

Appendix J – Air Quality Report



407 TRANSITWAY – WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400

MINISTRY OF TRANSPORTATION - CENTRAL REGION

Ontario Ministry of Transportation

AIR QUALITY IMPACT ASSESSMENT

407 Transitway: West of Hurontario Street to East of
Highway 400

June 2018

A large orange geometric graphic consisting of a triangle and a rectangle. The triangle is on the right side, pointing upwards, and the rectangle is on the left side, extending horizontally. A thin white line runs diagonally from the bottom-left corner of the triangle to the top-right corner, and another thin white line runs horizontally across the middle of the triangle.

AIR QUALITY IMPACT ASSESSMENT: 407 TRANSITWAY FROM WEST OF HURONTARIO STREET TO EAST OF HWY 400

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AIR QUALITY IMPACT ASSESSMENT

407 Transitway: West of Hurontario
Street to East of Highway 400

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1	0	January 2018	Original	TB / FB
2	1.0	March 2018	MOECC Comments Addressed	TB
3	2.0	June 2018	Revised figures (3.1 - 3.5)	TB/FB

EXECUTIVE SUMMARY

The Ontario Ministry of Transportation (MTO) is proposing a 23.7 km segment of a transitway facility along the 407 Express Toll Route (407 ETR) corridor through Peel Region and York Region, from west of Hurontario Street at the boundary of the Cities of Brampton and Mississauga to east of Highway 400 in the City of Vaughan (407 Transitway). The 407 Transitway will include a runningway and several stations that will include parking facilities, transit integration and other amenities. Subject to the outcome of the study, the 407 Transitway will be implemented initially as bus rapid transit (BRT) facility with the opportunity to convert to light rail transit (LRT) in the future, however this assessment only focuses on BRT. The transitway will be a high-speed fully grade separated facility on a separate right-of-way running parallel, and crossing over or under 407 ETR.

Arcadis Canada Inc. was retained by LGL Limited (LGL), on behalf of the MTO, to complete an Air Quality Impact Assessment (AQIA) in support of the Transit Project Assessment Process (TPAP) for the 407 Transitway project (the "Project"). As the Project is under the jurisdiction of the MTO, guidelines developed by the MTO were the primary reference for the assessment methodology and impact assessment criteria. In the absence of MTO-developed guidance for project effects, relevant guidelines from the Ontario Ministry of the Environment and Climate Change (MOECC) and other ministry-accepted sources were applied as appropriate.

An air quality and greenhouse gas (GHG) emissions inventory was completed for the future reference year 2031, with and without the proposed 407 Transitway. The air quality impacts of the proposed 407 Transitway were evaluated using detailed air dispersion modelling. Estimated concentrations of all pollutants of concern were shown to be below their corresponding ambient air quality criteria and standards for all scenarios, except benzo[a]pyrene, benzene, NO₂ and PM_{2.5} which have background concentrations already above or approaching their respective criteria and standards.

Discussion of Existing Conditions

The results of the assessment show, through modelling and monitoring data, that the existing air quality in the study area is typical of a suburban setting, which is characterized by elevated pollution concentrations in relation to rural areas, with periodic exceedances of applicable air quality criteria. Available historical monitoring data near to the study area indicates that background concentrations of nitrogen dioxide (NO₂), carbon monoxide (CO), sulphur dioxide (SO₂), acetaldehyde, acrolein, 1,3-butadiene and formaldehyde concentrations are well within applicable criteria whereas benzene, benzo[a]pyrene and PM_{2.5} concentrations periodically exceed applicable criteria.

Comparison of Existing Conditions with Future Scenarios

The assessment identified that compared to existing conditions, concentrations of gaseous contaminants are predicted to improve despite increases in traffic resulting from population growth in the study area. This improvement is a result of assumptions regarding future low emission engine technologies and fuels. Predicted concentrations at sensitive receptor locations will generally remain unchanged in both future scenarios for particulate matter-based compounds. Carbon dioxide equivalent (CO₂e) emissions are shown to decrease in the future scenarios relative to Existing Conditions.

Comparison of Future Scenarios

The assessment also identified that the Future Build scenario will generally result in less than a 1% increase in pollutant concentrations at sensitive receptor locations compared to the Future No-Build scenario. As a result, the increase in gaseous and particulate air pollutants attributable to the Project is deemed to be insignificant (i.e. <10%). Emissions of CO₂e are also shown to decrease in the Future Build scenario relative to Future No-Build, however, the percent change is also insignificant at less than 1%.

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ACRONYMS AND ABBREVIATIONS

$\mu\text{g}/\text{m}^3$	Micrograms per Cubic Metre
AADT	Annual Average Daily Traffic
AAQC	Ambient Air Quality Criteria
AQIA	Air Quality Impact Assessment
AVFT	Alternative Vehicle Fuels and Technologies
BRT	Bus Rapid Transit
CAAQS	Canadian Ambient Air Quality Standards
CAC	Criteria Air Contaminants
CCME	Canadian Council of the Ministers of the Environment
CO	Carbon monoxide
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
CH ₄	Methane
CWS	Canada-Wide Standard
EPR	Environmental Project Report
ETR	Express Toll Route
g/h	grams per hour
GHG	greenhouse gas
GTA	Greater Toronto Area
GWP	global warming potential
g/VKT	Grams per Vehicle Kilometre Travelled
LBPIA	Lester B. Pearson International Airport
LRT	Light rail transit
N ₂ O	Nitrous oxide
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides
MOECC	Ontario Ministry of the Environment and Climate Change
MOVES	Motor Vehicle Emissions Simulator
MTO	Ontario Ministry of Transportation
PAH	Polycyclic aromatic hydrocarbons
PM ₁₀	Particulate matter less than 10 microns
PM _{2.5}	Particulate matter less than 2.5 microns

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ppb	parts per billion
PPUDO	Passenger Pick-up and Drop-off
ROW	right-of-way
RVP	Reid Vapour Pressure
SO ₂	Sulphur dioxide
TPAP	Transit Project Assessment Process
TSP	Total suspended particulate
U.S. EPA	United States Environmental Protection Agency
VKT	Vehicle Kilometres Travelled
VMT	Vehicle Miles Travelled
VOC	Volatile organic compounds

1 INTRODUCTION

1.1 Project Description

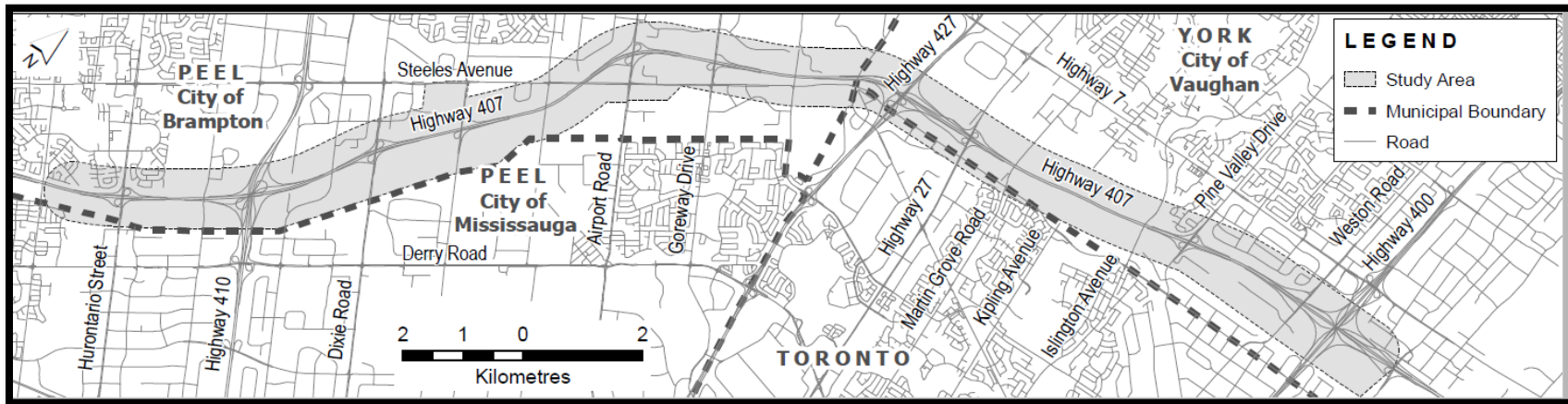
The Ontario Ministry of Transportation (MTO) is proposing a 23.7 km segment of a transitway facility along the 407 Express Toll Route (407 ETR) corridor through Peel Region and York Region, from west of Hurontario Street, at the boundary of the Cities of Brampton and Mississauga, to east of Highway 400 in the City of Vaughan (407 Transitway). The 407 Transitway will include a runningway and several stations that will include parking facilities, transit integration and other amenities. Subject to the outcome of the study, the 407 Transitway will be implemented initially as bus rapid transit (BRT) with the opportunity to convert to light rail transit (LRT) in the future.

This 23.7 km segment forms part of the 150 km long high-speed interregional facility planned to be ultimately constructed on a separate right-of-way that parallels 407 ETR from Burlington to Highway 35/115, with stations, parking and access connections. This transitway is a component of the official plans of the stakeholder municipalities and of the Province's commitment to support transit initiatives in the Greater Golden Horseshoe through the Metrolinx Regional Transportation Plan.

Arcadis Canada Inc. was retained by LGL Limited (LGL), on behalf of Parsons Corporation (Parsons), to complete an Air Quality Impact Assessment (AQIA) in support of the MTO's Transit Project Assessment Process (TPAP), as prescribed in Ontario Regulation 213/08 Transit Projects and Metrolinx Undertakings, for the 407 Transitway project (the "Project"). The design of the 407 Transitway developed by Parsons was used for this AQIA. This AQIA focuses on the potential BRT impacts. The Project study area is presented in Figure 1-1.

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Figure 1-1 Key Map of the Study Area



1.2 Summary of Impact Assessment Methodology

In accordance with the detailed work plan developed in consultation with the MTO and the Ontario Ministry of Environment and Climate Change (MOECC), an air quality assessment was conducted for the Project with and without the planned 407 Transitway for the future reference year 2031.

The assessment estimated the net change in pollutant emissions due to the Transitway in the 407 ETR transportation corridor for each pollutant of concern: carbon monoxide (CO), nitrogen dioxide (NO₂), sulphur dioxide (SO₂), volatile organic compounds (VOCs) (including 1,3-butadiene, acrolein, acetaldehyde, benzene, and formaldehyde), benzo[a]pyrene, which is a key representative of polycyclic aromatic hydrocarbons (PAHs), total suspended particulate (TSP), particulate matter less than 10 microns (PM₁₀), and particulate matter less than 2.5 microns (PM_{2.5}). To evaluate the potential impact of the Project on ambient air quality, the CAL3QHCR specialized transportation dispersion model was used to predict concentrations for those contaminants of concern. Model-predicted concentrations were added to local background concentrations and compared to applicable provincial and/or federal ambient air quality criteria. The air quality criteria used for this assessment are outlined in Section 2.

Where there are estimated increases in emissions due to the Project, their significance relative to emissions incurred on 407 ETR “now” (i.e., 2017) and in the future reference year was estimated. As established by MTO, an increase by more than 10% is deemed significant.

In addition to modelling air contaminants of concern, the change in greenhouse gas (GHG) emissions was also evaluated following the assessment approach outlined in MTO’s “Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects” (MTO 2012). The effects of the Project on climate change is considered and the assessment follows the draft guidance for the Consideration of Climate Change in Environmental Assessment in Ontario (MOECC, 2016b). Details of the complete GHG and climate change assessment methodology are provided in Sections 5 and 6.

1.3 Report Organization

In addition to this introductory chapter, this report includes the following information:

Chapter 2 – Describes the applicable ambient air quality criteria

Chapter 3 – Describes the study area

Chapter 4 – Discusses the air quality assessment methodology

Chapter 5 – Outlines the results of the air quality impact assessment

Chapter 6 – Discusses the project in relation to climate change

Chapter 7 – Outlines mitigation measures (if required)

2 AMBIENT AIR QUALITY CRITERIA

The MOECC has developed Ambient Air Quality Criteria (AAQC) as a measure to protect outdoor air quality. An AAQC is a desirable concentration based on the protection against adverse effects on health and/or the environment and is meant to be used to assess general or “ambient” air quality conditions from all sources. As a result, the addition of a background contribution (i.e., sources other than project-related activities) is required before comparing to an AAQC.

The purpose of this assessment is to evaluate the potential effects of the proposed Project on ambient air quality. Therefore, the model-predicted concentrations were added to local background concentrations and compared with the applicable AAQCs. Details about the selected criteria for each air contaminant of concern are provided in the sections below.

2.1 Fine Particulate Matter (PM_{2.5}), Particulate Matter (PM₁₀) and TSP

Particulate matter less than 2.5 microns (PM_{2.5}) is known as “respirable” particulate since the particles are generally small enough to be drawn in and deposited into the deepest portions of the lungs. In particular, many studies have indicated that airborne PM_{2.5} is associated with various adverse health effects in people who have compromised respiratory systems from conditions such as asthma, chronic pneumonia and cardiovascular disease. Anthropogenic sources, such as combustion of fossil fuels like diesel, tend to be the largest contributor to PM_{2.5} levels in the environment.

Footnote 8 of *Ontario’s Ambient Air Quality Criteria* (AAQC) document (MOECC, 2016a) presents an ambient air quality guide for decision making for PM_{2.5} of 30 µg/m³ (24-hour average), which is based on the Canadian Council of the Ministers of the Environment (CCME) Canada-Wide Standard (CWS) for fine particulate matter (CCME 2000). However, the CCME has since replaced the CWS with a Canadian Ambient Air Quality Standard (CAAQS) which was officially enacted under the *Canadian Environmental Protection Act* on May 25, 2013 (CCME 2012). The 24-hour PM_{2.5} CWS has been revised to 28 µg/m³ (effective in 2015) and to 27 µg/m³ (effective in 2020). The CCME has also established an annual PM_{2.5} CAAQS for 2015 (10.0 µg/m³) and for 2020 (8.8 µg/m³).

It is assumed that Ontario will adopt the new PM_{2.5} CAAQS and as a result, these new standards are considered in this assessment in lieu of the current CWS for PM_{2.5}. Since the operational life of the Project will extend beyond 2020, the 2020 CAAQS were applied in this assessment. Table 2-1 presents the PM_{2.5} ambient air quality criteria used in this assessment.

Particulate matter less than 10 microns (PM₁₀) is considered the filterable size particulate, however it has its own health effects and therefore was included in this assessment. Total suspended particulate matter (TSP) is a measure of the particles in the atmosphere that are too small to settle out quickly, generally this means particulates with an aerodynamic diameter of less

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than 44 µm. The ambient TSP criteria were set to prevent a reduction in visibility as a result of particles scattering or absorbing light coming from both the object and its background.

Table 2-1 below presents the PM_{2.5}, PM₁₀ and TSP ambient air quality criteria used in this assessment.

Table 2-1 PM Ambient Air Quality Assessment Criteria

Pollutant	Averaging Period	Source	Air Quality Criteria
PM _{2.5}	24-hour	CAAQS	27 µg/m ³ [a]
	Annual	CAAQS	8.8 µg/m ³ [b]
PM ₁₀	24-hour	AAQC	50 µg/m ³
TSP	24-hour	AAQC	120 µg/m ³
	Annual	AAQC	60 µg/m ³ [c]

Notes:

[a] The 2020 CAAQS for 24-hour PM_{2.5} is based on the 98th percentile of 24-hour average concentrations, averaged over 3 consecutive years (CCME 2012).

[b] The 2020 CAAQS for annual PM_{2.5} is based on the 3 consecutive years average of the average annual concentrations (CCME 2012).

[c] Geometric Mean.

2.2 Criteria Air Contaminants

Criteria air contaminants (CACs) including nitrogen oxides (NO_x), sulphur oxides (SO_x) and CO are considered common pollutants released into the air by activities such as the combustion of fossil fuels. Ozone is a CAC related to transportation, however, it is considered a secondary pollutant since it is formed through the photochemical reactions between NO_x and VOCs directly emitted from transportation sources. Although ozone has not been included in this assessment, the primary pollutants, including the ozone precursors, have all been assessed as part of this study.

Nitrogen dioxide (NO₂) is a reddish brown, highly reactive gas that can be formed during high-temperature combustion in the presence of air. NO_x is the sum of NO, NO₂ and other oxides of nitrogen that play a major role in the formation of ozone. NO₂ has adverse health effects at much lower concentrations than NO. Consequently, the Ontario AAQC is based on the health effects of NO₂. The AAQC for NO₂ is 400 µg/m³ for a 1-hour averaging period and 200 µg/m³ for a 24-hour averaging period. There is currently no annual AAQC for NO₂. In November 2017, the CCME announced new 1-hour and annual average CAAQS for NO₂. The 1-hour standard is 60 ppb or 113 µg/m³ (effective in 2020) and 42 ppb or 79 µg/m³ (effective in 2025). The annual standard for 2020 is 17 ppb or 32 µg/m³ (effective in 2020) and 12 ppb or 23 µg/m³ (effective in 2025). The 1-hour CAAQS for NO₂ are more stringent than the AAQC. Since the operational life of the Project will extend beyond 2025, the 2025 CAAQS were applied in this assessment.

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Sulphur dioxide (SO₂) is a colourless gas that smells like burnt matches. It can be oxidized to sulphur trioxide, which in the presence of water vapour, is readily transformed to sulphuric acid mist. SO₂ can be oxidized to form acid aerosols, and is a precursor of particulate sulphates, which are one of the main components of respirable particulates in the atmosphere. The current AAQC for SO₂ is 690 µg/m³ for a 1-hour averaging period, 275 µg/m³ for a 24-hour averaging period, and 55 µg/m³ for an annual averaging period. In October 2016, the CCME officially enacted new 1-hour and annual average CAAQS for SO₂ which are more stringent than the current AAQCs. The 1-hour SO₂ CAAQS is 70 ppb or 183 µg/m³ (effective in 2020) and 65 ppb or 170 µg/m³ (effective in 2025). The CCME has also established an annual SO₂ CAAQS for 2020 (5.0 ppb or 13 µg/m³) and for 2025 (4.0 ppb or 10 µg/m³). In October 2017, the MOECC proposed updated AAQC for SO₂. The proposed AAQC are 100 µg/m³ and 10 µg/m³ for the 1-hour and annual averaging periods where the 1-hour criteria is more stringent than the current CAAQS. Since these proposed AAQCs are not yet adopted in Ontario, 1-hour and annual SO₂ CAAQS are considered in this assessment in lieu of the current and proposed AAQCs for SO₂. The operational life of the Project will extend beyond 2025, therefore the 2025 CAAQS were applied in this assessment.

Carbon monoxide (CO) is a colourless, odourless gas, formed when hydrocarbon-based fuels are not completely combusted. It is a component of motor vehicle exhaust, with high concentrations of CO generally occurring in areas with heavy traffic congestion. The AAQC for CO is 36,200 µg/m³ for a 1-hour averaging period and 15,700 µg/m³ for an 8-hour averaging period.

