Air Quality Technical Report

BLUE WATER BRIDGE

Prepared For:

Michigan Department of Transportation

Prepared By:

May 2023

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Executive Summary

This Air Quality Technical Report evaluates the potential air quality impacts of the Blue Water Bridge U.S. Plaza redevelopment (BWB) within the Study Area. This includes an analysis of whether the project will cause or contribute to a new localized exceedance of particulate matter ($PM_{2.5}$) ambient air quality standards or increase the frequency or severity of any existing exceedance; the mobile source air toxic (MSAT) impacts of the project; and the greenhouse gas (GHG) impacts of the project.

$PM_{2.5}$

Via meetings held with Southeast Michigan's Interagency Working Group (IAWG) on March 9 and May 2, 2023, it was decided that this is not a project of air quality concern (POAQC) and that no further analysis would be required for $PM_{2.5}$. This project therefore complies with CAA and 40 CFR 51 and 93 requirements.

MSAT

For the traffic network, Build MSAT burdens would be the same as No Build burdens in future years. The project Build alternative is not expected to increase overall traffic volume compared to the No Build.

GHG

For the traffic network, Build GHG burdens would be the same as No Build burdens in future years. The project Build alternative is not expected to increase overall traffic volume compared to the No Build.

1.0 Introduction

This Air Quality Technical Report has been prepared in support of the Blue Water Bridge U.S. Plaza redevelopment (BWB) crossing project in the city of Port Huron, St. Clair County, Michigan.

An air quality analysis was previously performed for the project in June 2007.[1] Air quality is included in this re-evaluation because there have been numerous changes and updates to air quality regulations, guidelines and models since issuance of the 2007 analysis. These include the following:

- U.S. Environmental Protection Agency's (EPA) replacement of the MOBILE6.2 emissions factor model with the Motor Vehicle Emission Simulator (MOVES) in 2010. MOVES is a state-of-the-science emission modeling system that estimates emissions for mobile sources at the national, county, and project levels for criteria air pollutants, greenhouse gases, and air toxics. The most current version of MOVES is MOVES3.1.
- EPA's release of Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas. This guidance is to be used by state and local agencies to conduct quantitative particulate matter "hot-spot analyses" for new highway and transit projects that involve significant diesel emissions. This guidance describes how to estimate project emissions using EPA's MOVES model and how to apply air quality models (such as AERMOD and CAL3QHCR) for PM hot-spot analyses. The guidance also includes a list of additional resources that may assist agencies in conducting quantitative PM hot-spot analyses. The latest update of this guidance was in October 2021.
- EPA's release of the latest carbon monoxide (CO) hot-spot guidance, Using MOVES3 in Project-Level Carbon Monoxide Analyses, which is linked to EPA's earlier 1992 guidance, Guideline for Modeling Carbon Monoxide from Roadway Intersections. The new guidance describes how to use the MOVES3 emissions model to estimate CO emissions from transportation projects, including roadway intersections, highways, transit projects, parking lots and intermodal terminals. This guidance can be applied when using MOVES3 to complete any project-level quantitative CO analysis, including hot-spot analyses for transportation conformity determinations, modeling project-level emissions for State Implementation Plan (SIP) development, and completing National Environmental Policy Act (NEPA) analyses. The latest update of this guidance was in December 2021.

[1] Michigan Department of Transportation (MDOT), Air Quality Technical Report, Blue Water Bridge Plaza, June 2007.

- U.S. Federal Highway Administration's (FHWA) release of Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. The purpose of this guidance is to update previous guidance on when and how to analyze MSAT under the National Environmental Policy Act (NEPA) review process for highway projects. This update reflects recent changes in methodology for conducting emissions analysis, including the use of EPA's MOVES model, as well as updates of research in the MSAT arena. The latest update of this guidance was in December 2021.
- The proliferation of various guidance and methodology on the analysis of GHGs in transportation projects. The latest GHG guidance was issued by the Council on Environmental Quality (CEQ) on January 9, 2023. This interim GHG guidance is meant to assist agencies in analyzing GHG and climate change effects of their proposed actions under the National Environmental Policy Act (NEPA). CEQ issued this guidance as interim guidance so that agencies may make use of it immediately while CEQ seeks public comment on the guidance. CEQ intends to either revise the guidance in response to public comments or finalize the interim guidance. EPA's MOVES model is currently used to estimate GHG from transportation projects.

In addition to the above changes in air quality models, regulations and guidance, the traffic analysis for the project has been updated since the 2007 analysis. Therefore, an updated air quality analysis has been conducted based upon the latest models and guidance, using the updated traffic network developed for the project.

2.0 Project Description

The Port Huron U.S. Customs and Border Protection (CBP) Land Port of Entry (LPOE) is commonly referred to as the Blue Water Bridge (BWB) Plaza. The Port Huron facility is built on an elevated 11.5-acre plaza at the base of the United States side of the Blue Water Bridge, which connects Port Huron, Michigan with Sarnia, Ontario, across the St. Clair River. The existing plaza site is bordered by Elmwood Street on the north, Harker Street on the south, the M-25 connector on the west, and 10th Street on the east. Pine Grove Avenue (also known as M-25), one of Port Huron's major north-south connector streets, passes beneath the elevated plaza (Figure 1).

The existing facilities were constructed in 1996 and provide for the entry and exit between the United States and Canada. The U.S. BWB Plaza is owned by the Michigan Department of Transportation (MDOT) and partially leased to the General Services Administration (GSA). It is a major border crossing for cars and trucks between the United States - Canada, and Michigan - Ontario.

