are known to cause or suspected of causing cancer or other serious health ailments. Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of MSATs, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure are limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision making within the context of the National Environmental Policy Act (NEPA). Due to the scientific limitations and uncertainties surrounding MSAT analysis, and in accordance with 40 CFR 1502.22 regarding incomplete or unavailable information in EISs, FHWA guidance provides a three-tiered approach to analyzing the MSAT effects of transportation projects under NEPA (FHWA, 2012). The level of analysis is related to the expected size and effect of the project, as follows:

- No analysis for projects with no potential for meaningful MSAT effects; or
- Qualitative analysis for projects with low potential MSAT effects; or
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

The estimated average annual daily traffic (AADT) volume for the New Pueblo Freeway project is shown in **Exhibit 3.10-3**. For each of the alternatives, the AADT is much lower than the 140,000 AADT threshold where a quantitative MSAT analysis would be necessary or meaningful. The effects from each alternative were evaluated qualitatively.

**EXHIBIT 3.10-3**
Projected Corridor Maximum AADT on I-25 (2035)

| Alternative | Total AADT |
|---|---|
| No Build Alternative | 108,400 |
| Existing I-25 Alternative | 108,900 |
| Modified I-25 Alternative (Preferred Alternative) | 106,700 |

Source: CH2M HILL, 2005a; 2010h; 2011b.

For all alternatives, the amount of MSATs emitted is proportional to the vehicle miles traveled (VMT), assuming that other variables, such as fleet mix, are the same for each alternative. As shown in **Exhibit 3.10-4**, the corridor VMT estimated for both Build Alternatives is higher than for the No Action Alternative; the Build Alternatives provide additional capacity, which increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. The increase in VMT for the Build Alternatives would lead to higher MSAT emissions along the I-25 corridor, along with a corresponding decrease in MSAT emissions along parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOBIL6.2 model, emissions of the priority MSATs except for diesel PM decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of the technical models.

**EXHIBIT 3.10-4**
Vehicle Miles Traveled in the Project Area (2035)

| Alternative | Peak-Hour VMT | Daily VMT |
|---|---|---|
| No Build Alternative | 68,650 | 683,800 |
| Existing I-25 Alternative | 74,630 | 717,900 |
| Modified I-25 Alternative (Preferred Alternative) | 80,490 | 739,400 |

Source: CH2M HILL, 2005a; 2010h; 2011b.

The additional travel lanes contemplated as part of the Build Alternatives will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under each alternative, there may be localized areas where ambient concentrations of MSAT could be higher under the Build Alternatives than under the No Action Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built at the Eiler Heights neighborhood under the Modified I-25 Alternative (Preferred Alternative). However, the magnitude and duration of these potential increases compared to the No Action Alternative cannot be reliably quantified due to incomplete or unavailable information for forecasting project-specific MSAT health impacts. In summary, the localized level of MSAT emissions resulting from highway widening under the Build Alternatives could be higher relative to the No Action Alternative. However, this could be offset by increased speeds and reduced congestion, which are associated with lower MSAT emissions. Also, MSAT will be lower in other locations when traffic shifts away from these locations. On a regional basis and over time, EPA's vehicle and fuel regulations, coupled with fleet turnover, will result in substantial emissions reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than current conditions.

Regardless of the alternative chosen, design-year emissions will likely be lower than present levels as a result of EPA's national control programs that are projected to reduce MSAT emissions by 72 percent between 1999 and 2050. 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 in nearly all cases. Additional information about MSATs is presented in the *Air Quality Technical Memorandum, New Pueblo Freeway* (CH2M HILL, 2010g).

### 3.10.3 Mitigation

Because no adverse air quality impacts are anticipated to occur as a result of the proposed improvements, mitigation is not required from an air quality standpoint. Temporary air quality impacts may occur during construction, including an increase in fugitive dust. Measures to reduce temporary air quality impacts during construction are described below.

- Contractors will be required to reduce fugitive dust emissions during construction by implementing best management practices (BMPs), such as spraying or covering exposed soils, covering trucks when transporting material, minimizing mud tracking by vehicles, controlling vehicle speeds on construction access roads, and stabilizing construction entrances per CDOT M-208-1 requirements.
- All work performed on the project will be in accordance with appropriate CDOT Standard Specifications for Roadway and Bridge Construction.
- The following specific construction mitigation measures to reduce impacts will be used where appropriate:
  - Require construction vehicle engines to be properly tuned and maintained.
  - Use water or wetting agents to control dust
  - Have a wheel wash station and/or crushed stone apron at egress/ingress areas to prevent dirt being tracks onto public streets.
  - Use vacuum-powered street sweepers to remove dirt tracked onto streets
  - Use a binding agent for long-term excavated materials
  - Schedule work outside of normal hours for sensitive receptors; this should be necessary only in extreme circumstances, such as construction immediately adjacent to a health care facility, church, outdoor playground, or school.