The ambient air quality criteria used in this assessment for criteria air contaminants are summarized in Table 2-2.

Table 2-2 Ambient Air Quality Assessment Criteria for NO₂, SO₂ and CO

Pollutant	Ambient Air Quality Assessment Criteria (µg/m ³)			
	Annual	24-hour	8-hour	1-hour
NO ₂	23 ^[b] (CAAQS)	200 (AAQC)	--	79 ^[a] (CAAQS)
SO ₂	10 ^[d] (CAAQS)	275 (AAQC)	--	170 ^[c] (CAAQS)
CO	--	--	15,700 (AAQC)	36,200 (AAQC)

Notes:

^[a] The 2025 CAAQS is based on the 3-year average of the annual 98th percentile of the NO₂ daily maximum 1-hour average concentrations (CCME 2017).

^[b] The 2025 CAAQS is based on the arithmetic average over a single calendar year of all 1-hour average NO₂ concentrations (CCME, 2017).

^[c] The 2025 CAAQS is based on the 3-year average of the 99th percentile of the SO₂ daily maximum 1-hour average concentrations (CCME 2016).

^[d] The 2025 CAAQS is based on the arithmetic average over a single calendar year of all 1-hour average SO₂ concentrations (CCME, 2016).

2.3 Volatile Organic Compounds

Volatile organic compounds (VOCs) are defined technically as organic compounds having a saturation vapour pressure greater than 0.1 mm of mercury at 25 degrees Celsius (°C) and standard atmospheric pressure. Certain VOCs warrant special concern because they are capable of being transported very long distances in the atmosphere and play an important role in the formation of ground-level ozone and fine particles. As part of this assessment, six (6) typical VOCs that are emitted from vehicles were included: acetaldehyde, acrolein, benzene, 1-3-butadiene, formaldehyde, and benzo[a]pyrene, which is a key representative of polycyclic aromatic hydrocarbons (PAHs).

The ambient air quality criteria used in this assessment for each of these VOCs are presented in Table 2-3.

Table 2-3 Ambient Air Quality Criteria for Selected VOC

Pollutant	Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)		
	Annual	24-hour	1-hour
Acetaldehyde	--	500	--
Acrolein	--	0.4	4.5
Benzene	0.45	2.3	--
1-3 Butadiene	2	10	--
Formaldehyde	--	65	--
Benzo[a]pyrene	1.0E-05	5.0E-05	--

2.4 Greenhouse Gases

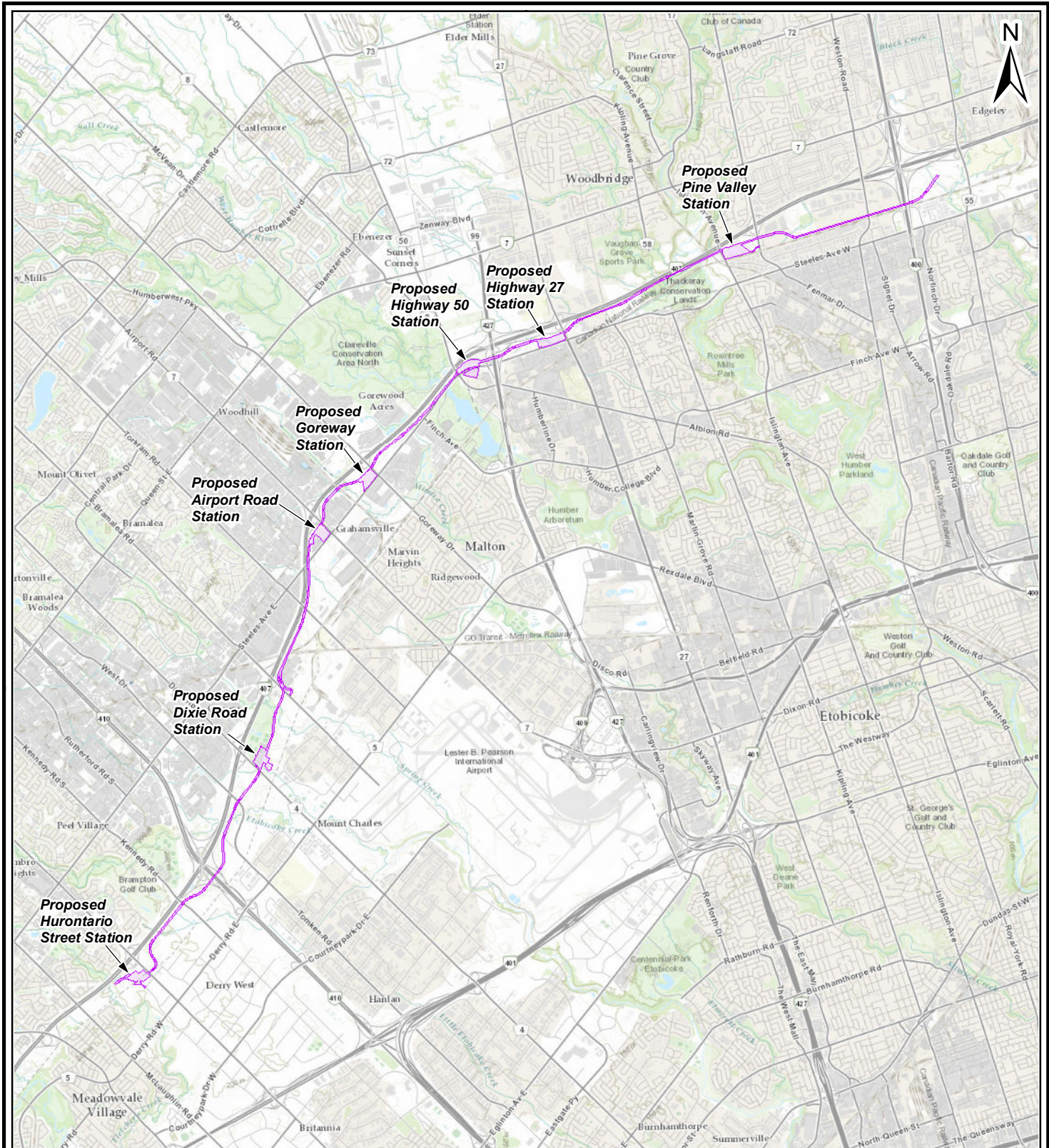
Fossil fuel combustion is the main source of GHG emissions related to this Project, which results in emissions of carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). For a given mixture of different GHGs, the carbon dioxide equivalent (CO₂e) is the unit of measure used to describe the amount of CO₂ that would have the same global warming potential as a mixture of GHGs when measured over a time period (typically a 100-year period). The CO₂e for a gas is calculated by multiplying the mass of the gas by its global warming potential (GWP). For example, the GWP for CH₄ over 100 years is 25 and for N₂O is 298 (IPCC 2007). This means that the emission of 1 tonne of CH₄ is equivalent, in its warming potential, to the emission of 25 tonnes of CO₂, and the emission of 1 tonne of N₂O is equivalent to the emission of 298 tonnes of CO₂.

There are no ambient air quality criteria for greenhouse gases.

3 STUDY AREA DESCRIPTION

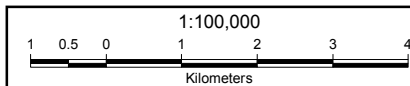
The Transitway will be a high-speed fully grade-separated facility on a separate right-of-way running parallel, and crossing over or under 407 ETR. This 23.7-km section includes seven transit stations including: Hurontario Street; Dixie Road; Airport Road; Goreway Drive; Highway 50 (Highway 427); Highway 27 and, Pine Valley Drive.

The station design will include bus access to and egress from the stations, bus platforms, layout of the access(es) to/from the arterial road, integration with local transit (bus platforms), parking spaces, passenger pick up and drop off (PPUDO), shelters, buildings, and other amenities. The Transitway and its stations will initially be designed to support the busway service with provisions for potential conversion to light-rail transit technology if needed. The study area including the proposed Transitway alignment and stations is presented in Figure 3-1.



Legend

- Impact Assessment Corridor (Proposed Transitway)



IMPACT ASSESSMENT CORRIDOR	
AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400	
Client: MINISTRY OF TRANSPORTATION OF ONTARIO	
ARCADIS	Date: Nov 2017
	Updated: Jun 28, 2018
FIGURE 3-1	

Layout: 8.5" x 11" (Author: mzare)

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The study area is primarily comprised of high density residential and commercial properties as well as arterial roadways. In the first segment of the study area, eastward from west of Hurontario Street to Dixie Road is in the vicinity of Lester B. Pearson International Airport (LBPIA) with several heavily travelled roadways such as McLaughlin Road, Hurontario Street, Kennedy Road, and Highway 410 intersecting the 407 ETR right-of-way (407 ROW). Land uses include residential subdivisions between McLaughlin Road and Hurontario Street on the north side of the 407 ETR, the Brampton Golf Club to the immediate north of the 407 ETR near Kennedy Road, and a mix of industrial establishments, and vacant undeveloped lands.

Moving eastward, large industrial and commercial land uses occupy most of the study area between Dixie Road and Airport Road, and these occupy the intervening space between the 407 ROW and any residential developments. The CNR/GO rail line crosses the 407 ETR east of Bramalea Road in this segment.

Eastward from Airport Road to Highway 427, the study area is characterized by a mix of industrial establishments and vacant undeveloped lands. There are no existing residential subdivisions in close proximity to the study area in this segment. Many heavily travelled streets such as Airport Road, Goreway Drive, Steeles Avenue East and Finch Avenue, are present in this segment. This segment also includes certain recreational facilities such as Wild Water Kingdom to the south of the 407 ETR.

Eastward from Highway 427 to Islington Avenue, the key land use features include a cemetery (Queen of Heaven Catholic Cemetery) close to Highway 27, commercial and industrial establishments, vacant undeveloped lands, a CPR freight rail line which crosses over the 407 ETR in a north-south direction, and a second rail line that runs parallel and south of the 407 and crosses the CPR line just west of Islington. This segment includes a residential subdivision along the south perimeter of the study area within the City of Toronto, in particular homes on Provence Trail/Minglehaze Drive, Ghion Spring, Kay Drive, etc.

The land uses adjacent to the proposed 407 Transitway within the City of Vaughan (and a small portion in the City of Toronto) consist mainly of a mixture of commercial, industrial, residential and transportation network (both road and rail) uses. Eastward from Islington Avenue to east of Highway 400, are several commercial and industrial establishments on both the north and south sides of the 407 ROW. There is a residential subdivision in close proximity to the study area between Islington Avenue and Pine Valley Drive, with homes fronting onto Terra Road and Timber Lane, with some backyards adjacent to the 407 ROW. Further north of the study area, along Highway 7, are other residential subdivisions, but these are well removed from the proposed 407 Transitway.

Due to the sources as described above, the primary source of contaminants within the study area are from the 407 ETR and the arterial roadways. Other insignificant minor sources of contaminants include sources of combustion from the residential and commercial properties within the study area.

Sensitive receptors, including both existing and proposed residences, were identified using recent aerial photography, and by field reconnaissance. The sensitive receptors were identified to

AIR QUALITY IMPACT ASSESSMENT: 407 TRANSITWAY FROM WEST OF HURONTARIO STREET TO EAST OF HWY 400

represent groups of receptors with similar exposure to the 407 Transitway. The receptors are summarized in Table 3-1 and illustrated in Figure 3-2 through Figure 3-5.

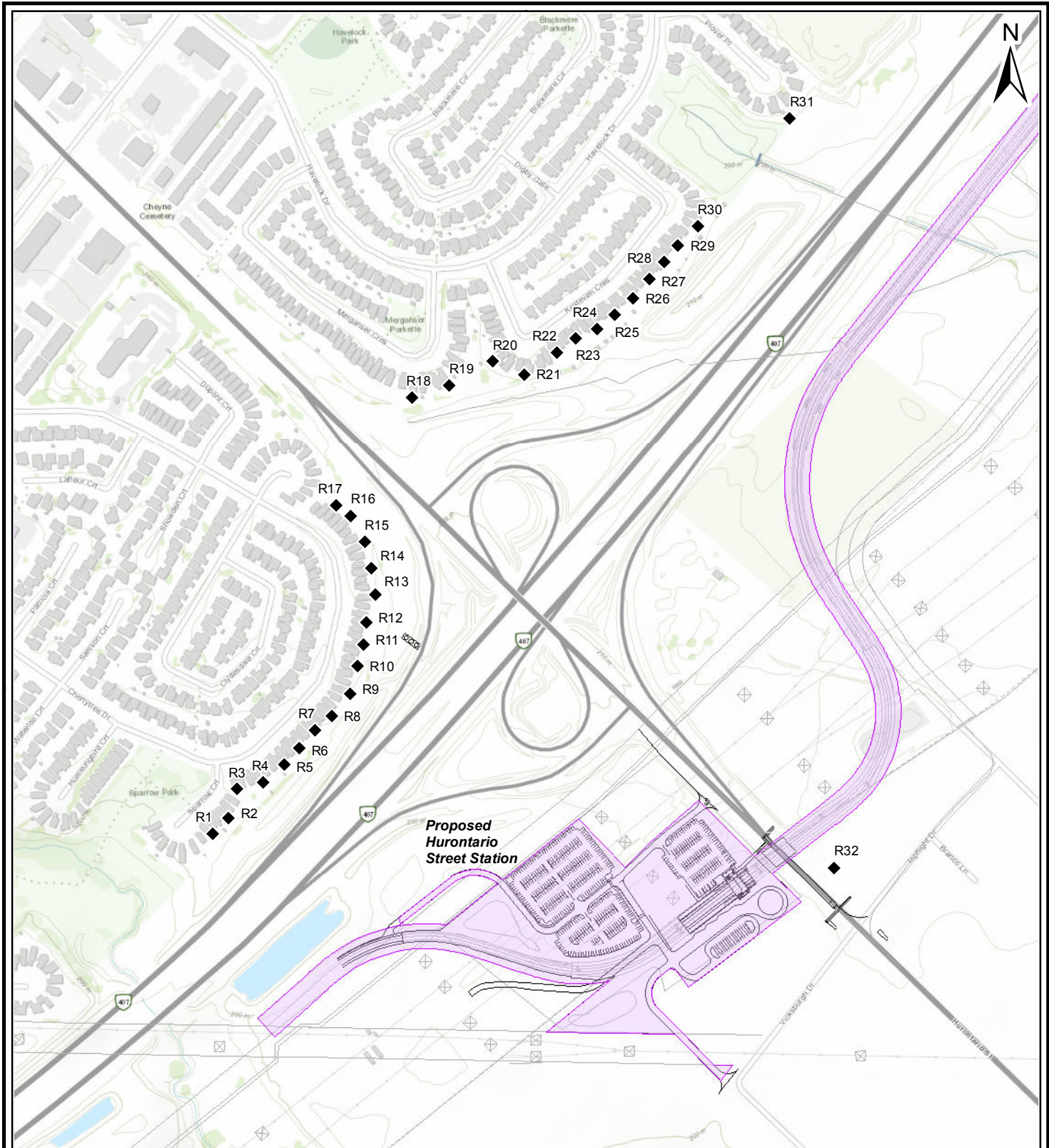
Table 3-1 Summary of Sensitive Receptors

ID	Type of Unit	Segment
R1	Residential	West of Hurontario to Highway 410
R2	Residential	West of Hurontario to Highway 410
R3	Residential	West of Hurontario to Highway 410
R4	Residential	West of Hurontario to Highway 410
R5	Residential	West of Hurontario to Highway 410
R6	Residential	West of Hurontario to Highway 410
R7	Residential	West of Hurontario to Highway 410
R8	Residential	West of Hurontario to Highway 410
R9	Residential	West of Hurontario to Highway 410
R10	Residential	West of Hurontario to Highway 410
R11	Residential	West of Hurontario to Highway 410
R12	Residential	West of Hurontario to Highway 410
R13	Residential	West of Hurontario to Highway 410
R14	Residential	West of Hurontario to Highway 410
R15	Residential	West of Hurontario to Highway 410
R16	Residential	West of Hurontario to Highway 410
R17	Residential	West of Hurontario to Highway 410
R18	Residential	West of Hurontario to Highway 410
R19	Residential	West of Hurontario to Highway 410
R20	Residential	West of Hurontario to Highway 410
R21	Residential	West of Hurontario to Highway 410
R22	Residential	West of Hurontario to Highway 410
R23	Residential	West of Hurontario to Highway 410
R24	Residential	West of Hurontario to Highway 410
R25	Residential	West of Hurontario to Highway 410
R26	Residential	West of Hurontario to Highway 410
R27	Residential	West of Hurontario to Highway 410
R28	Residential	West of Hurontario to Highway 410
R29	Residential	West of Hurontario to Highway 410
R30	Residential	West of Hurontario to Highway 410
R31	Residential	West of Hurontario to Highway 410

AIR QUALITY IMPACT ASSESSMENT: 407 TRANSITWAY FROM WEST OF HURONTARIO STREET TO EAST OF HWY 400

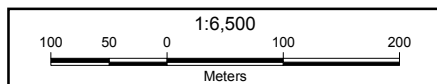
Table 3-1 Summary of Sensitive Receptors (Cont'd)

ID	Type of Unit	Segment
R32	Hotel	West of Hurontario to Highway 410
R33	Residential	Goreway to Highway 427
R34	Residential	Goreway to Highway 427
R35	Residential	Goreway to Highway 427
R36	Residential	Goreway to Highway 427
R37	Residential	Highway 27 to Pine Valley
R38	Residential	Highway 27 to Pine Valley
R39	Residential	Highway 27 to Pine Valley
R40	Residential	Highway 27 to Pine Valley
R41	Residential	Highway 27 to Pine Valley
R42	Residential	Highway 27 to Pine Valley
R43	Residential	Highway 27 to Pine Valley
R44	Residential	Highway 27 to Pine Valley
R45	Residential	Highway 27 to Pine Valley
R46	Residential	Highway 27 to Pine Valley
R47	Residential	Highway 27 to Pine Valley
R48	Residential	Highway 27 to Pine Valley
R49	Nursing Home	Highway 27 to Pine Valley
R50	Residential	Highway 27 to Pine Valley
R51	Residential	Highway 27 to Pine Valley
R52	Residential	Highway 27 to Pine Valley
R53	Residential	Highway 27 to Pine Valley
R54	Residential	Highway 27 to Pine Valley
R55	Residential	Highway 27 to Pine Valley
R56	Residential	Highway 27 to Pine Valley
R57	Residential	Highway 27 to Pine Valley
R58	Residential	Highway 27 to Pine Valley
R59	Residential	Highway 27 to Pine Valley
R60	Residential	Highway 27 to Pine Valley
R61	Residential	Highway 27 to Pine Valley
R62	Residential	Highway 27 to Pine Valley
R63	Residential	Highway 27 to Pine Valley
R64	Residential	Highway 27 to Pine Valley
R65	Residential	Highway 27 to Pine Valley