MDOT completed an Environmental Impact Statement (EIS) and obtained a Record of Decision (ROD) through the Federal Highway Administration on May 19, 2009. At that time, the project was divided into four separate phases, with real estate acquisition resulting in the purchase of 125 residences and 16 businesses by MDOT for the plaza and I-94/96 corridor expansion.

The four phases include:

- Replacement of the I-94/69 Black River Bridge to provide dedicated lanes for traffic heading to Canada.
- Modernization of the Water Street and Lapeer Connector interchanges to separate local traffic from the international traffic and eliminate interaction with the frequent backups on the I-94/69 freeway.
- Construction of a new Michigan Welcome Center and rest area west of the Lapeer Connector interchange.
- The expansion of the BWB Plaza.

The first three phases of the project have been constructed. The last phase – the expansion of the BWB Plaza, will require an environmental re-evaluation to review any changes in the project design, scope, affected environment or proposed mitigation, and provide updated analysis required by any new laws, regulations, or guidance established since the ROD.

In 2021, MDOT started refining and updating the US BWB Plaza facilities from the 2009 ROD Selected Alternative to become the proposed 2022 Refined Alternative.

The 2022 Refined Alternative primarily consists of expanding the existing plaza to the south and to the north all within the limits of the 2009 environmental clearance limits and will be approximately 30% smaller than the 2009 plaza selected alternative (Figure 2). As part of the Refined Alternative, MDOT is completing an environmental re-evaluation and feasibility study with GSA, CBP, and other federal partners.

Figure 1. Project Location

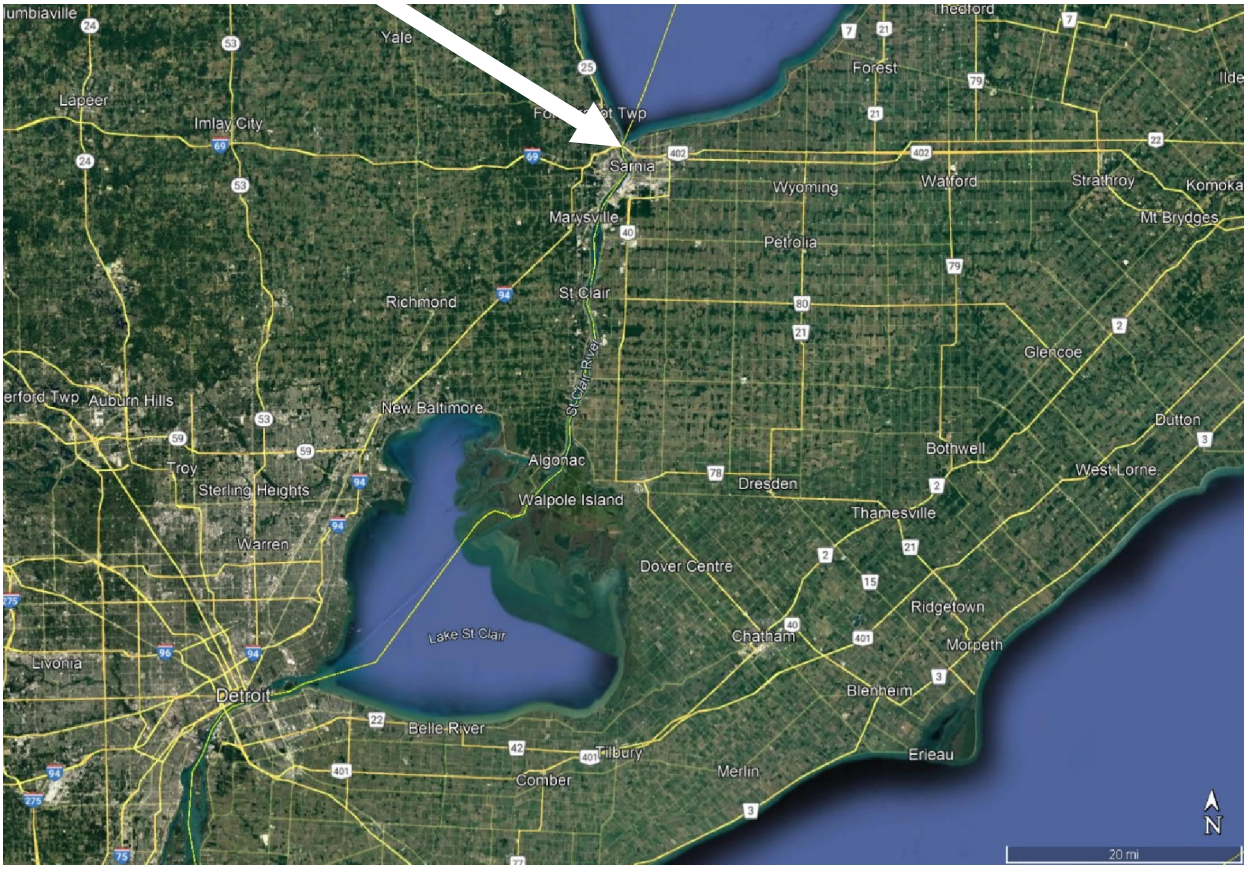
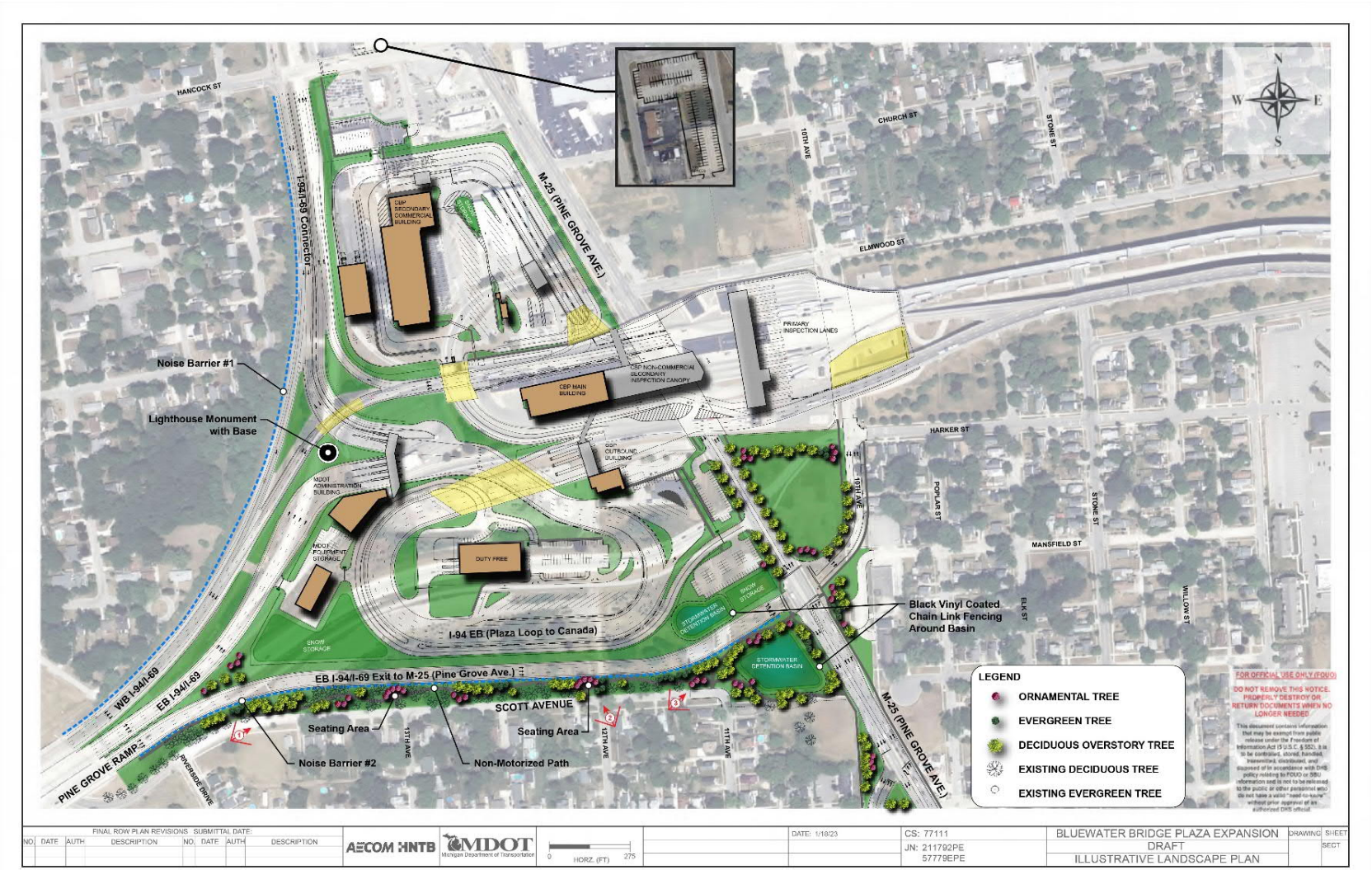


