Draft Air Quality Technical Memorandum for the 43rd Ave SE/Sunset Road Improvement Project

This draft air quality analysis for the proposed widening, extension, and improvements to the 43rd Avenue SE corridor (the 43rd Ave SE/Sunset Road Project [project]) is based on the guidelines provided by the Washington State Department of Transportation (WSDOT), the Federal Highway Administration (FHWA), and Puget Sound Clean Air Agency (PSCAA). The memorandum contains a qualitative analysis of pollutants generated from vehicle emissions associated with implementation of the project.

1.0 Project Overview

To alleviate traffic congestion through unincorporated Snohomish County, the county is proposing road improvements along 43rd Ave SE from Maltby Road north to Sunset Road (approximately 1.7 miles; see Figure 1). Project components include installing two new roundabouts and a traffic signal with turn pockets; adding roughly 1,950 linear feet of urban and rural road; improving a portion of existing urban road; and widening a portion of 43rd Avenue SE.

Source: Snohomish County 2019

Figure 1 Project Area

2.0 Methods of Analysis

It is assumed that a State Environmental Policy Act (SEPA) checklist will be prepared to satisfy the project's Washington SEPA environmental review requirements. To support a SEPA checklist level of environmental analysis, this memorandum provides a qualitative review of the impacts associated with project-related vehicle emissions including carbon monoxide (CO), nitrogen oxides (NOx), particulate matter with less than 2.5 micron diameter ($PM_{2.5}$), particulate matter with less than 10 micron diameter (PM_{10}), ozone, greenhouse gases, and Mobile Source Air Toxic (MSATs). The following agency guidelines were considered in preparation of this memorandum:

- Chapter 425 of WSDOT's *Environmental Manual M31-11.20* (June 2019) (WSDOT 2019)
- FHWA's *Updated Interim Guidance on Mobile Source Air Toxic Analysis in National Environmental Policy Act (NEPA) Documents* (October 2016) (FHWA 2016)
- WSDOT's *Project-Level Greenhouse Gas Evaluations under NEPA* (WSDOT 2018)

WSDOT guidelines recommend a qualitative analysis of greenhouse gases related to construction, operations, and maintenance emissions, since this type of project generally has a small potential to change greenhouse gas emissions (WSDOT 2018).

3.0 Regulatory Overview

National Ambient Air Quality Standards (NAAQs). The US Environmental Protection Agency (EPA) sets NAAQS for six criteria air pollutants: CO, nitrogen dioxide (NO_2), particulate matter (PM10 and PM2.5), sulfur dioxide (SO_2), ozone, and lead (Table 1). The Washington State Department of Ecology (Ecology) and the PSCAA have also established state and local ambient air quality standards for these pollutants. Snohomish County is considered to be in an attainment area, with no violations of any NAAQS. Though the area has been monitored for CO in the past, it no longer requires a CO conformity analysis as of October 2016 (i.e., 20 years from achieving attainment). Therefore, the project does not require a regional-level analysis and project-level analysis under federal transportation conformity regulations (further details in baseline conditions below).

Table 1 – Summary of Relevant Primary National Ambient Air Quality Standards

Pollutant	Level	Averaging Time	Threshold
Carbon monoxide (CO)	9 parts per million (ppm) 35 ppm	8 hours 1 hour	Not to be exceeded more than once a year.
Nitrogen Dioxide (NO_2)	53 parts per billion (ppb)	1 year	Annual mean
	100 ppb	1 hour	98% of one-hour daily max as averaged over 3 years
Particular Matter (PM_{10})	150 micrograms per cubic meter ($\mu g/m^3$)	24 hours	Not be exceeded more than once a year as averaged over 3 years
Particular Matter ($PM_{2.5}$)	12 $\mu g/m^3$	1 year	Annual mean as averaged over 3 years
	35 $\mu g/m^3$	24 hours	98% as averaged over 3 years
Ozone (O_3)	0.070 ppm	8 hours	Fourth-highest daily maximum over a year, as averaged for 3 years

Source: EPA 2019

Greenhouse gases. State regulations for transportation-related greenhouse gases do not apply to infrastructure projects but rather enforce vehicle emission standards, state vehicle fleet requirements, and tax incentives for purchasing electric vehicles. Snohomish County Executive Order 07-48 provides a county goal of achieving a 20 percent reduction in greenhouse gas emissions from county operations by the year 2020, as compared to the year 2000 baseline emissions.

MSATs. EPA has identified a list of 21 Hazardous Air Pollutants as MSATs, with a subset of seven compounds prioritized for mitigation, given their potential for adverse health effects. They are acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, naphthalene, and polycyclic organic matter. If federal funding is used to support this project, an assessment of MSATs is needed to satisfy NEPA requirements. FHWA's interim guidance requires a quantitative MSAT emissions analysis for projects with average annual daily traffic (AADT) greater than 140,000 vehicles or where there is potential for the project to substantially increase (10 percent) the number of diesel vehicles using a roadway. The current AADT volume is less than 10,000 and the future AADT volume is not predicted to exceed 14,000 vehicles. In addition, because the increase in diesel vehicles would not be higher than 10 percent, a quantitative MSAT analysis is not required.

4.0 Baseline Conditions

The Puget Sound Region, including Snohomish County, was designated as a "high-moderate" non-attainment area for CO and as a "marginal" ozone nonattainment area until 1996, when attainment with the standards was demonstrated and a maintenance plan developed to ensure that pollutant levels do not increase (Snohomish County 2012). The Puget Sound Region including Snohomish County is currently designated by the EPA as being in attainment for all six NAAQS pollutants. Vehicle emissions are Washington State's largest contributor to greenhouse gases.

5.0 Project Impacts and Mitigation

Construction. Construction equipment, construction-related activities, and vehicles carrying workers and equipment to and from the site would result in minor, temporary increases in emissions and dust. Emissions may also increase due to traffic congestion due to construction (WSDOT 2018). Cardno recommends mitigation as identified through the *Memorandum of Agreement on Fugitive Dust from Construction Projects* between WSDOT and the PSCAA (WSDOT 1999) and *Guide to Handling Fugitive Dust from Construction Projects* by the Associated General Contractors of Washington. These measures would include developing a Fugitive Dust Control Plan, use of water sprays, and reducing speed through the construction area.

Operations. The project is intended alleviate current high-traffic areas and improve traffic flow between 180th Street SE and SR 524/Maltby Road. The project is likely to carry vehicles that would have otherwise used currently strained road systems, and therefore actual vehicle emission levels are unlikely to increase due to operation of the project. Alleviating traffic flow typically produces long-term positive impacts to air quality by reducing traffic-related idling times (US Department of Transportation 2015). However, Snohomish County's 2035 air quality forecasting along 43rd Ave SE predicts air quality may be reduced due to increased traffic volume through the 43rd Ave corridor. However, based on the volumes of traffic in the corridor and percentage of diesel vehicles, the proposed projected is not predicted to result in any new exceedances of the NAAQS.

6.0 References

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