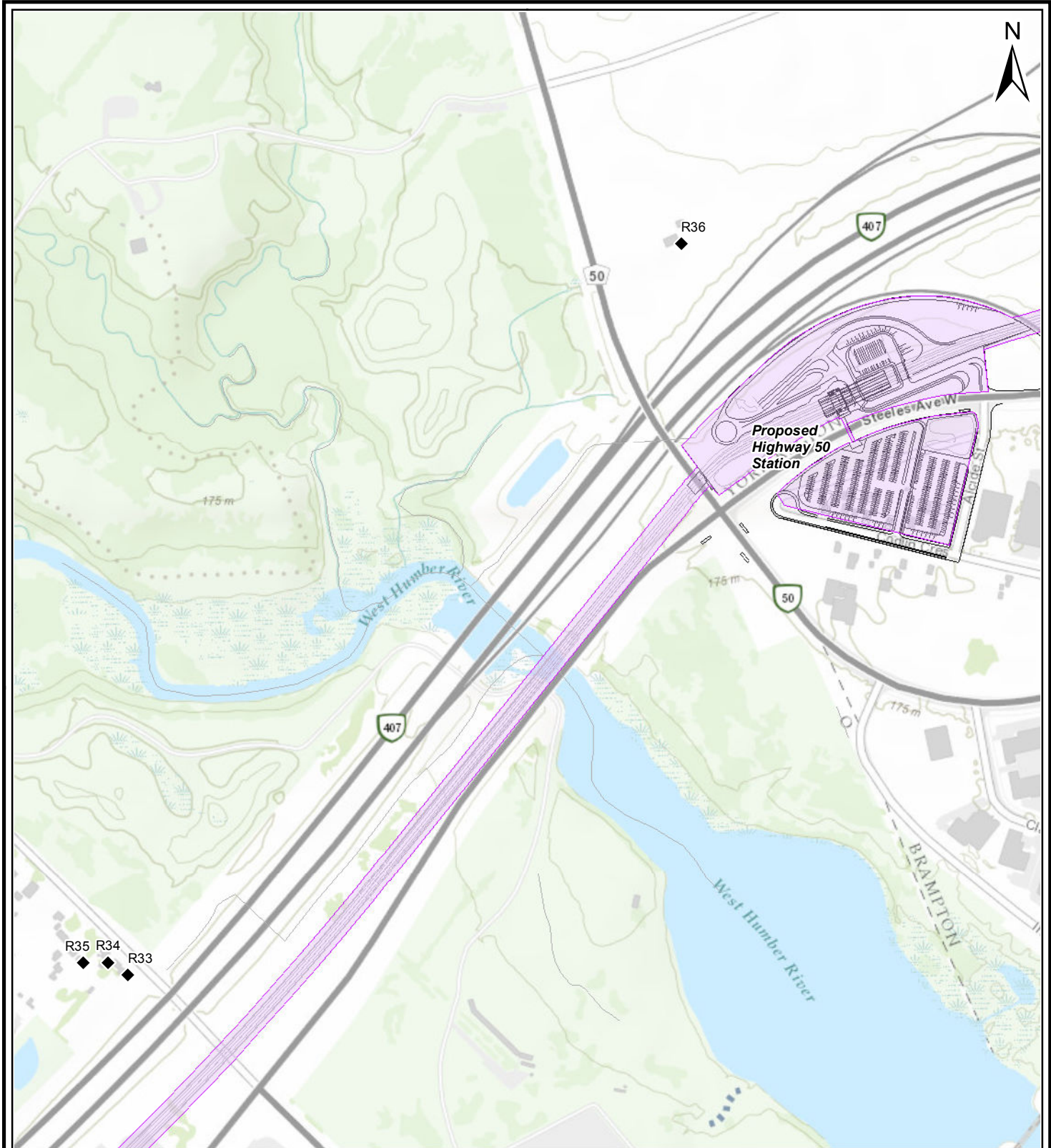
Legend

- Impact Assessment Corridor (Proposed Transitway)
- Sensitive Receptor Location



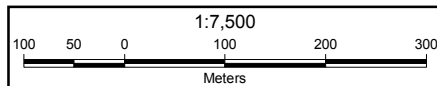
Title: SENSITIVE RECEPTOR LOCATIONS WEST OF HURONTARIO TO HIGHWAY 410	
Project: AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400	
Client: MINISTRY OF TRANSPORTATION OF ONTARIO	
Date: Nov 2017	ARCADIS
Updated: Jul 04, 2018	
FIGURE 3-2	

Layout: 8.5" x 11" (Author: mzarej)



Legend

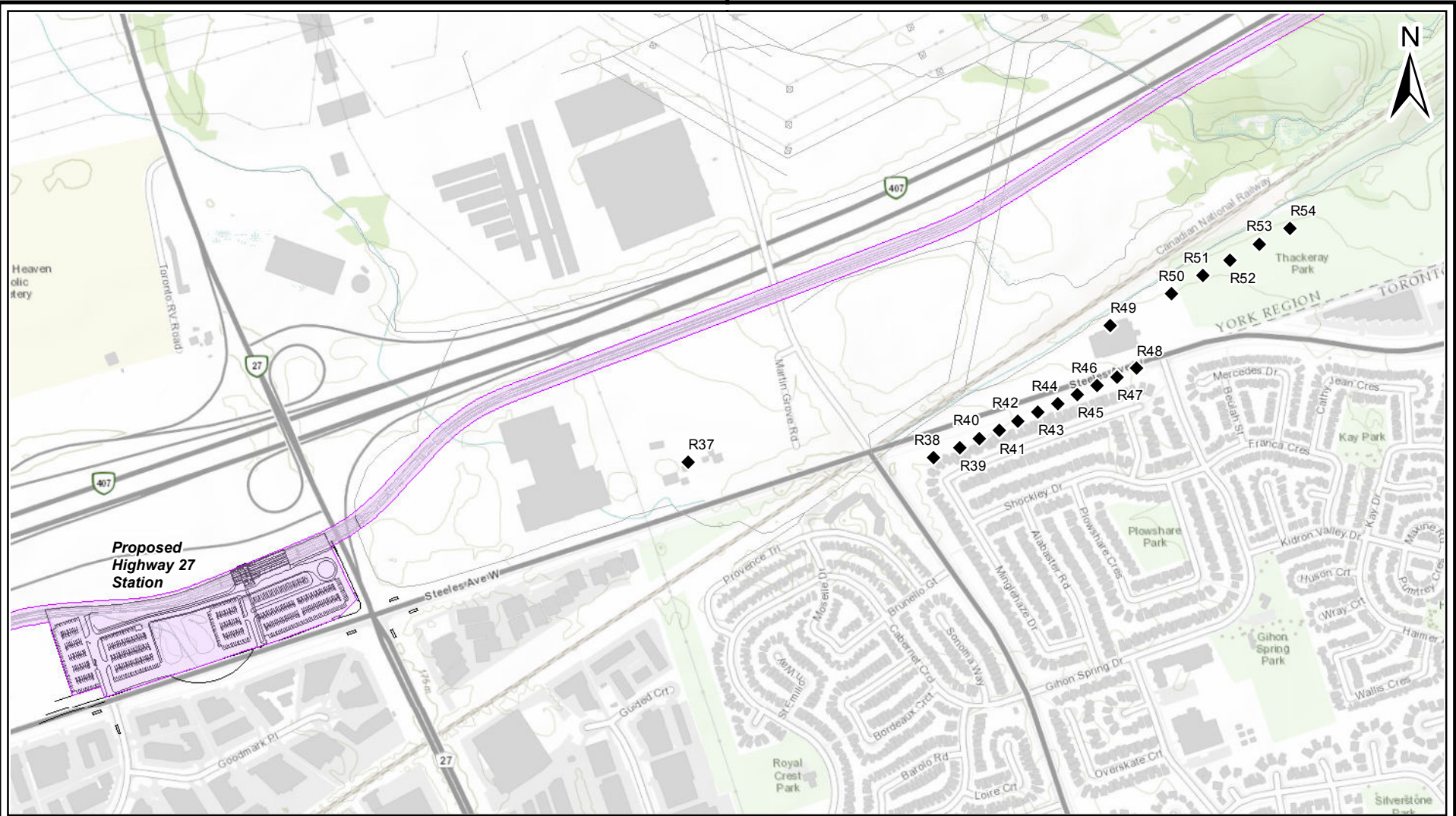
- Impact Assessment Corridor (Proposed Transitway)
- Sensitive Receptor Location



Title: SENSITIVE RECEPTOR LOCATIONS GOREWAY TO HIGHWAY 427	
Project: AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400	
Client: MINISTRY OF TRANSPORTATION OF ONTARIO	
Date:	Nov 2017
Updated:	Jul 04, 2018
FIGURE 3-3	



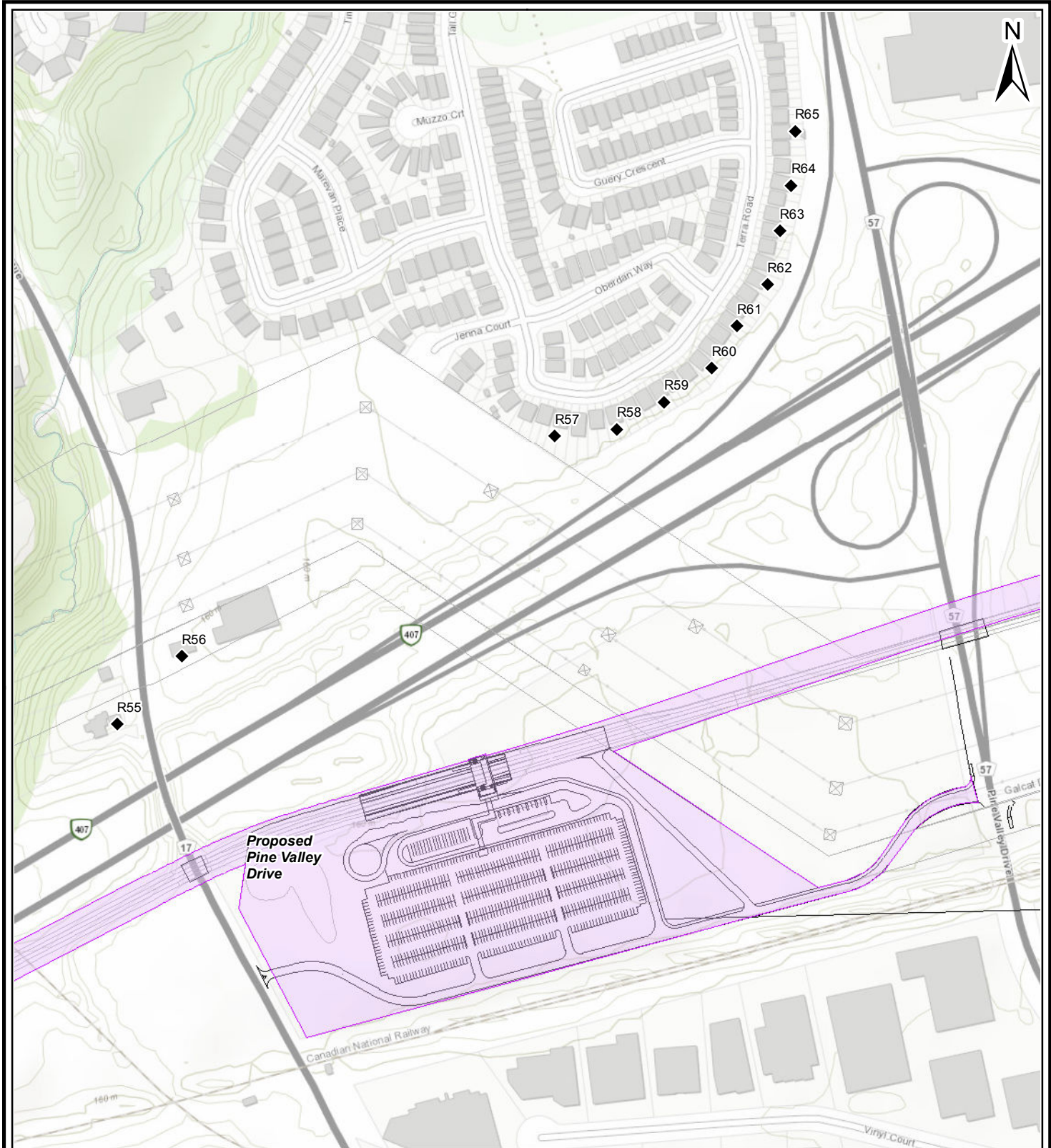
Layout: 8.5" x 11" (Author: mzaref)



Legend

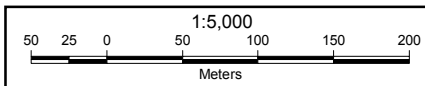
- Impact Assessment Corridor (Proposed Transitway)
- Sensitive Receptor Location

<p>Title: SENSITIVE RECEPTOR LOCATIONS HIGHWAY 27 TO PINE VALLEY</p>	
	<p>Project: AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400</p>
<p>Date: Nov. 2017</p>	<p>Client: MINISTRY OF TRANSPORTATION OF ONTARIO</p>
<p>Updated: Jul 04, 2018</p>	
<p>1:10,000</p> <p>Meters</p>	
<p>FIGURE 3-4</p>	



Legend

- Impact Assessment Corridor (Proposed Transitway)
- Sensitive Receptor Location



Title:	SENSITIVE RECEPTOR LOCATIONS HIGHWAY 27 TO PINE VALLEY CONT'D
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	Nov 2017
Updated:	Jul 04, 2018
FIGURE 3-5	



Layout: 8.5" x 11" (Author: mzarej)

4 AIR QUALITY IMPACT ASSESSMENT METHODOLOGY

4.1 Background Air Quality

Ambient background concentrations used in the air quality assessment represent the cumulative contribution of upwind sources such as industrial facilities, other roadways and transboundary pollution that are not included in the modelling. It is important to add background concentrations to modelled concentrations in order to assess the combined effect of all sources at a specific receptor location.

The MOECC measures air contaminants at various locations throughout Ontario, and reports on the state of Ontario's air quality on an annual basis. A review of MOECC monitoring stations in Ontario was undertaken to identify the monitoring stations that would be most representative of the study area and provide a conservative cumulative assessment. Data was obtained for the most recent consecutive five years available from the nearest representative monitoring stations to the study area. The 90th percentile values are considered conservative as they represent values that will only be exceeded 10% of the time under adverse meteorological conditions.

There are two inactive (Brampton and Elmcrest Road) and two active (Toronto West and Toronto North) continuous air monitoring stations located in the general vicinity of the study area that monitor(ed) PM_{2.5} and NO₂ and were considered for the assessment. The stations include:

1. Brampton (MOECC Station #46089 at 525 Main Street, Brampton), which was located approximately 7 km south-west of the study area;
2. Elmcrest Road (NAPS Station #60413 in Centennial Park, Toronto), which was located approximately 9 km south-east of the study area;
3. Toronto West (MOECC Station #35125 at 125 Resources Road, Toronto), which is located approximately 7 km south of the study area; and,
4. Toronto North (MOECC Station #34020 at Yonge Street and Hendon Avenue, Toronto), which is located approximately 10 km east of the study area.

The MOECC Toronto West station was selected to represent background concentrations for PM_{2.5} and NO₂ due to data record completeness and proximity to the study area.

There are two continuous monitoring stations located in Toronto that monitor SO₂ including the Toronto West station (MOECC Station #35125) and the Toronto Downtown station (MOECC Station #31103 at Bay St and Wellesley St. W, which is located approximately 18 km south-east of the study area). Since the MOECC Toronto West station is the nearest monitoring station to the study area and has a complete data record it was selected to represent background concentrations for SO₂.

AIR QUALITY IMPACT ASSESSMENT: 407 TRANSITWAY FROM WEST OF HURONTARIO STREET TO EAST OF HWY 400

The Toronto West station is one of the only stations in Ontario that monitors CO, therefore it was used in this assessment for the establishment of background concentrations for CO.

Table 4-1 outlines the recent measurement history for the MOECC Toronto West monitoring station considered for this study and presents a summary of the data in terms of the 90th percentile 1-hour, 8-hour, 24-hour and annual average values. For each contaminant of concern, the selected background concentrations are based on a 5-year average of the measured concentrations.

In summary, the historical air quality data outlines that the study area is located within a typical urban/suburban air shed with occasional smog periods during which air quality is compromised. In Ontario, the smog season occurs from May through September.

Table 4-1 Summary of Ambient Air Data for CACs at MOECC Toronto West Station

Contaminant	Years					
	2012	2013	2014	2015	2016	5-yr
PM_{2.5} (µg/m³)						
24-hour 90th Percentile	13	16	14	16	12	14
Annual	7	9	9	9	7	8
NO₂ (µg/m³)						
1-hour 90th Percentile	58	56	58	58	58	58
24-hour 90th Percentile	47	44	47	48	45	46
Annual	31	30	32	31	30	31
CO (µg/m³)						
1-hour 90th Percentile	435	412	424	412	412	419
8-hour 90th Percentile	414	396	415	397	395	403
SO₂ (µg/m³)						
1-hour 90th Percentile	5	3	3	5	3	4
24-hour 90th Percentile	4	3	4	5	3	4
Annual Average	2	1	2	3	2	2

Notes:

TSP is not monitored in Ontario; therefore, background concentrations were calculated based on the correlation $PM_{2.5}/TSP = 0.3$.
 PM₁₀ is not monitored in Ontario; therefore, PM₁₀ data were calculated from PM_{2.5} data using a correlation $PM_{2.5}/PM_{10} = 0.5$.
 Statistics are calculated based on data downloaded from the MOECC's Air Quality Ontario website <http://www.airqualityontario.com>.

Environment and Climate Change Canada (ECCC) operates the National Air Pollution Surveillance (NAPS) Network which measures various VOCs in addition to other common air contaminants. To assess the current air quality, with respect to VOCs, in the study area, the most recently available monitoring data from the closest NAPS stations were considered.

Table 4-2 summarizes the most recent available data for VOCs and benzo[a]pyrene nearest to the study area. The Brampton station (MOECC ID 46089/NAPS ID 60428) and Elmcrest Road station (NAPS ID 60413) were the two stations located closest to the study area which monitored 1,3-butadiene and benzene. Since the Brampton station was approximately two kilometers closer to the study area, the 2011 to 2015 data from this station was selected to represent background concentrations for 1,3-butadiene and benzene. The 2014 and 2015 data from the Toronto College Street station (NAPS ID 60439) was selected as background concentrations for acrolein, acetaldehyde, and formaldehyde. Although monitoring data for these contaminants are available from a closer station (Toronto station, NAPS ID 60418), the data availability is only available up to 2006. The 2010 to 2014 data from the Toronto Downtown station (NAPS ID 60427) was selected for benzo[a]pyrene.

The 90th percentile concentrations for the VOCs of concern are summarized in Table 4-2 below. The ambient concentrations of benzene (annual average) and benzo[a]pyrene currently exceed their respective AAQCs.