Figure 2. 2022 Refined Alternative



3.0 Regulations

"Air Pollution" is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants degrade the atmosphere by reducing visibility, damaging property, reducing the productivity or vigor of crops or natural vegetation, and/or reducing human or animal health. Air quality is a term used to describe the degree to which the ambient air is pollution-free, assessed by the measured or calculated amount of air pollution the public is exposed to in the environment.

Air quality in the United States is governed by the Federal Clean Air Act (CAA) and its amendments and is administered by the EPA.

3.1 Clean Air Act Amendments of 1990

The Clean Air Act (CAA) directs the EPA to implement environmental policies and regulations that will ensure acceptable levels of air quality. Under the CAA and its amendments, a project cannot:

- Cause or contribute to any new violation of any National Ambient Air Quality Standard (NAAQS) in any area;
- Increase the frequency or severity of any existing violation of any NAAQS in any area; or
- Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area.

3.1.1 National Ambient Air Quality Standards

The CAA directs EPA to periodically review and establish NAAQS. NAAQS have been established for the following six major air pollutants: carbon monoxide, nitrogen dioxide, ozone, particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide, and lead. These standards are summarized in Table 1. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare. The state of Michigan has adopted these standards as the state standards.

Brief descriptions of those criteria pollutants associated with transportation sources (ozone, carbon monoxide and particulate matter) are provided in the following sections.

Table 1. National Ambient Air Quality Standards

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead		primary and secondary	Rolling 3 month average	0.15 µg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb (2)	Annual Mean
Ozone		primary and secondary	8-hour	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution	$PM_{2.5}$	primary	Annual	12 µg/m^3	annual mean, averaged over 3 years
		secondary	Annual	15 µg/m^3	annual mean, averaged over 3 years
		primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide		primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: EPA, https://www.epa.gov/criteria-air-pollutants/naaqs-table

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m^3 as a calendar quarter average) also remain in effect.

(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O_3 standards.

(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

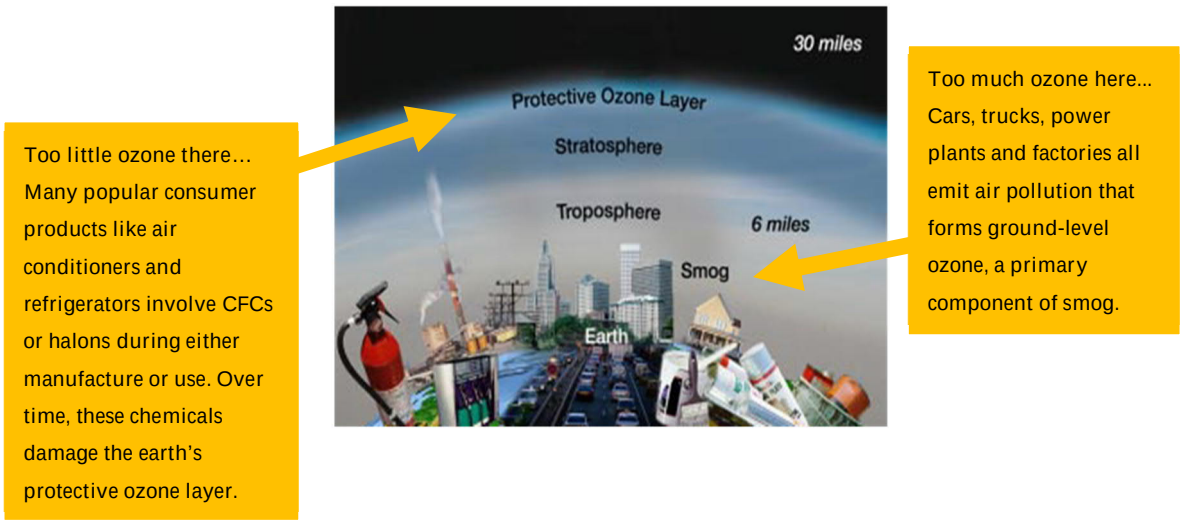
3.1.1.1 Ozone

Ozone (O_3) is a colorless toxic gas. As shown in Figure 3, O_3 is found in both the Earth's upper and lower atmospheric levels. In the upper atmosphere, O_3 is a naturally occurring gas that helps to prevent the sun's harmful ultraviolet rays from reaching the Earth. In the lower layer of the atmosphere, O_3 is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC). This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight.

O_3 at ground level is a harmful air pollutant, because of its effects on people and the environment, and it is the main ingredient in "smog." O_3 in the air we breathe can harm our health. People most at risk from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers. In addition, people with certain genetic characteristics, and people with reduced intake of certain nutrients, such as vitamins C and E, are at greater risk from ozone exposure.

Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and airway inflammation. It also can reduce lung function and harm lung tissue. Ozone can worsen bronchitis, emphysema, and asthma, leading to increased medical care. O_3 also damages vegetation by inhibiting its growth. The effects of changes in VOC and NOx emissions are examined on a regional level.

Figure 3. Ozone in the Atmosphere

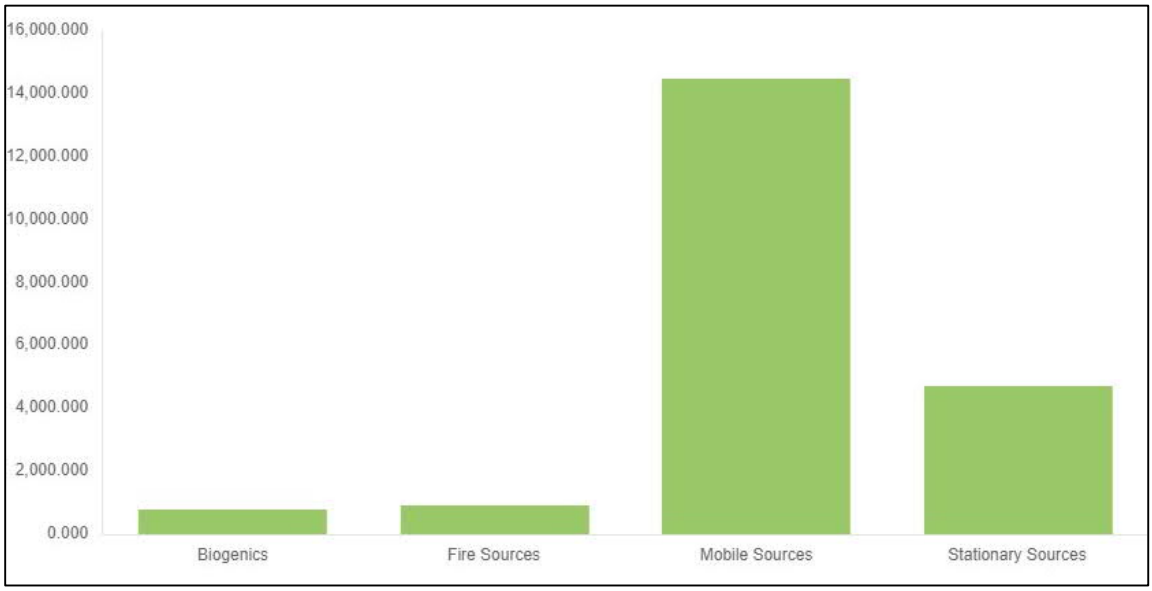


Source: EPA

3.1.1.2 Carbon Monoxide

Carbon monoxide (CO) is a colorless gas that interferes with the transfer of oxygen to the brain. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. As shown in Figure 4, mobile sources (on-road motor vehicle exhaust) are the primary source of CO in St. Clair County. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Prolonged exposure to high levels of CO can cause headaches, drowsiness, loss of equilibrium, or heart disease. CO levels are generally highest in the colder months of the year when inversion conditions (when warmer air traps colder air near the ground) are more frequent.