Table 4-2 Summary of Ambient Air Data for VOCs

Station Name	Contaminant	Averaging Period	Adopted Background Value ($\mu\text{g}/\text{m}^3$)	AAQC ($\mu\text{g}/\text{m}^3$)	Available Data Years
Brampton NAPS ID 60428	1,3-butadiene	24 hr -90th percentile	0.09	10	2011-2015
		Annual Mean	0.05	2	
	Benzene	24 hr -90th percentile	0.88	2.3	
		Annual Mean	0.55	0.45	
Toronto NAPS ID 60439	Acetaldehyde	24 hr -90th percentile	1.76	500	2014-2015
	Acrolein	1 hr	0.07 ^[a]	4.5	
		24 hr -90th percentile	0.07	0.4	
	Formaldehyde	24 hr -90th percentile	3.30	65	
Toronto NAPS ID 60427	Benzo[a]pyrene	24 hr -90th percentile	1.20E-04	5.00E-05	2010-2014
		Annual Mean	7.80E-05	1.00E-05	

Notes:

[a] Acrolein 24-hour background concentration used as a surrogate. Monitoring data for this contaminant are not available for the 1-hour averaging period.

Values in red represent background concentrations that exceed their respective AAQC.

4.2 Assessment Methodology

To assess the impact on air quality from the presence of the 407 Transitway and stations, an emissions inventory for the proposed development including existing sources, along with an air dispersion modelling study, was completed.

This AQIA estimated the number of vehicle-kilometers travelled (VKT) within the study area incurred by private passenger vehicles (cars and light trucks), public vehicles (i.e., transit buses) as well as heavy vehicles such as transport trucks. Based on the VKT estimates, emissions for each pollutant of concern were estimated including: CO, NO₂, SO₂, VOCs, (including 1,3-butadiene, acrolein, acetaldehyde, benzene, and formaldehyde), benzo[a]pyrene, TSP, PM₁₀, and PM_{2.5}. Emissions were estimated for existing conditions (2017) as well as future conditions in 2031, with (future build) and without (future no-build) the proposed Transitway.

To assess the impact of the Project on air quality within the study area, the net change in pollutant concentrations due to the Transitway in the 407 ETR transportation corridor was calculated for the reference year 2031 and compared against the applicable criteria and standards. Where there are estimated increases in emissions, their significance relative to emissions incurred on 407 ETR “now” and in the future reference year without the Project was evaluated. As outlined in the Project terms of reference developed by the MTO, an increase of more than 10% is deemed significant.

As identified in Section 3, sixty-five (65) sensitive and critical receptors were chosen to accurately represent the change in the study area for the existing conditions, future no-build, and future build scenarios.

4.3 Description of Assessment Scenarios

The potential air quality impacts associated with the Project were assessed by predicting air contaminant concentrations under three scenarios: Existing Conditions (2017), Future No-Build (without the 407 Transitway in 2031), and Future Build (with the 407 Transitway in 2031). Descriptions and assumptions used in each of the assessment scenarios are detailed in the following sections.

4.3.1 Existing Conditions (2017)

The 407 Transitway will be constructed in the major traffic corridor of the existing 407 ETR from west of Hurontario Street, at the boundary of the Cities of Brampton and Mississauga, to east of Highway 400 in the City of Vaughan. In particular, the Transitway will be built parallel to and typically within 50 m of 407 ETR for most of the route. Using the emissions estimating methods outlined in Section 4.3.4, an emissions inventory for Existing Conditions (2017) was developed for 407 ETR between Hurontario Street and Highway 400, including its arterial roads and interchanges: Hurontario Street; Highway 410; Dixie Road; Bramalea Road; Airport Road; Goreway Drive; Highway 427; Highway 27; Pine Valley Drive; Weston Road; and, Highway 400.

4.3.2 Future No-Build (2031)

The expected year that the Transitway will be in full operation is 2031. The Future No-Build (2031) scenario assumes that there are no changes to the existing road network of 407 ETR and its interchanges and arterial roads compared to the Existing Conditions scenario.

In response to population growth, it is expected that traffic volumes on 407 ETR and most of its interchanges will increase in the future with some arterial roads projected to see a traffic reduction, however, improvements in vehicular combustion standards are also expected. Therefore, an emissions inventory was developed using the methods outlined in Section 4.3.4 for this scenario with these considerations.

4.3.3 Future Build (2031)

The Future Build (2031) scenario is the same as the above future scenario except for the addition of a 23.7 km busway (the 407 Transitway) that will be fully grade-separated and approximately parallel to 407 ETR between Hurontario Street and Highway 400. The preferred alignment consists of a two-lane roadway (one lane in each direction) occupied solely by buses. In this scenario, buses are restricted to the Transitway. It was assumed that the future bus fleet on the Transitway would be diesel fueled as a worst-case scenario. An emissions inventory was developed using the methods outlined in Section 4.3.4 for the Future Build scenario with the Transitway.

This scenario also considered seven (7) potential 407 Transitway bus station locations where buses will briefly idle to allow passengers to board/depart buses. The proposed undertaking currently does not include bus garages within the study area. However, should plans for the garage proceed, an addendum to the Environmental Project Report (EPR) may be required.

Idling transitway bus emissions were not considered in this assessment. All stations will operate as regular bus street stops with passing lanes for express service; consequently, bus idling is not anticipated. Buses will only drop-off and pick-up passengers. In addition, during peak hours there will be approximately one bus per minute travelling through each of the stations; therefore, buses will stop for very short periods to allow passengers to board and exit. Therefore, the emissions from bus idling are expected to be insignificant.

Neither the Transitway nor 407 ETR have signaled road intersections, therefore, idling emissions from these alignments are not expected and were not considered in this assessment. Passenger vehicle emissions from within station parking lots and PPUDO areas were assessed, including idling emissions within each PPUDO area.

4.3.4 Vehicle Emissions Estimation

The rate of contaminant emissions from a section of road is proportional to the number and types of vehicles travelling along that road as well as vehicle speed. Hourly traffic flows for 407 ETR (and its interchanges) and the 407 Transitway (and its stations) were calculated based on average daily traffic flows. IBI Group provided annual average daily traffic (AADT) volumes for 407 ETR and the proposed 407 Transitway and stations for the following three scenarios:

- Existing Conditions (2017);
- Future No-Build (2031); and,
- Future Build (2031).

Note that according to Parsons, the number of buses (currently operated by GO Transit) will increase whether the Transitway is implemented or not. However, the forecasted volume of buses if the 407 Transitway is not implemented is uncertain. As a result, the analysis followed a conservative approach which assumed that for the Future No-Build scenario, the traffic increment on 407 ETR does not include buses. In other words, transit buses were not added to 407 ETR in the absence of the 407 Transitway.

The traffic study also suggests that it is reasonable to assume the introduction of the 407 Transitway into the Study Area will reduce the number of passenger vehicles present within the transportation corridor. The forecasted traffic increase between now and 2031 on Highway 407 ETR is 3%. It is assumed that the equivalent increment of highway users (if no Transitway is built), would use the Transitway if it is constructed. Therefore, a 3% reduction to the Future Build (2031) scenario estimate of passenger vehicles relative to the Future No Build (2031) was applied along Highway 407 ETR. Therefore, based on this assessment, with the implementation of the Transitway, the reduction of automobiles would be on the order of 2,000 to 3,000 per day.

The average daily traffic volumes and average daily vehicle-kilometers travelled (VKT) for 407 ETR are considered proprietary information and therefore, have not been included in this report. However, average daily traffic volumes and daily VKT for the 407 Transitway and its stations are presented in Table 4-3 for the Future Build scenario.

Table 4-3 Annual Average Daily Traffic Volumes (AADT) and Daily Vehicle Kilometres Travelled (VKT) for the 407 Transitway and Stations (Future Build Scenario)

Roadway	Vehicle Type	AADT	Daily VKT
407 Transitway*	Transit Bus	535	12,680
Hurontario Street Station	Passenger Vehicle	1,128	755
Dixie Road Station	Passenger Vehicle	730	366
Airport Road Station	Passenger Vehicle	793	258
Goreway Drive Station	Passenger Vehicle	1,196	558
Highway 50 Station	Passenger Vehicle	1,723	1,047
Highway 27 Station	Passenger Vehicle	1,128	275
Pine Valley Drive Station	Passenger Vehicle	862	939

Notes:

*AADT and Daily VKT based on weekday two-way traffic volumes.

Station traffic volumes includes both passenger vehicles that park, in/out traffic, and PPUDO vehicles.

4.3.4.1 Tailpipe Emissions

All contaminants of concern considered in this study are emitted in vehicle exhaust. Additionally, particulate matter (TSP, PM₁₀ and PM_{2.5}) is emitted from the roadway surface as a result of tire/brake wear, and re-suspension of surface dust by: (1) the action of the tires on the surface; and (2) the wake created by the passing of the vehicle. Both tailpipe and mechanically-generated fractions of PM₁₀ and PM_{2.5} were included in this study. Tailpipe emissions from vehicles are a function of many variables. Some of the more important parameters are listed below:

- age of the vehicle (newer vehicles emit less);
- number of kilometers which the vehicle has driven;
- emission control equipment;
- type of fuel (gasoline, diesel);
- Reid Vapour Pressure (RVP) of gasoline used (adjusted seasonally);
- ambient air temperature;
- vehicle speed;
- rate of acceleration;
- time spent idling;
- type of vehicle (car, light truck, heavy truck, bus, etc.); and,
- cold or hot start mode.

Vehicular emissions are generally estimated by using emission factors in units of mass of contaminant emitted per vehicle, per distance travelled. To obtain a mass emission rate for a particular road section, the length of the road section is multiplied by the number of vehicles using that section to obtain the total VKT. The VKT are then multiplied by the appropriate emission factors.

The vehicular exhaust emission rates were estimated for Existing Conditions, and for the Future No-Build and Future Build scenarios. Emission factors were obtained by running the U.S. EPA MOVES2014 model. The model output provided emission factors in grams per vehicle-kilometer travelled (g/VKT) for all contaminants of concern. All expected technological and regulatory changes affecting future emissions are built into the model, in order to generate the most representative emission factors possible. Details about MOVES2014 inputs are provided in Appendix A.

As previously mentioned, it was assumed that the future bus fleet on the Transitway will be diesel fueled. Even though bus propulsion is expected to evolve away from diesel technology to more clean and sustainable systems such as natural gas or electric propulsion, the timing for this change is uncertain. Therefore, by assuming that buses operating on the Transitway will still be based on diesel technology, emissions from Transitway buses are conservative.

Table 4-4 and Table 4-5 summarize the final vehicular exhaust emission factors used in the existing conditions and future reference year for idling conditions, 30 km/hr, which is the posted speed limit in the parking lots and PPUDO areas, 60 km/h which is the posted speed limit along the interchange roadways, and 100 km/h, which is the posted speed limit on 407 ETR and the 407 Transitway. Emission factors at 30, 60 and 100 km/h are in g/VKT whereas idle emission factors are in g/hr.

Table 4-4 Tailpipe Emission Factors for Cars and Medium Trucks for 2017 and 2031

Year	Speed	Cars												
		PM ₁₀	PM _{2.5}	CO	NO ₂	SO ₂	VOC	1,3-Butadiene	Acetaldehyde	Acrolein	Benzene	Formaldehyde	Benzo[a]pyrene	CO _{2e}
2017	Idle (g/h)	7.50E-02	6.70E-02	2.30E+01	1.60E+00	1.00E-01	1.80E+00	3.20E-03	1.00E-02	7.50E-04	2.60E-02	1.30E-02	1.90E-04	5.30E+03
	30 km/h (g/VKT)	7.00E-03	6.30E-03	2.10E+00	2.20E-01	6.90E-03	1.00E-01	1.90E-04	6.50E-04	4.80E-05	1.90E-03	8.80E-04	7.40E-05	3.50E+02
	60 km/h (g/VKT)	6.60E-03	5.90E-03	1.60E+00	2.10E-01	4.50E-03	5.90E-02	1.10E-04	3.80E-04	2.80E-05	1.20E-03	5.30E-04	7.20E-05	2.30E+02
	100 km/h (g/VKT)	6.30E-03	5.60E-03	1.60E+00	2.50E-01	4.30E-03	5.30E-02	9.10E-05	3.50E-04	2.60E-05	1.20E-03	5.00E-04	6.80E-05	2.20E+02
2031	Idle (g/h)	2.70E-02	2.40E-02	7.10E+00	1.30E-01	2.20E-02	6.50E-01	8.90E-06	7.60E-04	1.00E-04	3.00E-03	2.10E-03	1.30E-04	3.30E+03
	30 km/h (g/VKT)	2.20E-03	2.00E-03	7.20E-01	2.10E-02	1.50E-03	3.40E-02	4.70E-07	5.80E-05	7.30E-06	2.70E-04	1.50E-04	2.30E-05	2.20E+02
	60 km/h (g/VKT)	1.90E-03	1.70E-03	6.50E-01	2.80E-02	9.60E-04	1.80E-02	2.40E-07	4.60E-05	5.50E-06	2.30E-04	1.10E-04	5.60E-05	1.40E+02
	100 km/h (g/VKT)	1.90E-03	1.70E-03	7.10E-01	3.90E-02	9.20E-04	1.60E-02	2.00E-07	5.10E-05	5.90E-06	2.70E-04	1.20E-04	2.10E-05	1.40E+02
Year	Speed	Medium Trucks												
		PM ₁₀	PM _{2.5}	CO	NO ₂	SO ₂	VOC	1,3-Butadiene	Acetaldehyde	Acrolein	Benzene	Formaldehyde	Benzo[a]pyrene	CO _{2e}
2017	Idle (g/h)	2.40E+00	2.20E+00	3.40E+01	3.90E+01	1.60E-01	6.90E+00	1.40E-02	1.90E-01	3.20E-02	9.10E-02	4.60E-01	2.60E-03	1.40E+04
	30 km/h (g/VKT)	1.20E-01	1.10E-01	2.50E+00	2.10E+00	9.70E-03	3.80E-01	7.30E-04	9.80E-03	1.60E-03	5.40E-03	2.30E-02	5.00E-04	8.20E+02
	60 km/h (g/VKT)	6.30E-02	5.80E-02	1.70E+00	1.30E+00	6.00E-03	1.80E-01	3.40E-04	4.50E-03	7.50E-04	2.40E-03	1.10E-02	2.60E-04	5.00E+02
	100 km/h (g/VKT)	4.70E-02	4.30E-02	1.50E+00	1.00E+00	5.00E-03	1.30E-01	2.30E-04	3.00E-03	5.00E-04	1.50E-03	7.10E-03	1.90E-04	4.10E+02
2031	Idle (g/h)	3.10E-01	2.80E-01	9.90E+00	1.10E+01	1.00E-01	2.10E+00	9.10E-04	5.50E-02	8.10E-03	2.20E-02	1.70E-01	1.30E-04	1.30E+04
	30 km/h (g/VKT)	1.60E-02	1.40E-02	7.50E-01	5.60E-01	5.90E-03	1.10E-01	4.60E-05	2.80E-03	4.10E-04	1.30E-03	8.40E-03	2.90E-05	7.30E+02
	60 km/h (g/VKT)	9.80E-03	8.90E-03	5.50E-01	3.20E-01	3.50E-03	5.90E-02	2.10E-05	1.30E-03	1.80E-04	5.90E-04	3.80E-03	2.60E-05	4.40E+02
	100 km/h (g/VKT)	8.20E-03	7.50E-03	4.90E-01	2.60E-01	2.80E-03	4.30E-02	1.40E-05	8.30E-04	1.20E-04	3.80E-04	2.50E-03	2.70E-05	3.50E+02

Notes:

* PM₁₀ and PM_{2.5} emission factors do not include road dust. See Section 4.3.4.2.

* Emissions factors were calculated as the average of emission factor associated with each road type (Interchanges, highway and ramps).

Table 4-5 Tailpipe Emission Factors for Heavy Trucks and Buses for 2017 and 2031

Year	Speed	Heavy Trucks												
		PM ₁₀	PM _{2.5}	CO	NO ₂ **	SO ₂	VOC	1,3-Butadiene	Acetaldehyde	Acrolein	Benzene	Formaldehyde	Benzo[a]pyrene	CO _{2e}
2017	Idle (g/h)	5.80E+00	5.40E+00	2.40E+01	8.70E+01	1.80E-01	8.80E+00	2.00E-02	3.10E-01	5.50E-02	6.70E-02	7.60E-01	1.30E-02	2.00E+04
	30 km/h (g/VKT)	3.50E-01	3.30E-01	1.50E+00	5.80E+00	1.40E-02	4.70E-01	1.00E-03	1.60E-02	2.80E-03	3.40E-03	3.90E-02	2.00E-03	1.60E+03
	60 km/h (g/VKT)	1.90E-01	1.70E-01	8.70E-01	3.70E+00	9.40E-03	2.30E-01	4.70E-04	7.10E-03	1.30E-03	1.50E-03	1.70E-02	7.40E-04	1.10E+03
	100 km/h (g/VKT)	1.20E-01	1.10E-01	6.80E-01	3.50E+00	9.20E-03	1.80E-01	3.30E-04	4.90E-03	8.80E-04	1.10E-03	1.20E-02	3.30E-04	1.00E+03
2031	Idle (g/h)	8.20E-01	7.60E-01	7.10E+00	2.50E+01	1.60E-01	2.60E+00	2.10E-03	1.00E-01	1.50E-02	1.90E-02	3.00E-01	7.30E-04	1.90E+04
	30 km/h (g/VKT)	5.80E-02	5.30E-02	4.20E-01	1.70E+00	1.30E-02	1.60E-01	1.10E-04	5.10E-03	7.60E-04	9.70E-04	1.50E-02	1.10E-04	1.50E+03
	60 km/h (g/VKT)	3.30E-02	3.00E-02	2.50E-01	1.00E+00	8.40E-03	8.40E-02	4.60E-05	2.20E-03	3.30E-04	4.20E-04	6.50E-03	4.30E-05	9.80E+02
	100 km/h (g/VKT)	2.20E-02	2.00E-02	1.90E-01	9.30E-01	8.10E-03	7.00E-02	3.00E-05	1.40E-03	2.10E-04	2.70E-04	4.20E-03	2.00E-05	9.40E+02
Year	Speed	Transit Bus												
		PM ₁₀	PM _{2.5}	CO	NO ₂	SO ₂	VOC	1,3-Butadiene	Acetaldehyde	Acrolein	Benzene	Formaldehyde	Benzo[a]pyrene	CO _{2e}
2017	Idle (g/h)	4.10E+00	3.80E+00	2.90E+01	6.30E+01	1.70E-01	7.90E+00	1.70E-02	2.50E-01	4.40E-02	7.90E-02	6.10E-01	5.00E-03	1.70E+04
	30 km/h (g/VKT)	2.40E-01	2.20E-01	2.00E+00	4.00E+00	1.20E-02	4.30E-01	8.80E-04	1.30E-02	2.20E-03	4.40E-03	3.10E-02	7.30E-04	1.20E+03
	60 km/h (g/VKT)	1.80E-01	1.70E-01	1.30E+00	3.20E+00	9.80E-03	2.10E-01	4.00E-04	5.80E-03	1.00E-03	1.90E-03	2.20E-02	3.50E-04	7.90E+02
	100 km/h (g/VKT)	8.40E-02	7.70E-02	1.10E+00	2.30E+00	7.10E-03	1.50E-01	2.80E-04	4.00E-03	6.90E-04	1.30E-03	9.40E-03	1.80E-04	7.20E+02
2031	Idle (g/h)	5.70E-01	5.20E-01	8.50E+00	1.80E+01	1.30E-01	2.30E+00	1.50E-03	7.80E-02	1.20E-02	2.10E-02	2.40E-01	3.40E-04	1.60E+04
	30 km/h (g/VKT)	3.70E-02	3.40E-02	5.90E-01	1.10E+00	9.30E-03	1.40E-01	7.60E-05	3.90E-03	5.80E-04	1.10E-03	1.20E-02	4.90E-05	1.10E+03
	60 km/h (g/VKT)	2.10E-02	1.90E-02	4.00E-01	6.60E-01	6.00E-03	7.20E-02	3.30E-05	1.70E-03	2.50E-04	5.00E-04	5.20E-03	2.30E-05	7.10E+02
	100 km/h (g/VKT)	1.50E-02	1.40E-02	3.40E-01	5.90E-01	5.50E-03	5.70E-02	2.20E-05	1.10E-03	1.70E-04	3.20E-04	3.40E-03	1.20E-05	6.50E+02

Notes:

*PM₁₀ and PM_{2.5} emission factors do not include road dust. See Section 4.3.4.2.

* Emissions factors were calculated as the average of emission factor associated with each road type (Interchanges, highway and ramps).

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4.3.4.2 Mechanically-Generated Dust Emissions

U.S. EPA AP-42 Section 13.2.1 provides an emission factor to estimate the amount of dust suspended by vehicles on the road (U.S. EPA, 2011), according to the following equation:

$$E = k(sL)^{0.91} \times (W)^{1.02} \times (1 - P/4N)$$

Where:

E = particulate emission factor (g/VKT)

k = particle size multiplier = 0.62 (g/VKT) for PM₁₀ and 0.15 (g/VKT) for PM_{2.5}

sL = silt loading (g/m²)

0.6 (< 500 vehicles per day)

0.2 (500 – 5,000 vehicles per day)

0.06 (5,000 – 10,000 vehicles per day)

0.03 (> 10,000 vehicles per day)

W = weight of fleet (tons/vehicle)

P = number of "wet" days with at least 0.254 mm of precipitation during the averaging period = 129 (obtained from Toronto Pearson Airport data)

N = number of days in the averaging period = 365 days

Silt loading was determined using the AADT. In general, the AADT along 407 ETR and its interchanges is greater than 10,000 vehicles per day. The AADT along the proposed 407 Transitway will be just over 500 buses per day when both directions are considered. As a result, the silt loading for 407 ETR and its interchanges is 0.03 g/m², whereas the silt loading for the proposed 407 Transitway is 0.2 g/m².

The road dust emission factor equation also includes vehicle weight as a variable. For this assessment, the following vehicle weights were used:

- 2,500 kg gross vehicle weight for passenger vehicles (provided by Parsons);
- 24,000 kg gross vehicle weight for Transitway buses (provided by Parsons);
- 9,000 kg gross vehicle weight for medium trucks;
- 30,000 kg gross vehicle weight for heavy trucks.

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In addition, according to the WRAP Fugitive Dust Handbook (Countess Environmental, 2006), a control efficiency of 40% can be applied to roadways where the posted speed limit is less than 40 km/h. Since the posted speed limit in the station parking lots and PPUDO areas will be 30 km/h, a control efficiency of 40% was applied.

Note that mechanically-generated dust emissions from vehicular travel on paved roads are not expected to change over time.

4.4 Assessment Criteria

As mentioned in Section 4.3, where there are estimated increases in emissions in the Future Build scenario compared to the Future No-Build scenario, their significance relative to the emissions incurred on 407 ETR “now” and in the future without the Project was evaluated. As outlined in the Project terms of reference developed by the MTO, an increase of more than 10% is deemed significant.

4.5 Air Dispersion Modelling

Local air quality impacts are characterized by concentrations of contaminants emitted from the sources within the study area. These concentrations will vary spatially and temporarily in response to changing atmospheric conditions (wind speed, wind direction, temperature, atmospheric stability and mixing height) and the amount of pollutant emitted. To calculate the concentration at a given location, an atmospheric dispersion model is used. The model takes the emissions from a source and disperses them into the surrounding atmosphere, typically using historical hourly meteorological data from a local weather station.

To assess the impact on air quality within the study area based on the presence of the 407 Transitway, air dispersion modelling was completed using the U.S. EPA’s recommended air dispersion model, CAL3QHCR which is described in further detail in Section 4.5.1.

Local air quality impacts related to the Project emissions were assessed for twelve pollutants and resulting concentrations were obtained for three different scenarios (see Sections 4.3.1- 4.3.3 for a list of scenarios).

4.5.1 CAL3QHCR

CAL3QHCR is a model developed specifically to predict the changes in downwind air quality resulting from vehicle emissions from free-flowing traffic conditions and near roadway intersections (U.S. EPA, 1995). The model combines the CALINE-3 (Benson, 1979) line source dispersion model and a traffic algorithm for estimating vehicular queue lengths at signalized intersections. The CALINE-3 line source dispersion model predicts more realistic concentrations immediately around roads because of the initial mixing in the wake zone of the vehicle. This initial mixing, combined with the traffic algorithm for queuing (added emissions from idling vehicles),

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provides improved model predictions of the impact of vehicle tailpipe emissions adjacent to roadways. CAL3QHCR includes additional calculations for approximating emissions near roadway intersections.

CAL3QHCR requires the input of roadway geometries, receptor locations, vehicular emission factors, signal timing, intersection configuration, and meteorological data.

CAL3QHCR model guidance documents recommend using a source release height of 0 m. All sources were assigned a release height of 0 m with the exception of bridges and complex overpasses which were all assigned a source release height of 10 m.

The CAL3QHCR model was originally designed to simulate dispersion of CO and PM_{2.5} from roadways. However, it is applicable to all gaseous pollutants, provided that minor alterations to the model source code are made. To model NO₂, SO₂ and VOC emissions, the model was modified to reflect the difference in the contaminant's molecular weight.

Since emission factors differ by vehicle class, the vehicle mix was used to calculate a composite emission factor for each pollutant for a given roadway based on the fraction of cars and trucks that travel on it. Typical hourly traffic profiles for weekdays and weekends were provided by Parsons and the weekday profiles were conservatively used to develop emission factors for each pollutant for each hour of the day. The assessment considers both weekday and weekend hourly traffic patterns.

4.5.2 Meteorological Data

The meteorological data requirements for the comprehensive analysis include hourly meteorological data on mixing height, temperature, cloud cover, cloud opacity, wind speed and wind direction, surface wind direction and velocity, stability class, and mixing height. The preferred data set is the most recent five years of meteorological observations acquired from the nearest meteorological station(s) (usually, the nearest airport).

The site specific meteorological dataset processed by the MOECC with surface data from the Toronto International Airport station for the period from 2012 to 2016 was used in conjunction with the CAL3QHCR model. Surface data were processed as per MOECC-endorsed MTO "Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects" and hourly mixing heights were estimated using the U.S. EPA's regulatory meteorological pre-processor PCRAMMET (version 99169). Namely, the two meteorological datasets have been prepared by the MOECC for the study area as described below:

1. HW407_From_HW10_to_IslingtonAve.met: to be used for modelling the segment of 407 ETR from approximately 1 km west of Hurontario street to Islington avenue; and

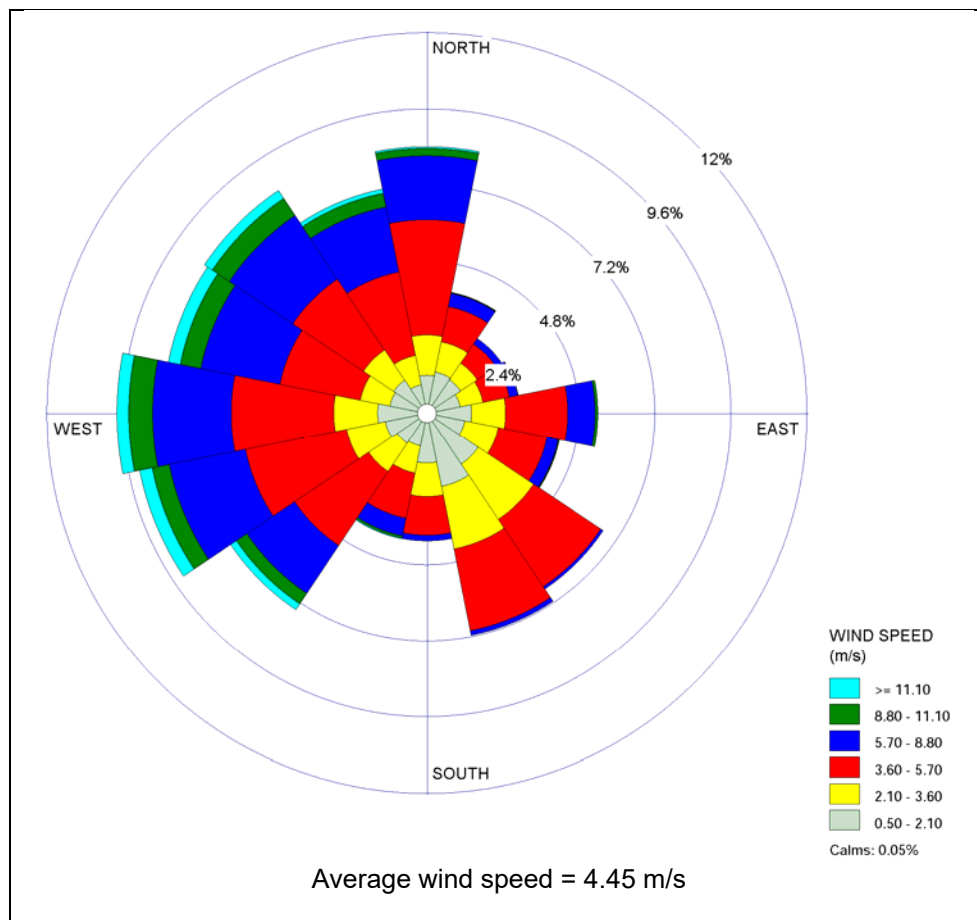
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2. HW407_From_IslingtonAve_to_HW400.met: to be used for modelling the segment of 407 ETR from Islington avenue to approximately 2 km east of highway 400.

In discussion with the MOECC, the met data set HW407_From_HW10_to_IslingtonAve.met that covers the largest portion of the 407 ETR within the study area was selected to be used as a reasonable reflection of the meteorological conditions for this modelling assessment.

The frequency distribution of hourly surface wind speed and direction at the Toronto International Airport in the 5 year period from 2012 to 2016, in the form of a wind rose (i.e. a graphical representation of the frequency of winds from each direction) is presented on Figure 4-1. The average wind speed was 4.5 m/s, and calm wind conditions were observed approximately 0.05% of the time. The prevailing winds were westerly (9.8% of the time) and from the west-southwest (9.2% of the time).

Figure 4-1 Wind Rose Plot at Toronto Int'l Airport for the period 2012 to 2016 (wind blowing from)



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Typically, five years of hourly meteorological data are used in dispersion modelling calculations, as recommended by the U.S. EPA in order to include all of the possible combinations of meteorological conditions expected to occur in the area to be modelled. The CAL3QHCR model can process only one year of data per model run, therefore the results for each year of meteorological data were compared to determine the maximum concentration for each contaminant. The models were run for five years of meteorological data to determine maximum contaminant concentrations at 65 sensitive receptor locations (see Section 3). The worst-case meteorological year (i.e., the year that resulted in the highest maximum ground-level concentrations) was determined to be 2012. Modelling results using 2012 meteorological data are presented in this report. Contaminants with criteria based on three-year averaging periods were assessed using the meteorological years 2012, 2013 and 2014.

4.5.3 Receptor Grid

A receptor grid is required to develop isopleths (i.e. lines of equal concentrations) to illustrate the results of the air dispersion modelling. In addition to the 65 sensitive receptors described in Section 3, receptors were placed every 100 m from the roadway extending to 500 m with spacing between receptors ranging from 100 m to 150 m which run parallel to the road links defined within the study area. The total number of receptors (i.e. sensitive receptors plus receptor grid) for the Existing Conditions and Future No-Build scenarios is 2017 whereas the Future Build scenario is 2031.

4.5.4 NO_x to NO₂ Conversion

As discussed previously, NO_x emissions are composed of nitric oxide (NO) and nitrogen dioxide (NO₂), with adverse health effects resulting from NO₂ at much lower concentrations than NO. Once NO is emitted to the atmosphere it reacts with other contaminants (primarily ground-level ozone – O₃) to produce NO₂. Depending on the amount of ozone present, only a portion of NO_x will be converted to NO₂. However, for the purpose of this assessment, it has been conservatively assumed that all NO_x will be converted to NO₂.

5 AIR QUALITY IMPACT ASSESSMENT

5.1 CAL3QHCR Modelling Results

The output from CAL3QHCR is the predicted 1-hour average concentration at each of the modelled receptor points for the gaseous pollutants and 24-hour average concentrations for particulate matter. Hourly data is post-processed to determine maximum predicted 1-hour, 8-hour and 24-hour average concentrations, as well as annual average concentrations.

Tables B-1 through B-23 in Appendix B present the model-predicted concentrations of criteria air contaminants (i.e., including background) for each applicable averaging period for the sixty-five (65) representative sensitive receptor locations. The ambient background concentrations presented in Section 4.1 were added to the model-predicted concentrations to estimate worst-case ambient concentrations that could be realized as a result of the proposed Project.

As presented in Tables B-1 to B-13, all model-predicted concentrations of TSP, PM₁₀, SO₂, and CO for all averaging periods, NO₂ (1-hour and 24-hour) and PM_{2.5} (24-hour) are well below applicable ambient air quality criteria even with the addition of background concentrations at each sensitive receptor. The only exceptions to this trend include annual NO₂ and PM_{2.5}. As presented in Table B-8, future annual NO₂ concentrations are predicted to exceed the 2025 CAAQS at all sensitive receptors due to elevated background concentrations already above the respective standard without any contribution from the Project. The 3-year annual average PM_{2.5} concentrations are predicted to be at, or higher than the 2020 CAAQS at select sensitive receptor locations, as presented in Table B-4. These exceedances occur at the locations closest to the intersections of 407 ETR and highway 400, at the receptors closest to the road (i.e. less than 50 m). It should be noted that the background concentration for the PM_{2.5} annual averaging period represents 93% of the annual CAAQS. The receptors at or above the 2020 CAAQS are:

- R33 – Goreway to Highway 427
- R55 to R63 – Highway 27 to Pine Valley

Furthermore, the maximum cumulative concentrations of SO₂ are well below the more stringent 1-hour and annual CAAQS and current and proposed AAQC.

VOC compounds of acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde and benzo[a]pyrene were modelled and predicted results for the averaging periods with applicable air quality criteria are presented in Tables B-14 through B-23 in Appendix B. Model-predicted concentrations of VOCs for all averaging periods are well below applicable ambient air quality criteria when combined with their respective 90th percentile ambient background concentrations. The only exceptions are benzo[a]pyrene and annual benzene, where the background concentrations are already above their respective AAQC without any contribution from the Project.

Table B-24 through Table B-26 in Appendix B presents the three highest concentrations, the days (i.e. Julian day in 2012) and hour (when applicable) on which these concentrations occurred and locations (i.e. UTM coordinates in km) where these concentrations occurred, for each modelled contaminant for the Existing Conditions, Future No-Build and Future Build scenarios. Concentrations for contaminants with 1-hour or 24-hour CAAQS are presented as percentiles. For example, the SO₂ 1-hour concentrations are presented as the 99th percentile averaged over three consecutive years (i.e. 2012, 2013 and 2014) whereas the NO₂ 1-hour and PM_{2.5} 24-hour concentrations are presented as 98th percentile averaged over the same three years. Annual SO₂ and NO₂ concentrations are presented as annual average concentrations in 2012 while annual PM_{2.5} concentrations are averaged over a three-year period.

5.2 Air Quality

5.2.1 Comparison of Existing Conditions (2017) to Future Scenarios (2031)

Model-predicted concentrations for twelve contaminants, three scenarios and sixty-five sensitive receptors are presented in Tables B-1 to B-23 in Appendix B. The percent change in contaminant concentrations for the Future No-Build and Future Build scenarios relative to Existing Conditions is also presented in the tables. Tables B-1 through Table B-5 present predicted concentrations of TSP, PM_{2.5} and PM₁₀ which are shown to have insignificant changes at all receptors for the Future scenario relative to Existing Conditions. In general, slight increases of TSP concentrations are predicted for the Future Build scenario relative to Existing Conditions and Future No-Build at most sensitive receptors. PM₁₀ concentrations for the Future Build scenario show a very slight decreasing trend at most sensitive receptors except for R32 which is located close to the proposed Hurontario Street Station. There is a slight increase in PM₁₀ concentrations from Future Build compared to Future No-Build. PM_{2.5} concentrations for the Future Build scenario show a very slight decreasing trend compared to Existing Conditions and a very slight increasing trend compared to Future No-Build. Unlike gaseous pollutants, particulate matter emissions are made up of re-suspended road dust as well as tailpipe emissions. Since the road dust component dominates the total particulate matter emission factor, the expected net effect over time is an increase in emissions due to an increase in future traffic volumes.

In contrast, CO, NO₂, and benzo[a]pyrene concentrations decrease significantly for the Future Build and Future No-Build scenarios relative to Existing Conditions (Tables B-6 through B-8, B-12 and B-13, and B-22 and B-23). This is a result of the significant decrease in emission factors for every type of vehicle (passenger cars, light-duty trucks, medium duty trucks and heavy trucks). The decrease in emission factors in 2031 is great enough to offset the increase in traffic, which results in an overall decrease in contaminant concentrations at all sensitive receptor locations. The decrease in emission factors is due to the assumptions regarding the future improvements to vehicle combustion and exhaust control technology.

Table B-15 and Table B-16 show that there is a decrease in acrolein concentrations for the future scenarios relative to Existing Conditions which is also a direct result in an overall decrease in vehicle emission factors due to assumptions regarding the improvements in technology. The average percent change is significant for the 1-hour averaging period at 13% and insignificant for the 24-hour averaging period at 3%. As noted in Table 4-2, the 24-hour background concentration was used as a surrogate for the 1-hour period as monitoring data for the 1-hour period is not available.

Tables B-9 through B-11, B-14 and B-17 through B-21 present the maximum (or percentile) predicted concentrations for SO₂, acetaldehyde, benzene, 1,3-butadiene and formaldehyde showing insignificant changes for the Future Build and Future No-Build scenarios relative to Existing Conditions. As previously mentioned, insignificant changes can be expected despite the predicted increase in traffic volumes as a result of the improvements to engine technologies, as well as improved fuel standards.