Figure 4. Sources of CO in St. Clair County, 2017 (tons)



Source: EPA

CO concentrations can vary greatly over relatively short distances. Relatively high concentrations of CO are typically found near congested intersections, along heavily used roadways carrying slow-moving traffic, and in areas where atmospheric dispersion is inhibited by urban "street canyon" conditions. Consequently, CO concentrations must be predicted on a microscale basis.

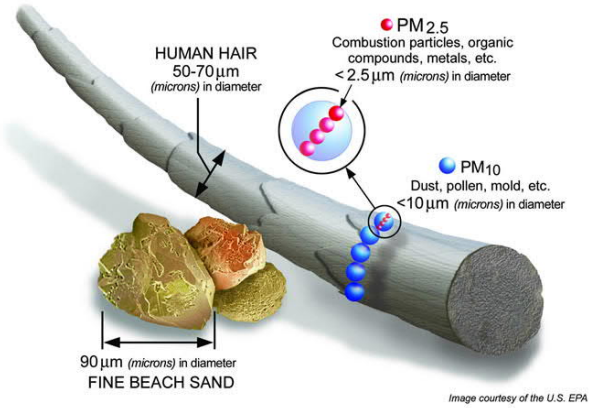
3.1.1.3 Particulate Matter

PM stands for particulate matter (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.

Particle pollution includes:

- PM_{10}: inhalable particles, with diameters that are generally 10 micrometers and smaller; and
- $PM_{2.5}$: fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.

Figure 5. Relative Particulate Matter Size



Source: EPA

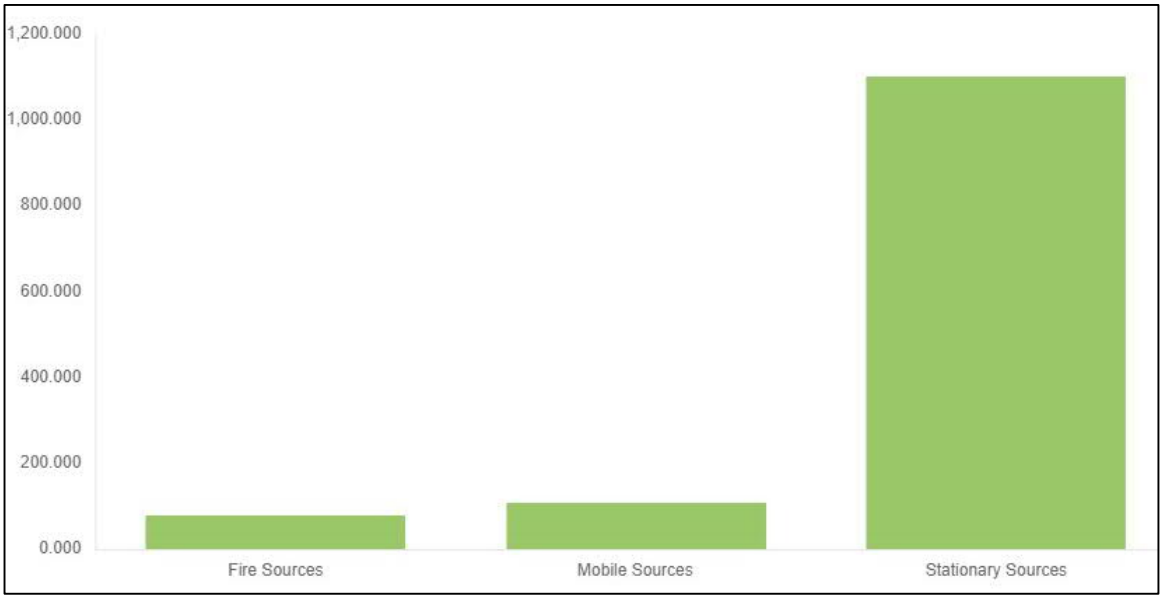
These particles come in many sizes and shapes and can be made up of hundreds of different chemicals. Some are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks or fires. Most particles form in the atmosphere as a result of complex reactions of chemicals such as sulfur dioxide and nitrogen oxides, which are pollutants emitted from power plants, industries and automobiles.

Particulate matter contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. Particles less than 10 micrometers in diameter pose the greatest problems, because they can get deep into your lungs, and some may even get into your bloodstream. Whereas particles 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles 2.5 microns or less are so tiny that they can penetrate deeper into the lungs and damage lung tissues.

Fine particles ($PM_{2.5}$) are the main cause of reduced visibility (haze) in parts of the United States, including many of our treasured national parks and wilderness areas. As shown in Figure 6, stationary sources are the primary source of $PM_{2.5}$ in St. Clair County

The effects of PM_{10} and $PM_{2.5}$ emissions for a project are examined on a localized, or microscale, basis.

Figure 6. Sources of $PM_{2.5}$ in St. Clair County, 2017 (tons)



Source: EPA

3.1.2 Transportation Conformity Rule

Transportation conformity is required by the Clean Air Act section 176(c) (42 U.S.C. 7506(c)) to ensure that federal funding and approval are given to highway and transit projects that are consistent with ("conform to") the air quality goals established by a state air quality implementation plan (SIP). Conformity, to the purpose of the SIP, means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the national ambient air quality standards. Proposed transportation projects must be derived from a long-range transportation plan (LRTP) that conforms with the state air quality plans, as outlined in the SIP.

The conformity rule establishes the process by which the FHWA, the Federal Transit Administration (FTA), and local metropolitan planning organizations (MPOs) determine conformance of transportation plans and transportation improvement plans (TIPs) and federally-funded highway and transit projects. TIPs are a subset of staged, multi-year, inter-modal programs of transportation projects covering metropolitan planning areas that are consistent with regional transportation plans (RTPs). The TIPs include a list of roadway and transit projects selected as priorities for funding by cities, county road commissions, and transit agencies. As part of this process, local MPOs are required under regulations promulgated in the CAA and its amendments to undertake conformity determinations on RTPs and TIPs before they are adopted, approved, or accepted.

3.1.3 Interagency Consultation

Proposed transportation projects normally go through interagency consultation in order to determine if the project is one of local air quality concern and, if it is determined to be such, that applicable models and methodologies are used for project-level air quality analyses. Southeast Michigan's Interagency Working Group (IAWG) is responsible for this process for the Study Area. This group consists of representatives from various involved or concerned agencies, including the MPO (Southeast Michigan Council of Governments [SEMCOG]), MDOT, EPA, Michigan Department of Environmental Quality (MDEQ), and FHWA.

The BWB project was brought forth to the March 9, 2023 meeting of the IAWG. Information on the project was presented to the IAWG and subsequently provided to the agencies for their review and decision as to whether the project is a project of air quality concern (POAQC), thereby requiring a microscale particulate matter analysis.

A subsequent meeting was held on May 2, 2023, in which the IAWG concluded that this project is not a POAQC. As such, no further analysis is required. Documentation of the interagency decision is included in Appendix A. Approved methodology is included in Appendix B.

3.2 Mobile Source Air Toxics

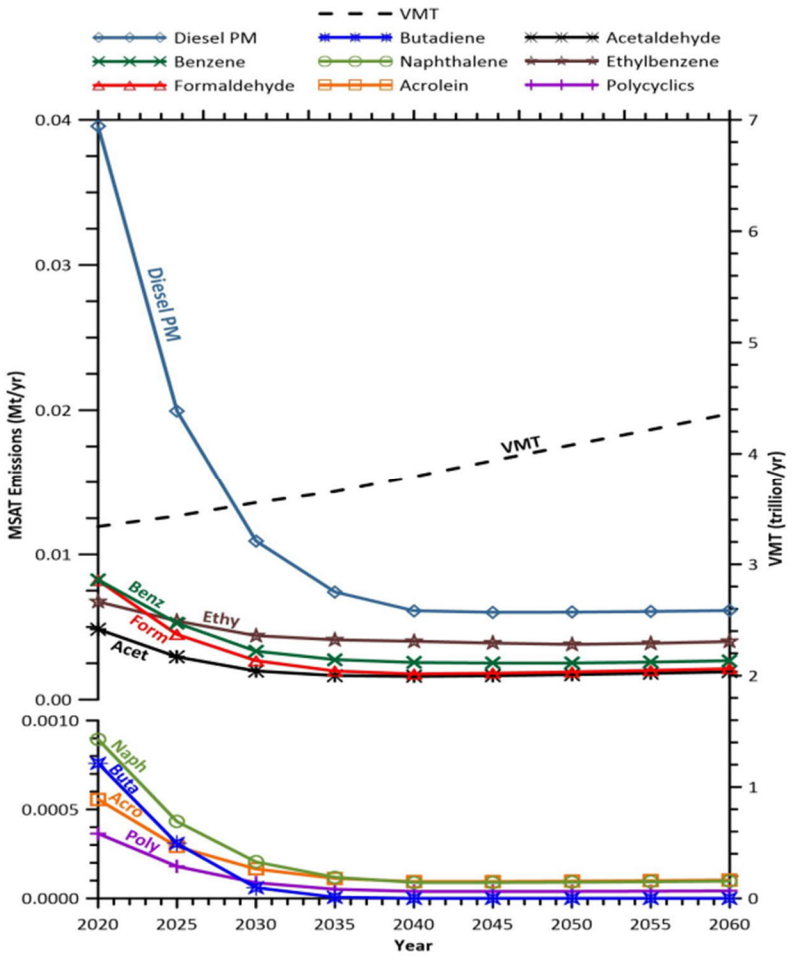
In addition to the criteria pollutants for which there are NAAQS, the EPA also regulates air toxics. Toxic air pollutants are those pollutants known or suspected to cause cancer or other serious health effects. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA), whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (*Federal Register*, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (http://www.epa.gov/iris/). In addition, the EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (https://www.epa.gov/national-air-toxics-assessment). These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene,

formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority MSATs, the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. Using EPA's MOVES3 model, as shown in Figure 7, FHWA estimates that even if VMT increases by 31 percent from 2020 to 2060 as forecast, a combined reduction of 76 percent in the total annual emissions for the priority MSAT is projected for the same time period.

Figure 7. FHWA Projected National MSAT Emission Trends 2010 – 2060 for Vehicles Operating on Roadways



Source: EPA MOVES3 model runs conducted in March 2021 by FHWA.

Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles traveled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.

3.3 Greenhouse Gases

While the Earth has gone through many natural changes in climate in its history, there is general agreement that the Earth's climate is currently changing at an accelerated rate and will continue to do so for the foreseeable future. Carbon dioxide (CO_2) makes up the largest component of these GHG emissions. Other prominent transportation greenhouse gases include methane (CH_4) and nitrous oxide (N_2O).

The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different GHGs. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2). The larger the GWP, the more that a given gas warms the earth compared to CO_2 over that time period. The time period usually used for GWPs is 100 years. GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases (e.g., to compile a national GHG inventory), and allows policymakers to compare emissions reduction opportunities across sectors and gases.