5.2.2 Comparison of Future No-Build and Future Build Scenarios

When assessing the merits of the proposed 407 Transitway project compared to Future No-Build conditions, it is the incremental change in total model-predicted concentrations between the two future cases that is the true measure of the future impact of the Project. The same background concentrations are added to the modelled concentrations for the Future Build and Future No-Build scenarios, therefore, when assessing the incremental change in the combined concentrations, the background concentration cancels out.

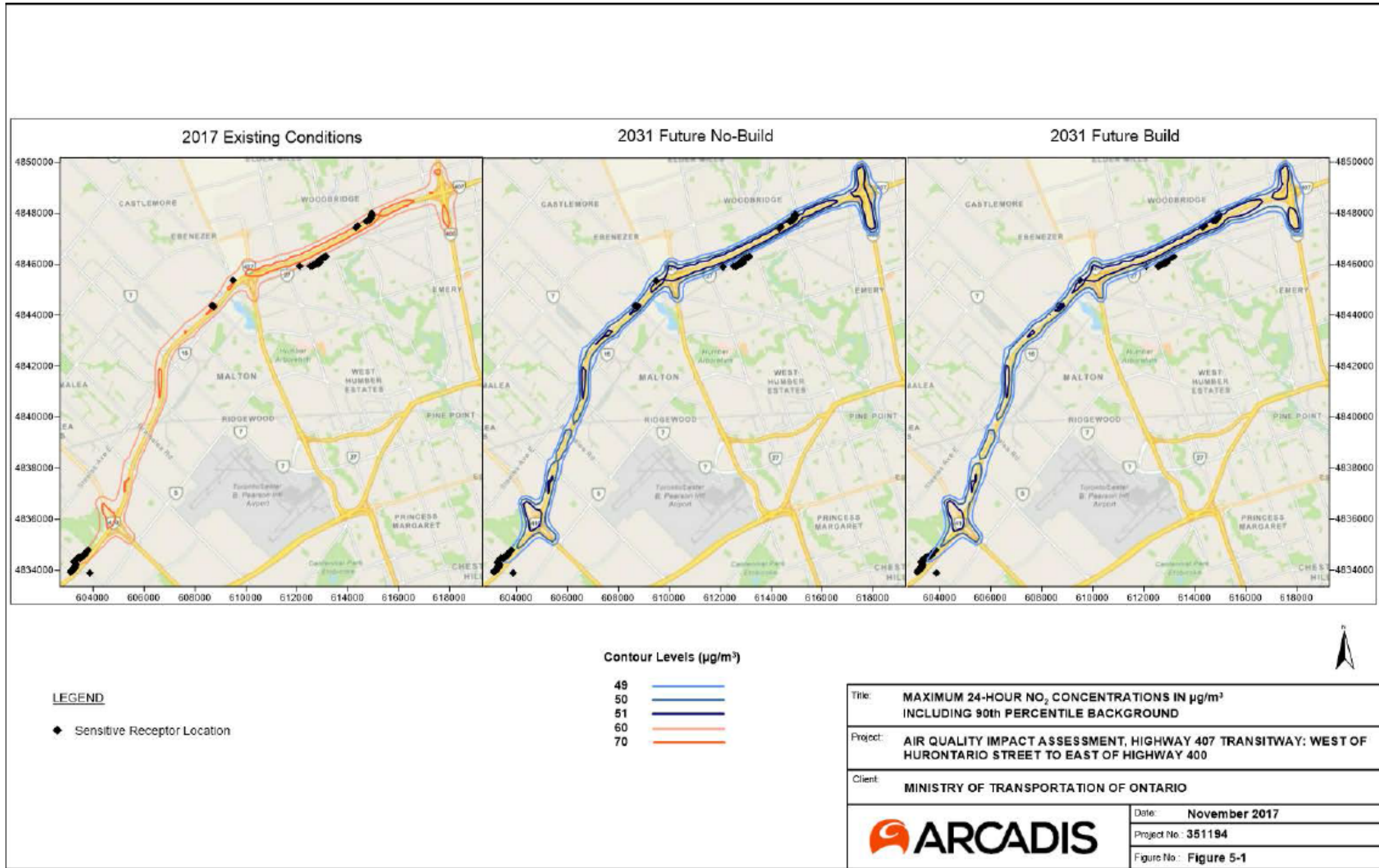
The percent change in predicted concentrations for Future Build relative to Future No-Build is presented in Tables B-1 through B-23 in Appendix B. For most contaminants and most averaging periods, model-predicted concentrations are shown to stay fairly similar between the future scenarios at all sensitive receptor locations. The percentage change in the predicted concentration for the Future Build scenario relative to the Future No-Build scenario for all modelled contaminants is less than 1% at all sensitive receptors. Table 5-1 below identifies that none of the sensitive receptors are predicted to be significantly affected between the Future Build and Future No-Build scenarios.

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Table 5-1 Changes from Future Build and Future No-Build Scenarios

Contaminant	Change from Future Build and No-Build	Number of Receptors Significantly Affected
Benzo[a]pyrene	insignificant (<10%)	0
Formaldehyde	insignificant (<10%)	0
Acetaldehyde	insignificant (<10%)	0
Acrolein	insignificant (<10%)	0
1,3-butadiene	insignificant (<10%)	0
Benzene	insignificant (<10%)	0
Carbon Monoxide	insignificant (<10%)	0
Nitrogen Dioxide	insignificant (<10%)	0
Sulphur Dioxide	insignificant (<10%)	0
TSP	insignificant (<10%)	0
PM ₁₀	insignificant (<10%)	0
PM _{2.5}	insignificant (<10%)	0

The results from the air dispersion modelling have been presented in graphical format as contour plots for each of the twelve modelled contaminants (averaging period depends on the contaminant of concern) for all three scenarios in Appendix C. As outlined in Section 4.5.2, the worst-case meteorological year (2012) was used to develop graphical isopleths for each contaminant except for 1-hour SO₂ and NO₂ and 24-hour and annual PM_{2.5} where the three-year average (2012, 2013 and 2014) was used. For example, Figure 5-1 presents the predicted 24-hour maximum NO₂ concentrations for the Existing Conditions (2017), Future No-Build (2031) and Future Build (2031) scenarios, respectively. These concentrations are the maximum 24-hour predicted concentrations that occur during a one-year period added to a conservative background concentration. The figure shows negligible changes in NO₂ concentrations between the Future No-Build and Future Build scenarios. Figures for all other gaseous compounds are provided in Appendix C and demonstrate results similar to those of NO₂. Figures of predicted concentrations for particulate matter in Appendix C confirm the very slight changes in the Future Build scenario relative to the Future No-Build scenario.



5.3 Greenhouse Gases

The total annual quantities of carbon dioxide equivalent (CO_{2e}) released (in tonnes) for each assessment scenario and percent change between scenarios are summarized in Table 5-2.

Table 5-2 Annual CO_{2e} Emissions from Traffic

Assessment Scenario	Total CO _{2e} Emissions (tonnes/year)	% Change from Existing Conditions	% Change from Future No-Build
Existing Conditions	775,461	-	-
Future No-Build	387,159	-50%	-
Future Build	383,013	-50%	-1.07%

CO_{2e} is shown to decrease by 1.07% in the Future Build scenario relative to Future No-Build and decreases by 50% in the Future Build scenario relative to Existing Conditions. The decrease in GHG emissions is attributable to the efficiency changes to vehicles, resulting in lower emission factors and the reduction in personal vehicles on the road as a result of the Transitway. Although GHG emissions are expected to decrease slightly for the specific Transitway study area, this is likely a worst-case (i.e., 100% diesel bus fleet) estimate of the Project's impact on GHG emissions. The Future Build scenario is expected to minimize GHG emissions more than 1.07% with newer clean technology and by promoting an alternative option to personal vehicles.

According to Environment and Climate Change Canada's (ECCC) 2016 National Inventory Report, Ontario's GHG emissions were 182 and 170 million tonnes (Mt) in 1990 and 2014, respectively (ECCC, 2016). The GHG emissions target for 2030 is 115 Mt based on a 37% reduction below 1990 levels. Emissions therefore have to decrease by 55 Mt in 2030 relative to existing conditions. However, the Project is estimated to decrease GHG emissions by 4,144 tonnes in forecast year 2031 relative to the Future No-Build scenario. As a result, the Project as designed will positively affect progress towards the 2030 GHG target by approximately 0.007%. This minor decrease is the result of the worst-case scenario being evaluated, which includes increased traffic volumes and diesel-fueled transit buses on the Transitway.

6 CLIMATE CHANGE

6.1 Impacts of Climate Change on the Project

The study area is expected to experience increasing incidents of extreme weather events as a result of climate change. These events can result in a variety of detrimental losses within the proposed Transitway, as well as in the natural environment surrounding the study area. Some of these extremes can include:

- changes to freeze thaw cycle;
- increased severity of flood events;
- increase heat waves; and,
- high winds and lightning.

The change in freeze and thaw cycles can cause concrete or asphalt to fail leading to cracks and crumbling of roadways. Cracks can be damaging to private and commercial vehicles as well as lead to pot holes and in extreme situations, sink holes. The Transitway system will be built to ensure longevity and will be maintained to minimize cracking and potholes.

Ontario is predicting that the average temperature within Southwestern Ontario will rise 5 to 6 degrees in the next 80 years. Within these temperature extremes, the public will rely more on their personal vehicles to travel in comfort (MOECC, 2007). By implementing a comfortable and reliable Transitway, the number of personal vehicles operating within these extremes can decrease. Buses within the 407 Transitway will receive reliable maintenance and will be operated to encourage efficiency in order to reduce its carbon footprint. High temperatures can also lead to expansion of the roadway resulting in cracks and surface abnormalities. Temperatures will be monitored, and roadways will be visually checked for abnormalities to confirm safety for buses and passengers, as part of the regularly scheduled maintenance.

The Greater Toronto Area (GTA) has also witnessed several high rain events in the past few years that have led to flooding and infrastructure damage. Roadways can be flooded in situations of high rain as result of low porosity of concrete and asphalt. This low porosity can result in localized flooding within the surrounding environment. To mitigate this runoff, the Transitway will be equipped with a storm water collection system that will collect runoff and transport it to safe locations. The storm water system will be designed to handle extreme weather conditions, however the Transitway will also be monitored and if localized flooding is identified emergency procedures will be implemented and buses will either be re-routed or shut down until flooding has ceased.

Wind and lightning can result in power lines being compromised, resulting in power loss to roadways and signs. The Transitway system will be constructed so that the buses can still operate in scenarios where power is not available. The Transitway will also have reflective markers to

provide support to buses when power is lost, or fog is present. All material within the Transitway will also be secured to ensure that in high wind scenarios that items remain fixed and safe for passengers.

6.2 Impacts of the Project on Climate Change

Transportation is Ontario's major contributor to GHG emissions with the GTA being the busiest and most developed area within Ontario. In 2011, 114 million trips were completed on the existing 407 ETR highway and every year since it has been growing. Ontario has identified the transportation sector to be an area to focus on reducing GHG emissions. As part of their plans, Ontario would like to provide lower emission vehicles and provide cleaner transportation options (MOECC, 2016c). The 407 Transitway is following this action. The development of this transitway is promoting a cleaner transportation option by removing personal vehicles from the road and reducing pressure on the already congested roadways within the GTA. As discussed in Section 5.3, even with the conservative approach of assuming the fleet will be diesel-fueled transit buses, the Transitway will still result in a decrease in the overall GHG emissions compared to future conditions without the Project.

The Transitway system will run parallel to the pre-existing 407 ETR highway and has been assumed to operate only diesel-fueled buses. The Transitway will be designed as a rapid transit system with only a select number of stops. The diesel buses and passenger vehicles within the stations are the only direct GHG emission sources for this project. The passenger vehicle emissions from passenger pick-up and drop-off are insignificant relative to the emissions coming from the buses, and passenger vehicle travel within the stations, as this activity is expected to be very short term and only at certain intervals when buses are arriving and departing. The system however, will create indirect emissions by consuming power from the grid for station lighting and heating, and transitway illumination. The diesel buses will contribute additional GHG emissions to the pre-existing environment, however, it is the intent that by introducing this new transit system, that it will encourage drivers to use public transit over their personal vehicles.

For the AQIA the worst-case scenario was evaluated, however, as part of this climate change assessment, carbon-focused build scenarios were also considered. Rather than operating diesel fueled buses, an electric substitute such as a Light Rail Transit (LRT) or electric power buses were considered. In this scenario the number of vehicles operated within the 407 ETR would not change; however, no transit bus emissions would be present. The LRT or electric bus system would produce indirect emission from electricity consumption, however Ontario's electricity grid is primarily made up of renewable or emission free sources including (Ministry of Energy, 2017):

- Nuclear – 60%
- Hydroelectric – 24%
- Natural Gas – 10%
- Wind – 6%

- Solar & Biofuel – <1%

Therefore, when considering this carbon-focused scenario the only emission reduction is from the diesel powered buses. Table 6-1 indicates that if an LRT or electrical bus system was implemented, there would only be a 1.3% reduction in GHG emissions as the diesel buses do not contribute a large portion to the overall GHG emissions within the study area.

Table 6-1 Comparison of Annual Tonnes of CO₂e: Business As Usual vs. Climate Focused

Assessment Scenario	Cars	Medium Trucks ¹	Heavy Trucks ²	Buses	Total
Build Scenario (Diesel Bus)	272,121	47,748	58,186	4,957	383,014
Build Scenario (Carbon-Focused)	272,121	47,748	58,186	0	378,055
Percent Difference					-1.3%

Notes:

¹ Based on medium trucks consisting of two-thirds of the overall truck volumes.

² Based on heavy trucks consisting of one-third of the overall truck volumes.

It should be noted that the above comparison is based solely on tailpipe emissions from buses. This comparison does not consider indirect emissions due to the sources used to generate electricity to power an LRT alternative, or charge the electrical bus system. Such comparison will require a number of unknown inputs related to the expected grid mix in 2031.

Another carbon-focused scenario would be switching from diesel buses to lower-carbon alternative fuels such as natural gas or dimethyl ether. Another option is blending biological-based fuels such as biodiesel or hydrogenation-derived renewable diesel with conventional petroleum-based diesel. Regardless of the technology used for the public transit, a reduction in GHG emissions contributing to climate change would be seen by providing an alternative clean transportation option.

To guarantee continual GHG reductions, the 407 ETR will ensure that all equipment is maintained and operated efficiently, to ensure no additional GHG emissions are developed. Stations will be designed to minimize idling for passenger vehicles parking or dropping off as well as buses that are arriving and departing. To conclude, this new transitway system will provide reliable and safe public transit system to the public, while providing a positive effect on climate change with reducing passenger vehicles and congestion within the GTA. Lastly, the Transitway is expected to withstand future extreme climate events such as high winds, high and low temperatures, and flooding by implementing maintenance and design features within the system.

7 MITIGATION OF AIR QUALITY IMPACTS

There are several ways that particulate emissions can be mitigated during the construction and operation phases of the Project. The sections below describe proposed mitigation measures for both the traffic (operation) and construction phases of the Project.

7.1 Traffic Phase Mitigation

For the operation phase, there are many fuel and technology pathways available to reduce tailpipe emissions of the Transitway buses. Switching from diesel to alternative fuels such as natural gas or dimethyl ether can reduce tailpipe emissions. Another option is blending biological-based fuels such as biodiesel or hydrogenation-derived renewable diesel with conventional petroleum-based diesel. Moreover, upgrading transit buses from conventional internal combustion engine technology to hybrid or electric technology can improve fuel economy or eliminate tailpipe emissions altogether. These pathways would simultaneously reduce air pollution and GHG emissions.

7.2 Construction Phase Mitigation

High temperatures and wind have the potential to cause the release and disbursement of particulate emissions. Therefore, it is recommended that, if possible, construction activities that are likely to cause the release of particulates be avoided under such conditions. If avoidance is not possible, it is recommended that residents within the immediate surrounding area be notified of the potential for particulate emissions during construction or high wind and high temperature scenarios. The ECCC publication “Best Practices for the Reduction of air Emissions from Construction and Demolition Activities” provides several mitigation measures for reducing emissions during construction activities. It is recommended that these best management practices be followed during construction of the road to reduce any adverse air quality impact that may occur. Mitigation of road dust, as recommended in the ECCC document, includes the use of wind barriers (i.e., solid barriers, or trees and shrubs), wetting or non-chloride dust suppressants, equipment washing, and limiting the exposed area which may be a source of dust.

8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

With the exception of benzo[a]pyrene, benzene, NO₂ and PM_{2.5}, there are no model predicted exceedances of applicable criteria or standards at sensitive receptor locations for all scenarios assessed.

Exceedances of the annual benzene and 24-hour and annual benzo[a]pyrene AAQC are predicted at many receptor locations for existing conditions and future scenarios assessed. Similarly, exceedances of the annual NO₂ CAAQS are predicted at many receptor locations for future conditions. These contaminants in particular have background concentrations that exceed their respective AAQC and CAAQS. Annual PM_{2.5} exceedances are predicted at select sensitive receptor locations and is largely attributable to background concentrations accounting for 93% of the AAQC which suggests that model predicted exceedances of annual PM_{2.5} criteria are attributable to elevated background concentrations within the study area.

8.1.1 Discussion of Existing Conditions

The results of the assessment show, through modelling and monitoring data, that the existing air quality in the study area is typical of a suburban setting, which is characterized by elevated pollution concentrations in relation to rural areas, with periodic exceedances of applicable air quality criteria. Available historical monitoring data near to the study area indicates that background concentrations of NO₂, CO, SO₂, acetaldehyde, acrolein, 1,3-butadiene and formaldehyde concentrations are well within applicable criteria whereas benzene, benzo[a]pyrene and PM_{2.5} concentrations periodically exceed applicable criteria.

8.1.2 Comparison of Existing Conditions with Future Scenarios

The assessment identified that compared to existing conditions, concentrations of gaseous contaminants are predicted to improve despite increases in traffic resulting from population growth in the study area. This improvement is a result of assumptions regarding future low emission engine technologies and fuels. Predicted concentrations at sensitive receptor locations will generally remain unchanged in both future scenarios for particulate matter-based compounds. CO₂e emissions are shown to decrease in the future scenarios relative to Existing Conditions.

8.1.3 Comparison of Future Scenarios

The assessment also identified that the Future Build scenario will generally result in less than a 1% increase in pollutant concentrations at sensitive receptor locations compared to the Future No-Build scenario. As a result, the increase in gaseous and particulate air pollutants attributable to the Project is deemed to be insignificant (i.e. <10%). Emissions of CO₂e are also shown to

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decrease in the Future Build scenario relative to Future No-Build, however, the percent change is also insignificant at less than 1%.

8.2 Recommendations

Construction and operational air quality mitigation recommendations are provided in Chapter 7 of the AQIA.