- CO_2, by definition, has a GWP of 1 regardless of the time period used, because it is the gas being used as the reference. CO_2 remains in the climate system for a very long time: CO_2 emissions cause increases in atmospheric concentrations of CO_2 that will last thousands of years.

- Methane (CH_4) is estimated to have a GWP of 25 over 100 years. CH_4 emitted today lasts about a decade on average, which is much less time than CO_2. But CH_4 also absorbs much more energy than CO_2. The net effect of the shorter lifetime and higher energy absorption is reflected in the GWP. The CH_4 GWP also accounts for some indirect effects, such as the fact that CH_4 is a precursor to ozone, and ozone is itself a GHG.

- Nitrous Oxide (N_2O) has a GWP 298 times that of CO_2 for a 100-year timescale. N2O emitted today remains in the atmosphere for more than 100 years, on average.

GHGs are reported in CO_2 Equivalents (CO_2e), which is a combined measure of greenhouse gas emissions weighted according to the global warming potential of each gas, relative to CO_2. CO_2 equivalent is calculated within the MOVES3 model from CO_2, N_2O and CH_4 mass emissions according to the following equation:

$$CO_2e = CO_2 \times GWP_{CO2} + CH_4 \times GWP_{CH4} + N_2O \times GWP_{N2O}$$

To date, no national standards have been established regarding GHGs, nor has EPA established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO_2 under the CAA. However, in January 2023 the Council on Environmental Quality (CEQ) issued interim guidance to assist agencies in analyzing GHGs and climate change effects of their proposed actions under the National Environmental Policy Act (NEPA). CEQ issued this guidance as interim guidance so that agencies may make use of it immediately while CEQ seeks public comment on the guidance. CEQ intends to either revise the guidance in response to public comments or finalize the interim guidance.

Furthermore, there is a considerable body of scientific literature addressing the sources of GHG emissions and their adverse effects on climate, including reports from the Intergovernmental Panel on Climate Change, the US National Academy of Sciences, and EPA and other federal agencies. The GHGs are different from other air pollutants[2] evaluated in federal environmental reviews because their impacts are not localized or regional due to their rapid dispersion into the global atmosphere, which is characteristic of these gases.

In addition, from a quantitative perspective, global climate change is the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations. In contrast to broad scale actions such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project.

[2] April 2007: The U.S. Supreme Court ruled in Massachusetts v. EPA that GHGs are air pollutants covered by the Clean Air Act. The EPA may regulate GHGs if they are determined to be a danger to human health.

4.0 Existing Conditions

4.1 Ambient Air Quality Data

4.1.1 Local Meteorology

The project is located in Port Huron, approximately 50 miles north of the Detroit metropolitan area. Porth Huron is located adjacent to the St. Clair River at the south end of Lake Huron. The climate of this area is influenced by its location with respect to major storm tracks and the influence of the Great Lakes (Figure 1). The normal wintertime storm track is south of the project area. Winter storms can bring combinations of rain, snow, freezing rain, and sleet, with heavy snowfall accumulations at times. In summer, most storms pass to the north, allowing for intervals of warm, humid, sunny skies with occasional thunderstorms followed by days of mild, dry, and fair weather. Temperatures of 90 degrees Fahrenheit or higher are reached during each summer. Local climatic variations are due largely to the immediate effect of Lake Huron (National Oceanic and Atmospheric Administration).

4.1.2 Local Monitored Air Quality

The monitored information for the hot-spot pollutant of concern for this project, 24-hour $PM_{2.5}$, is presented in Table 2. This table presents the last three years of available monitored data at the closest monitoring stations to the Study Area.

Table 2. Monitored $PM_{2.5}$ 24-hour 98th Percentile Values (µg/m^3)

Year	Monitor Address	24-Hour 98th Percentile	Annual Average
2021	2525 Dove Rd, Port Huron	23	9.3
	57700 Gratiot, New Haven	23	9.7
2020	2525 Dove Rd, Port Huron	17	6.7
	57700 Gratiot, New Haven	16	6.0
2019	2525 Dove Rd, Port Huron	20	7.6
	57700 Gratiot, New Haven	19	7.3

Note: 24 Hour standard is 35 µg/m^3, annual standard is 12 µg/m^3 averaged over 3 years.
Source: EPA AirData, Accessed March 2023 - https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

4.2 Attainment Status

Section 107 of the 1977 CAAA first established the procedure that requires the EPA to publish a list of all geographic areas in compliance with the NAAQS, plus those not attaining the NAAQS. Areas not in NAAQS compliance are deemed nonattainment areas. Areas that have insufficient data to make a determination are deemed unclassified and are treated as being attainment areas until proven otherwise. Maintenance areas are

areas that were previously designated as nonattainment for a particular pollutant, but have since demonstrated compliance with the NAAQS for that pollutant. An area's designation is based on the data collected by the state monitoring network on a pollutant-by-pollutant basis.

The BWB is located in St. Clair County in Southeast Michigan. Table 3 shows the attainment status for Southeast Michigan. As shown in the table, the EPA has classified the entire region, including St. Clair County, as a non-attainment area for ozone and a maintenance area for 24-hour $PM_{2.5}$.