The proposed undertaking does not currently include bus garages; if in the future any plans are considered, an addendum to the EPR may be required.

9 REFERENCES

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APPENDIX A
MOVES2014 Inputs



Summary of MOVES2014 Model Inputs

As noted in Section 4.3.4, vehicle emission factors developed for the purposes of this air quality assessment were based on the U.S. EPA's Motor Vehicle Emission Simulator (MOVES) model. The U.S. EPA introduced MOVES in 2010 as a replacement emission inventory tool to the MOBILE6.2 model.

For this assessment, emission factors were developed for cars, medium trucks, heavy trucks and buses using MOVES2014 and Niagara County, New York (NY) State as the geographic surrogate for exhaust emissions. Although there are small temperature and humidity effects on exhaust emissions, the geographic proximity of Niagara County, NY to the study area are not expected to affect emission estimates to a level that would materially impact results and conclusions of this report.

The base year 2017, and the future horizon year 2031 were based on county-level MOVES runs using the “emission rates” calculation mode. In general, Chapter 5 of the MOVES2014 User Guide “*Generate Emission Rates for County Scale Analyses*” was followed. When running MOVES in the “emission rates” mode, many of the same inputs needed to run MOVES in “inventory” mode are required in order for the model to run in “emission rates” mode. However, not all inputs are actually used by the model in the calculation of emission rates. As a result, much of the default data available for Niagara County, NY could be used as input to MOVES without impacting the results. Default inputs used included:

- meteorology;
- average speed distribution;
- road type distribution;
- ramp fraction;
- fuels information; and
- hotelling.

Of this list, fuel supply information is the only data input that can directly affect the emission rates calculations. However, recent fuel supply data is not readily available for Ontario and as a result, default fuel information for Niagara County, NY was used as a surrogate. Since Canada's on-road vehicle and engine emissions regulations¹ are closely aligned with U.S. emissions regulations, the differences in fuel and engine characteristics are considered minor enough so as not to affect emission estimates to a level that would materially impact results and conclusions of this report. However, it should be noted that it was conservatively assumed that all buses were powered by diesel fuel. The AVFT (alternative vehicle fuels and technologies) input table was adjusted to reflect this. A summary of the primary MOVES input parameters is provided in Table A-1.

¹ Government of Canada. On-Road Vehicle and Engine Emission Regulations SOR/2003-2. Available at: <http://laws-lois.justice.gc.ca/PDF/SOR-2003-2.pdf>. Accessed on: 18 September 2015.

Table A-1 MOVES Input Parameters

Parameter	Input
Scale	County Domain
Meteorology	Default temperature and humidity for Niagara County, NY
Years	2017, 2031
Geographical Bounds	Niagara County, NY
Fuels	Gasoline Fuels, Diesel Fuels
Source Use Types	Passenger Car, Passenger Truck, Bus, Single short-haul, Single long-haul truck, Combination short-haul truck, Combination long-haul truck
Road Type	4- Urban Restricted Access, 5 – Urban Unrestricted Access
Contaminants and Processes	All Processes for NO _x , CO, SO ₂ , PM _{2.5} , PM ₁₀ , Acetaldehyde, Acrolein, Benzene, 1,3-butadiene, Formaldehyde, Benzo[a]Pyrene
Vehicle Age Distribution	30-year distribution from Age Distribution Projection Tool for MOVES2014

Source type population data and VMT (vehicle-miles travelled) data was based on data from Statistics Canada's 2009 Annual Canadian Vehicle Survey Report². 2009 is the most recent year that data is published for. VMT information was then input to the AADVMT Converter Tool for MOVES2014 (available from the U.S. EPA) to generate the required inputs for MOVES: HPMSVTypeYear; and VMTFraction. The Statistics Canada vehicle categories were mapped into HPMSVTypeID categories as shown in Table A-2. The mapping was based on professional judgment.

Table A-2 Statistics Canada Vehicle Categories Mapped Into MOVES Source Types

Statistics Canada Vehicle Category	MOVES Source Type	HPMSVTypeID
<i>Vehicles up to 4.5 tonnes</i>		
Car	21	25
Station wagon	21	25
Van	21	25
Sport utility vehicle	21	25
Pickup	31	25
Straight truck	32	50
<i>Trucks 4.5 tonnes to 14.9 tonnes</i>		
Van	32	50
Pickup	32	50
Straight truck	52	50
Tractor trailer	53	50
Bus	42	40
<i>Trucks 15 tonnes and over</i>		
Straight truck	61	60
Tractor trailer	62	60

² Statistics Canada. 2010. Canadian Vehicle Survey: Annual, 2009. Catalogue no. 53-223-X. July.

Age distribution data was based on data available from ECCC for the year 2006, which was provided to Arcadis for a previous project. The Age Distribution Projection Tool for MOVES2014 (available from the U.S. EPA) was then used to project the age distributions. I/M program information was not used in this assessment.

Rate per distance tables were generated using MOVES2014 which provided emission factors for each pollutant by year, month, vehicle type, vehicle speed and road type. The emission factors generated were then applied to the traffic volume data described in Section 4.3.4 to calculate total annual emissions. Note that emission factors were not varied by time of year. Rather, emissions factors were generated for January and July months to determine the worst-case scenario. The winter emission factors, more specifically January, were then used to calculate emissions for an entire year as they were the most conservative. Cold weather promotes cold starts on vehicles, which consequently result in incomplete combustion and higher tailpipe emissions. Cold weather also diminishes dispersion of contaminants, resulting in higher ground-level concentrations.

The rate per distance tables provided emission factors for eight vehicle source types; however, the traffic volumes provided by IBI Group were only broken down into four categories (cars, medium trucks, heavy trucks and buses). As a result, the emission factors for the selected MOVES source types were averaged before being applied to the traffic volumes in Section 4.3.4. Table A-3 illustrates which MOVES source types were averaged together for the composite emission factor.

Table A-3 Classification of MOVES Source Type Outputs for the Air Quality Assessment

MOVES Source Type ID	MOVES Source Type Name	Assessment Source Type Classification
21	Passenger Car	Cars ¹
31	Passenger truck	Cars ¹
32	Light commercial truck	Medium Trucks ²
42	Bus	Bus
52	Single-unit short-haul truck	Medium Trucks ²
53	Single-unit long-haul truck	Medium Trucks ²
61	Combination short-haul truck	Heavy Trucks ³
62	Combination long-haul truck	Heavy Trucks ³

Notes:

- ¹ The traffic volume for Cars includes all vehicles having designed primarily for the transportation of nine or fewer passengers or the transportation of cargo (e.g., vans and light trucks). Generally, the gross vehicle weight is less than 4,500 kg.
- ² The traffic volume for Medium Trucks includes all vehicles designed for the transportation of cargo. Generally, the gross vehicle weight is greater than 4,500 kg but less than 12,000 kg.
- ³ The traffic volume for Heavy Trucks includes all vehicles designed for the transportation of cargo. Generally, the gross vehicle weight is greater than 12,000 kg.

APPENDIX B
CAL3QHCR Model Results Tables



Table B-1 24-hour Maximum TSP Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			AAQC ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration ($\mu\text{g}/\text{m}^3$)	24-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	24-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	24-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	47	51.3	51.1	0%	51.7	1%	1%	120	43%	43%	43%
R2	West of Hurontario to Highway 410	47	51.6	51.3	0%	51.8	1%	1%	120	43%	43%	43%
R3	West of Hurontario to Highway 410	47	51.9	51.7	0%	52.1	0%	1%	120	43%	43%	43%
R4	West of Hurontario to Highway 410	47	52.2	51.9	0%	52.4	0%	1%	120	43%	43%	44%
R5	West of Hurontario to Highway 410	47	52.6	52.3	0%	52.8	0%	1%	120	44%	44%	44%
R6	West of Hurontario to Highway 410	47	53.0	52.7	-1%	53.2	0%	1%	120	44%	44%	44%
R7	West of Hurontario to Highway 410	47	53.5	53.2	-1%	53.6	0%	1%	120	45%	44%	45%
R8	West of Hurontario to Highway 410	47	54.0	53.7	-1%	54.1	0%	1%	120	45%	45%	45%
R9	West of Hurontario to Highway 410	47	54.9	54.5	-1%	55.0	0%	1%	120	46%	45%	46%
R10	West of Hurontario to Highway 410	47	55.5	55.1	-1%	55.6	0%	1%	120	46%	46%	46%
R11	West of Hurontario to Highway 410	47	55.9	55.5	-1%	56.0	0%	1%	120	47%	46%	47%
R12	West of Hurontario to Highway 410	47	56.2	55.7	-1%	56.2	0%	1%	120	47%	46%	47%
R13	West of Hurontario to Highway 410	47	56.8	56.3	-1%	56.8	0%	1%	120	47%	47%	47%
R14	West of Hurontario to Highway 410	47	56.9	56.3	-1%	56.8	0%	1%	120	47%	47%	47%
R15	West of Hurontario to Highway 410	47	57.9	56.7	-2%	57.2	-1%	1%	120	48%	47%	48%
R16	West of Hurontario to Highway 410	47	58.2	57.0	-2%	57.6	-1%	1%	120	49%	48%	48%
R17	West of Hurontario to Highway 410	47	57.7	56.6	-2%	57.1	-1%	1%	120	48%	47%	48%
R18	West of Hurontario to Highway 410	47	53.9	53.5	-1%	54.0	0%	1%	120	45%	45%	45%
R19	West of Hurontario to Highway 410	47	54.2	54.0	0%	54.6	1%	1%	120	45%	45%	45%
R20	West of Hurontario to Highway 410	47	54.4	54.3	0%	54.8	1%	1%	120	45%	45%	46%
R21	West of Hurontario to Highway 410	47	55.6	55.6	0%	56.1	1%	1%	120	46%	46%	47%
R22	West of Hurontario to Highway 410	47	55.7	55.8	0%	56.4	1%	1%	120	46%	46%	47%
R23	West of Hurontario to Highway 410	47	55.9	56.0	0%	56.6	1%	1%	120	47%	47%	47%
R24	West of Hurontario to Highway 410	47	56.4	56.5	0%	57.1	1%	1%	120	47%	47%	48%
R25	West of Hurontario to Highway 410	47	56.6	56.6	0%	57.4	1%	1%	120	47%	47%	48%
R26	West of Hurontario to Highway 410	47	56.7	56.7	0%	57.5	2%	1%	120	47%	47%	48%
R27	West of Hurontario to Highway 410	47	56.6	56.6	0%	57.5	2%	1%	120	47%	47%	48%
R28	West of Hurontario to Highway 410	47	56.5	56.5	0%	57.4	2%	2%	120	47%	47%	48%
R29	West of Hurontario to Highway 410	47	56.4	56.4	0%	57.3	2%	2%	120	47%	47%	48%
R30	West of Hurontario to Highway 410	47	56.5	56.5	0%	57.4	2%	2%	120	47%	47%	48%
R31	West of Hurontario to Highway 410	47	56.7	56.8	0%	57.5	1%	1%	120	47%	47%	48%
R32	West of Hurontario to Highway 410	47	51.5	51.6	0%	54.5	6%	6%	120	43%	43%	45%
R33	Goreway to Highway 427	47	65.8	65.8	0%	66.9	2%	2%	120	55%	55%	56%
R34	Goreway to Highway 427	47	60.7	60.7	0%	61.6	2%	1%	120	51%	51%	51%
R35	Goreway to Highway 427	47	58.6	58.6	0%	59.4	1%	1%	120	49%	49%	49%
R36	Goreway to Highway 427	47	65.2	64.6	-1%	65.6	1%	2%	120	54%	54%	55%
R37	Highway 27 to Pine Valley	47	54.2	54.2	0%	54.9	1%	1%	120	45%	45%	46%
R38	Highway 27 to Pine Valley	47	51.9	51.9	0%	52.3	1%	1%	120	43%	43%	44%
R39	Highway 27 to Pine Valley	47	51.8	51.8	0%	52.3	1%	1%	120	43%	43%	44%
R40	Highway 27 to Pine Valley	47	51.8	51.8	0%	52.3	1%	1%	120	43%	43%	44%
R41	Highway 27 to Pine Valley	47	51.8	51.8	0%	52.2	1%	1%	120	43%	43%	44%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			AAQC ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration ($\mu\text{g}/\text{m}^3$)	24-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	24-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	24-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	47	51.8	51.8	0%	52.2	1%	1%	120	43%	43%	44%
R43	Highway 27 to Pine Valley	47	51.8	51.8	0%	52.2	1%	1%	120	43%	43%	44%
R44	Highway 27 to Pine Valley	47	51.7	51.7	0%	52.2	1%	1%	120	43%	43%	43%
R45	Highway 27 to Pine Valley	47	51.7	51.7	0%	52.1	1%	1%	120	43%	43%	43%
R46	Highway 27 to Pine Valley	47	51.7	51.7	0%	52.1	1%	1%	120	43%	43%	43%
R47	Highway 27 to Pine Valley	47	51.6	51.6	0%	52.1	1%	1%	120	43%	43%	43%
R48	Highway 27 to Pine Valley	47	51.6	51.6	0%	52.0	1%	1%	120	43%	43%	43%
R49	Highway 27 to Pine Valley	47	52.3	52.3	0%	52.9	1%	1%	120	44%	44%	44%
R50	Highway 27 to Pine Valley	47	52.3	52.3	0%	52.8	1%	1%	120	44%	44%	44%
R51	Highway 27 to Pine Valley	47	52.3	52.3	0%	52.8	1%	1%	120	44%	44%	44%
R52	Highway 27 to Pine Valley	47	52.3	52.3	0%	52.8	1%	1%	120	44%	44%	44%
R53	Highway 27 to Pine Valley	47	52.2	52.2	0%	52.8	1%	1%	120	43%	43%	44%
R54	Highway 27 to Pine Valley	47	52.1	52.1	0%	52.7	1%	1%	120	43%	43%	44%
R55	Highway 27 to Pine Valley	47	67.2	67.1	0%	69.7	4%	4%	120	56%	56%	58%
R56	Highway 27 to Pine Valley	47	64.2	64.0	0%	65.8	2%	3%	120	54%	53%	55%
R57	Highway 27 to Pine Valley	47	67.3	67.5	0%	68.1	1%	1%	120	56%	56%	57%
R58	Highway 27 to Pine Valley	47	72.3	72.8	1%	73.3	1%	1%	120	60%	61%	61%
R59	Highway 27 to Pine Valley	47	72.9	73.7	1%	74.1	2%	1%	120	61%	61%	62%
R60	Highway 27 to Pine Valley	47	72.6	74.0	2%	74.4	2%	1%	120	61%	62%	62%
R61	Highway 27 to Pine Valley	47	69.2	70.8	2%	71.1	3%	0%	120	58%	59%	59%
R62	Highway 27 to Pine Valley	47	68.5	70.5	3%	70.8	3%	0%	120	57%	59%	59%
R63	Highway 27 to Pine Valley	47	67.2	69.3	3%	69.5	3%	0%	120	56%	58%	58%
R64	Highway 27 to Pine Valley	47	67.1	69.0	3%	69.1	3%	0%	120	56%	58%	58%
R65	Highway 27 to Pine Valley	47	65.4	67.2	3%	67.4	3%	0%	120	54%	56%	56%