Table 3. Southeast Michigan Attainment Status

Pollutant	Current Designation	Standard (Year Established)	Current Designation Year	Area	Transportation Conformity Required?
Ozone (O_3)	Nonattainment	8-Hr: 70 ppb (2015)	2018	Entire region	Yes[4]
Fine Particulate Matter ($PM_{2.5}$) 24-Hr	Attainment/ Maintenance	35 µg/m^3 (2006)	2013	Entire region	Yes
Fine Particulate Matter ($PM_{2.5}$) Annual	Attainment	12 µg/m^3 (2012)	2015	Entire region	No[1]
Carbon Monoxide (CO)	Attainment (ended Maintenance)	1-Hr: 35 ppm 8-Hr: 9 ppm (1971)	2019	Portions of Wayne, Oakland & Macomb counties	No[2]
Sulfur Dioxide (SO_2)	Nonattainment	1-Hr: 75 ppb (2010)	2013 & 2016	Narrow strip of Southeastern Wayne County & Partial St. Clair County	No[3]

Source: SEMCOG, 2023 http://semcog.org/Air

[1]1997 standard was officially revoked on October 24, 2016
[2]The maintenance period ended in 2019
[3]Mobile sources are not a significant emissions contributor
[4]SEMCOG is also conducting conformity for the 1997 Ozone standard

The MPO for the Study Area, SEMCOG, adopted the latest TIP, the Fiscal Year (FY) 2023-2026 Transportation Improvement Program for Southeast Michigan, in July 2022. The BWB project is included in SEMCOG's FY 2023-2026 TIP (#211792 & 211793), and its associated emissions will not have an adverse effect on the ability of Southeast Michigan to obtain their applicable air quality goals. As such, no additional regional conformity analyses are required.

5.0 Environmental Consequences

5.1 $PM_{2.5}$ Analysis

The IAWG concluded that this project is not a POAQC. As such, no further analysis is required. Documentation of the interagency decision is included in Appendix A. Approved methodology is included in Appendix B.

5.2 MSAT Analysis

5.2.1 Methodology

The MSAT analysis was conducted according to FHWA's latest guidance, Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents (January 2023). The project was analyzed as a Tier 1 project, based on FHWA's recommended tiering approach i.e., for projects without the potential for MSAT effects.

5.2.2 Analysis

According to the Blue Water Bridge Plaza Draft Traffic Analysis Report (February 2023), the proposed BWB plaza improvements are not expected to result in increased traffic volumes within the study area beyond what is expected in the no-build condition. No changes in the vehicle mix are anticipated for the with-project condition compared to the no-build condition. Because the estimated VMT under each of the alternatives (no-build and with project) are the same, and no changes in vehicle mix would occur, it is expected there would be no appreciable difference in overall MSAT emissions among the alternatives. For all alternatives, emissions are virtually certain to be lower than present levels in the design year as a result of the Environmental Protection Agency's (EPA) national control programs that are projected to reduce annual MSAT emissions by over 76 percent from 2020 to 2060. 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 than they are today.

5.3 Greenhouse Gas Analysis

5.3.1 Methodology

A qualitative GHG analysis was conducted according to CEQ's recent guidance, National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change (January 2023). As discussed in this guidance, when conducting climate change analyses in NEPA reviews, agencies should consider: (1) the potential effects of a proposed action on climate change, including by assessing both GHG emissions and

reductions from the proposed action; and (2) the effects of climate change on a proposed action and its environmental impacts.

5.3.2 Analysis

According to the Blue Water Bridge Plaza Draft Traffic Analysis Report (February 2023), the proposed BWB plaza improvements are not expected to result in increased traffic volumes within the study area beyond what is expected in the no-build condition. Furthermore, the with-project condition would have a small beneficial effect on local traffic congestion and intersection operations.

As calculated in EPA's MOVES emissions model, GHGs are a function of traffic volume, vehicle type population mix and speed. As such, based upon the findings of the traffic analysis that these traffic characteristics would be similar under no build and with-project conditions, the project is not expected to affect GHG emissions.

6.0 References

Council on Environmental Quality, National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change. January 2023. https://ceq.doe.gov/guidance/ceq_guidance_nepa-ghg.html

Federal Highway Administration, Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. January 2023. https://www.fhwa.dot.gov/Environment/air_quality/air_toxics/policy_and_guidance/msat/fhwa_nepa_msat_memorandum_2023.pdf

HNTB, Blue Water Bridge Plaza Draft Traffic Analysis Report, Version 1.0. February 2023.

National Oceanic and Atmospheric Administration. Local Climatological Data, Annual Summaries for 1998. Part III Central Region.

Southeast Michigan Council of Governments, Air. 2023. http://semcog.org/Air

Southeast Michigan Council of Governments, FY 2023-2026 Transportation Improvement Program (TIP) for Southeast Michigan. 2022. https://semcog.org/transportation-improvement-program-tip

US Environmental Protection Agency, AirData, 2023. https://www.epa.gov/outdoor-air-quality-data/monitor-values-report.

US Environmental Protection Agency. 2017 National Emissions Inventory Report. Last updated 2020. https://gispub.epa.gov/neireport/2017/

US Environmental Protection Agency. Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas. October 2021. https://www.epa.gov/state-and-local-transportation/project-level-conformity-and-hot-spot-analyses#pmguidance

US Environmental Protection Agency. MOVES3 Motor Vehicle Emission Simulator, 2013. https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves

US Environmental Protection Agency. National Ambient Air Quality Standards, 2023. https://www.epa.gov/criteria-air-pollutants/naaqs-table

US Environmental Protection Agency. Ozone Basics, 2023. https://www.epa.gov/ozone-pollution/ozone-basics#what

US Environmental Protection Agency. Particulate Matter (PM) Pollution, 2023. https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM

Appendix A

Interagency Consultation

Appendix B

Air Quality Analysis Methodology