Table B-2 Annual Average TSP Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			AAQC ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration	Annual Average Concentration	Annual Average Concentration	% change from Existing Conditions	Annual Average Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)		($\mu\text{g}/\text{m}^3$)						
R1	West of Hurontario to Highway 410	27	27.5	27.4	0%	27.7	1%	1%	60	46%	46%	46%
R2	West of Hurontario to Highway 410	27	27.5	27.5	0%	27.7	1%	1%	60	46%	46%	46%
R3	West of Hurontario to Highway 410	27	27.6	27.5	0%	27.8	1%	1%	60	46%	46%	46%
R4	West of Hurontario to Highway 410	27	27.7	27.6	0%	27.9	1%	1%	60	46%	46%	47%
R5	West of Hurontario to Highway 410	27	27.8	27.7	0%	28.0	1%	1%	60	46%	46%	47%
R6	West of Hurontario to Highway 410	27	27.9	27.7	-1%	28.0	0%	1%	60	47%	46%	47%
R7	West of Hurontario to Highway 410	27	27.9	27.8	0%	28.1	1%	1%	60	47%	46%	47%
R8	West of Hurontario to Highway 410	27	28.0	27.9	0%	28.2	1%	1%	60	47%	47%	47%
R9	West of Hurontario to Highway 410	27	28.1	27.9	-1%	28.3	1%	1%	60	47%	47%	47%
R10	West of Hurontario to Highway 410	27	28.2	28.0	-1%	28.3	0%	1%	60	47%	47%	47%
R11	West of Hurontario to Highway 410	27	28.3	28.1	-1%	28.4	0%	1%	60	47%	47%	47%
R12	West of Hurontario to Highway 410	27	28.4	28.2	-1%	28.5	0%	1%	60	47%	47%	48%
R13	West of Hurontario to Highway 410	27	28.7	28.5	-1%	28.7	0%	1%	60	48%	48%	48%
R14	West of Hurontario to Highway 410	27	28.9	28.6	-1%	28.9	0%	1%	60	48%	48%	48%
R15	West of Hurontario to Highway 410	27	29.1	28.8	-1%	29.0	0%	1%	60	49%	48%	48%
R16	West of Hurontario to Highway 410	27	29.2	28.9	-1%	29.1	0%	1%	60	49%	48%	49%
R17	West of Hurontario to Highway 410	27	29.0	28.7	-1%	28.9	0%	1%	60	48%	48%	48%
R18	West of Hurontario to Highway 410	27	29.6	29.3	-1%	29.5	0%	1%	60	49%	49%	49%
R19	West of Hurontario to Highway 410	27	29.4	29.2	-1%	29.4	0%	1%	60	49%	49%	49%
R20	West of Hurontario to Highway 410	27	29.3	29.2	0%	29.3	0%	0%	60	49%	49%	49%
R21	West of Hurontario to Highway 410	27	29.7	29.6	0%	29.8	0%	1%	60	50%	49%	50%
R22	West of Hurontario to Highway 410	27	29.7	29.6	0%	29.8	0%	1%	60	50%	49%	50%
R23	West of Hurontario to Highway 410	27	29.7	29.7	0%	29.8	0%	0%	60	50%	50%	50%
R24	West of Hurontario to Highway 410	27	29.8	29.8	0%	30.0	1%	1%	60	50%	50%	50%
R25	West of Hurontario to Highway 410	27	29.9	29.9	0%	30.0	0%	0%	60	50%	50%	50%
R26	West of Hurontario to Highway 410	27	29.9	29.9	0%	30.1	1%	1%	60	50%	50%	50%
R27	West of Hurontario to Highway 410	27	29.9	29.8	0%	30.0	0%	1%	60	50%	50%	50%
R28	West of Hurontario to Highway 410	27	29.8	29.8	0%	30.0	1%	1%	60	50%	50%	50%
R29	West of Hurontario to Highway 410	27	29.8	29.8	0%	30.0	1%	1%	60	50%	50%	50%
R30	West of Hurontario to Highway 410	27	29.8	29.8	0%	30.0	1%	1%	60	50%	50%	50%
R31	West of Hurontario to Highway 410	27	29.8	29.8	0%	30.1	1%	1%	60	50%	50%	50%
R32	West of Hurontario to Highway 410	27	28.0	27.9	0%	29.5	5%	6%	60	47%	47%	49%
R33	Goreway to Highway 427	27	32.9	32.9	0%	33.2	1%	1%	60	55%	55%	55%
R34	Goreway to Highway 427	27	31.3	31.3	0%	31.6	1%	1%	60	52%	52%	53%
R35	Goreway to Highway 427	27	30.6	30.6	0%	30.8	1%	1%	60	51%	51%	51%
R36	Goreway to Highway 427	27	31.2	31.1	0%	31.4	1%	1%	60	52%	52%	52%
R37	Highway 27 to Pine Valley	27	29.4	29.4	0%	29.7	1%	1%	60	49%	49%	50%
R38	Highway 27 to Pine Valley	27	28.6	28.6	0%	28.8	1%	1%	60	48%	48%	48%
R39	Highway 27 to Pine Valley	27	28.6	28.6	0%	28.8	1%	1%	60	48%	48%	48%
R40	Highway 27 to Pine Valley	27	28.6	28.6	0%	28.7	0%	0%	60	48%	48%	48%
R41	Highway 27 to Pine Valley	27	28.6	28.6	0%	28.7	0%	0%	60	48%	48%	48%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			AAQC ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration ($\mu\text{g}/\text{m}^3$)	Annual Average Concentration ($\mu\text{g}/\text{m}^3$)	Annual Average Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	Annual Average Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	27	28.6	28.6	0%	28.7	0%	0%	60	48%	48%	48%
R43	Highway 27 to Pine Valley	27	28.6	28.6	0%	28.7	0%	0%	60	48%	48%	48%
R44	Highway 27 to Pine Valley	27	28.5	28.5	0%	28.7	1%	1%	60	48%	48%	48%
R45	Highway 27 to Pine Valley	27	28.5	28.5	0%	28.7	1%	1%	60	48%	48%	48%
R46	Highway 27 to Pine Valley	27	28.5	28.5	0%	28.7	1%	1%	60	48%	48%	48%
R47	Highway 27 to Pine Valley	27	28.5	28.5	0%	28.7	1%	1%	60	48%	48%	48%
R48	Highway 27 to Pine Valley	27	28.5	28.5	0%	28.7	1%	1%	60	48%	48%	48%
R49	Highway 27 to Pine Valley	27	28.8	28.8	0%	29.0	1%	1%	60	48%	48%	48%
R50	Highway 27 to Pine Valley	27	28.8	28.8	0%	29.0	1%	1%	60	48%	48%	48%
R51	Highway 27 to Pine Valley	27	28.8	28.8	0%	29.0	1%	1%	60	48%	48%	48%
R52	Highway 27 to Pine Valley	27	28.8	28.8	0%	29.0	1%	1%	60	48%	48%	48%
R53	Highway 27 to Pine Valley	27	28.8	28.8	0%	29.0	1%	1%	60	48%	48%	48%
R54	Highway 27 to Pine Valley	27	28.8	28.8	0%	29.0	1%	1%	60	48%	48%	48%
R55	Highway 27 to Pine Valley	27	33.4	33.4	0%	33.8	1%	1%	60	56%	56%	56%
R56	Highway 27 to Pine Valley	27	32.2	32.2	0%	32.6	1%	1%	60	54%	54%	54%
R57	Highway 27 to Pine Valley	27	33.0	33.1	0%	33.5	2%	1%	60	55%	55%	56%
R58	Highway 27 to Pine Valley	27	34.7	34.9	1%	35.3	2%	1%	60	58%	58%	59%
R59	Highway 27 to Pine Valley	27	35.1	35.3	1%	35.6	1%	1%	60	59%	59%	59%
R60	Highway 27 to Pine Valley	27	35.1	35.4	1%	35.7	2%	1%	60	59%	59%	60%
R61	Highway 27 to Pine Valley	27	34.0	34.3	1%	34.6	2%	1%	60	57%	57%	58%
R62	Highway 27 to Pine Valley	27	33.7	34.1	1%	34.3	2%	1%	60	56%	57%	57%
R63	Highway 27 to Pine Valley	27	32.8	33.3	2%	33.5	2%	1%	60	55%	56%	56%
R64	Highway 27 to Pine Valley	27	32.6	33.2	2%	33.3	2%	0%	60	54%	55%	56%
R65	Highway 27 to Pine Valley	27	32.4	33.0	2%	33.2	2%	1%	60	54%	55%	55%

Table B-3 Three-year average 98th Percentile 24-hour PM2.5 Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS (µg/m³)	% of the CAAQS		
ID	Name	Concentration (µg/m³)	98th Percentile 24-hr Concentration (µg/m³)	98th Percentile 24-hr Concentration (µg/m³)	% change from Existing Conditions	98th Percentile 24-hr Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	14.2	14.5	14.4	-1%	14.5	0%	0%	27	54%	53%	54%
R2	West of Hurontario to Highway 410	14.2	14.5	14.4	-1%	14.5	0%	0%	27	54%	54%	54%
R3	West of Hurontario to Highway 410	14.2	14.5	14.5	-1%	14.5	0%	0%	27	54%	54%	54%
R4	West of Hurontario to Highway 410	14.2	14.6	14.5	-1%	14.5	0%	0%	27	54%	54%	54%
R5	West of Hurontario to Highway 410	14.2	14.6	14.5	-1%	14.5	0%	0%	27	54%	54%	54%
R6	West of Hurontario to Highway 410	14.2	14.6	14.5	-1%	14.6	0%	0%	27	54%	54%	54%
R7	West of Hurontario to Highway 410	14.2	14.6	14.5	-1%	14.6	0%	0%	27	54%	54%	54%
R8	West of Hurontario to Highway 410	14.2	14.7	14.5	-1%	14.6	-1%	0%	27	54%	54%	54%
R9	West of Hurontario to Highway 410	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	54%	54%	54%
R10	West of Hurontario to Highway 410	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	55%	54%	54%
R11	West of Hurontario to Highway 410	14.2	14.8	14.6	-1%	14.7	-1%	0%	27	55%	54%	54%
R12	West of Hurontario to Highway 410	14.2	14.8	14.7	-1%	14.7	-1%	0%	27	55%	54%	55%
R13	West of Hurontario to Highway 410	14.2	14.9	14.7	-1%	14.8	-1%	0%	27	55%	55%	55%
R14	West of Hurontario to Highway 410	14.2	15.0	14.8	-2%	14.8	-1%	0%	27	56%	55%	55%
R15	West of Hurontario to Highway 410	14.2	15.0	14.8	-2%	14.8	-1%	0%	27	56%	55%	55%
R16	West of Hurontario to Highway 410	14.2	15.0	14.8	-2%	14.8	-1%	0%	27	56%	55%	55%
R17	West of Hurontario to Highway 410	14.2	15.0	14.8	-2%	14.8	-1%	0%	27	56%	55%	55%
R18	West of Hurontario to Highway 410	14.2	14.9	14.7	-1%	14.7	-1%	0%	27	55%	54%	55%
R19	West of Hurontario to Highway 410	14.2	14.9	14.7	-1%	14.8	-1%	0%	27	55%	55%	55%
R20	West of Hurontario to Highway 410	14.2	14.9	14.7	-1%	14.8	-1%	0%	27	55%	55%	55%
R21	West of Hurontario to Highway 410	14.2	15.0	14.8	-1%	14.9	-1%	0%	27	56%	55%	55%
R22	West of Hurontario to Highway 410	14.2	15.1	14.9	-1%	14.9	-1%	0%	27	56%	55%	55%
R23	West of Hurontario to Highway 410	14.2	15.1	14.9	-2%	14.9	-1%	0%	27	56%	55%	55%
R24	West of Hurontario to Highway 410	14.2	15.1	14.9	-2%	15.0	-1%	0%	27	56%	55%	55%
R25	West of Hurontario to Highway 410	14.2	15.2	14.9	-2%	15.0	-1%	0%	27	56%	55%	55%
R26	West of Hurontario to Highway 410	14.2	15.2	14.9	-2%	15.0	-1%	0%	27	56%	55%	56%
R27	West of Hurontario to Highway 410	14.2	15.2	14.9	-2%	15.0	-1%	0%	27	56%	55%	56%
R28	West of Hurontario to Highway 410	14.2	15.2	14.9	-2%	15.0	-1%	0%	27	56%	55%	56%
R29	West of Hurontario to Highway 410	14.2	15.2	14.9	-2%	15.0	-1%	0%	27	56%	55%	56%
R30	West of Hurontario to Highway 410	14.2	15.2	14.9	-2%	15.0	-1%	0%	27	56%	55%	56%
R31	West of Hurontario to Highway 410	14.2	15.2	15.0	-2%	15.0	-1%	0%	27	56%	55%	56%
R32	West of Hurontario to Highway 410	14.2	14.5	14.4	-1%	14.6	1%	1%	27	54%	54%	54%
R33	Goreway to Highway 427	14.2	16.1	15.6	-3%	15.7	-3%	0%	27	60%	58%	58%
R34	Goreway to Highway 427	14.2	15.6	15.3	-2%	15.3	-2%	0%	27	58%	57%	57%
R35	Goreway to Highway 427	14.2	15.4	15.1	-2%	15.2	-2%	0%	27	57%	56%	56%
R36	Goreway to Highway 427	14.2	15.7	15.3	-3%	15.4	-2%	1%	27	58%	57%	57%
R37	Highway 27 to Pine Valley	14.2	14.9	14.8	-1%	14.8	-1%	0%	27	55%	55%	55%
R38	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	55%	54%	54%
R39	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	55%	54%	54%
R40	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	54%	54%	54%
R41	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	54%	54%	54%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS ($\mu\text{g}/\text{m}^3$)	% of the CAAQS		
ID	Name	Concentration ($\mu\text{g}/\text{m}^3$)	98th Percentile 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	98th Percentile 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	98th Percentile 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	54%	54%	54%
R43	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	54%	54%	54%
R44	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	54%	54%	54%
R45	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	54%	54%	54%
R46	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	54%	54%	54%
R47	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	54%	54%	54%
R48	Highway 27 to Pine Valley	14.2	14.7	14.6	-1%	14.6	-1%	0%	27	54%	54%	54%
R49	Highway 27 to Pine Valley	14.2	14.8	14.6	-1%	14.7	-1%	0%	27	55%	54%	54%
R50	Highway 27 to Pine Valley	14.2	14.8	14.6	-1%	14.7	-1%	0%	27	55%	54%	54%
R51	Highway 27 to Pine Valley	14.2	14.8	14.6	-1%	14.7	-1%	0%	27	55%	54%	54%
R52	Highway 27 to Pine Valley	14.2	14.8	14.6	-1%	14.7	-1%	0%	27	55%	54%	54%
R53	Highway 27 to Pine Valley	14.2	14.8	14.6	-1%	14.7	-1%	0%	27	55%	54%	54%
R54	Highway 27 to Pine Valley	14.2	14.8	14.6	-1%	14.7	-1%	0%	27	55%	54%	54%
R55	Highway 27 to Pine Valley	14.2	16.1	15.6	-3%	15.7	-3%	1%	27	60%	58%	58%
R56	Highway 27 to Pine Valley	14.2	15.8	15.4	-3%	15.5	-2%	1%	27	59%	57%	57%
R57	Highway 27 to Pine Valley	14.2	16.0	15.6	-3%	15.7	-2%	1%	27	59%	58%	58%
R58	Highway 27 to Pine Valley	14.2	16.4	15.9	-3%	16.0	-3%	0%	27	61%	59%	59%
R59	Highway 27 to Pine Valley	14.2	16.5	16.0	-3%	16.0	-3%	0%	27	61%	59%	59%
R60	Highway 27 to Pine Valley	14.2	16.5	16.0	-3%	16.0	-3%	0%	27	61%	59%	59%
R61	Highway 27 to Pine Valley	14.2	16.2	15.8	-3%	15.8	-2%	0%	27	60%	58%	59%
R62	Highway 27 to Pine Valley	14.2	16.1	15.7	-2%	15.8	-2%	0%	27	60%	58%	58%
R63	Highway 27 to Pine Valley	14.2	15.9	15.6	-2%	15.6	-2%	0%	27	59%	58%	58%
R64	Highway 27 to Pine Valley	14.2	15.8	15.6	-1%	15.6	-1%	0%	27	58%	58%	58%
R65	Highway 27 to Pine Valley	14.2	15.7	15.5	-1%	15.6	-1%	0%	27	58%	58%	58%

Note:

Concentrations are based on the 98th percentile of-24 hour average concentrations, averaged over 3 consecutive years (2012, 2013 and 2014).

Table B-4 Three-year Annual Average PM2.5 Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS (µg/m³)	% of the CAAQS		
ID	Name	Concentration (µg/m³)	Annual Average Concentration (µg/m³)	Annual Average Concentration (µg/m³)	% change from Existing Conditions	Annual Average Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	8.2	8.3	8.2	0%	8.3	0%	0%	8.8	94%	94%	94%
R2	West of Hurontario to Highway 410	8.2	8.3	8.2	0%	8.3	0%	0%	8.8	94%	94%	94%
R3	West of Hurontario to Highway 410	8.2	8.3	8.3	0%	8.3	0%	0%	8.8	94%	94%	94%
R4	West of Hurontario to Highway 410	8.2	8.3	8.3	0%	8.3	0%	0%	8.8	94%	94%	94%
R5	West of Hurontario to Highway 410	8.2	8.3	8.3	0%	8.3	0%	0%	8.8	94%	94%	94%
R6	West of Hurontario to Highway 410	8.2	8.3	8.3	0%	8.3	0%	0%	8.8	94%	94%	94%
R7	West of Hurontario to Highway 410	8.2	8.3	8.3	0%	8.3	0%	0%	8.8	94%	94%	94%
R8	West of Hurontario to Highway 410	8.2	8.3	8.3	0%	8.3	0%	0%	8.8	94%	94%	94%
R9	West of Hurontario to Highway 410	8.2	8.3	8.3	0%	8.3	0%	0%	8.8	94%	94%	94%
R10	West of Hurontario to Highway 410	8.2	8.3	8.3	0%	8.3	0%	0%	8.8	95%	94%	94%
R11	West of Hurontario to Highway 410	8.2	8.3	8.3	0%	8.3	0%	0%	8.8	95%	94%	95%
R12	West of Hurontario to Highway 410	8.2	8.3	8.3	-1%	8.3	0%	0%	8.8	95%	94%	95%
R13	West of Hurontario to Highway 410	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R14	West of Hurontario to Highway 410	8.2	8.4	8.3	-1%	8.4	0%	0%	8.8	95%	95%	95%
R15	West of Hurontario to Highway 410	8.2	8.4	8.3	-1%	8.4	-1%	0%	8.8	96%	95%	95%
R16	West of Hurontario to Highway 410	8.2	8.4	8.4	-1%	8.4	-1%	0%	8.8	96%	95%	95%
R17	West of Hurontario to Highway 410	8.2	8.4	8.3	-1%	8.4	-1%	0%	8.8	96%	95%	95%
R18	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	96%	95%	95%
R19	West of Hurontario to Highway 410	8.2	8.4	8.4	-1%	8.4	-1%	0%	8.8	96%	95%	95%
R20	West of Hurontario to Highway 410	8.2	8.4	8.4	-1%	8.4	-1%	0%	8.8	96%	95%	95%
R21	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	96%	96%	96%
R22	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	96%	96%	96%
R23	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	96%	96%	96%
R24	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	97%	96%	96%
R25	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	97%	96%	96%
R26	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	97%	96%	96%
R27	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	97%	96%	96%
R28	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	97%	96%	96%
R29	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	97%	96%	96%
R30	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	97%	96%	96%
R31	West of Hurontario to Highway 410	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	97%	96%	96%
R32	West of Hurontario to Highway 410	8.2	8.3	8.3	0%	8.4	1%	1%	8.8	94%	94%	95%
R33	Goreway to Highway 427	8.2	8.8	8.6	-2%	8.7	-2%	0%	8.8	100%	98%	98%
R34	Goreway to Highway 427	8.2	8.7	8.5	-1%	8.6	-1%	0%	8.8	98%	97%	97%
R35	Goreway to Highway 427	8.2	8.6	8.5	-1%	8.5	-1%	0%	8.8	98%	96%	97%
R36	Goreway to Highway 427	8.2	8.7	8.5	-1%	8.6	-1%	0%	8.8	98%	97%	97%
R37	Highway 27 to Pine Valley	8.2	8.5	8.4	-1%	8.4	-1%	0%	8.8	96%	95%	96%
R38	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R39	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R40	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R41	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS ($\mu\text{g}/\text{m}^3$)	% of the CAAQS		
ID	Name	Concentration ($\mu\text{g}/\text{m}^3$)	Annual Average Concentration ($\mu\text{g}/\text{m}^3$)	Annual Average Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	Annual Average Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R43	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R44	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R45	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R46	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R47	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R48	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.3	0%	0%	8.8	95%	95%	95%
R49	Highway 27 to Pine Valley	8.2	8.4	8.4	-1%	8.4	0%	0%	8.8	95%	95%	95%
R50	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.4	0%	0%	8.8	95%	95%	95%
R51	Highway 27 to Pine Valley	8.2	8.4	8.4	-1%	8.4	0%	0%	8.8	95%	95%	95%
R52	Highway 27 to Pine Valley	8.2	8.4	8.4	-1%	8.4	0%	0%	8.8	95%	95%	95%
R53	Highway 27 to Pine Valley	8.2	8.4	8.4	-1%	8.4	0%	0%	8.8	95%	95%	95%
R54	Highway 27 to Pine Valley	8.2	8.4	8.3	-1%	8.4	0%	0%	8.8	95%	95%	95%
R55	Highway 27 to Pine Valley	8.2	8.9	8.7	-2%	8.7	-2%	0%	8.8	101%	99%	99%
R56	Highway 27 to Pine Valley	8.2	8.7	8.6	-2%	8.6	-1%	0%	8.8	99%	98%	98%
R57	Highway 27 to Pine Valley	8.2	8.8	8.7	-2%	8.7	-1%	0%	8.8	100%	98%	99%
R58	Highway 27 to Pine Valley	8.2	9.0	8.8	-2%	8.8	-2%	0%	8.8	102%	100%	100%
R59	Highway 27 to Pine Valley	8.2	9.0	8.8	-2%	8.8	-2%	0%	8.8	102%	100%	100%
R60	Highway 27 to Pine Valley	8.2	9.0	8.8	-2%	8.8	-2%	0%	8.8	102%	100%	100%
R61	Highway 27 to Pine Valley	8.2	8.9	8.7	-2%	8.8	-1%	0%	8.8	101%	99%	100%
R62	Highway 27 to Pine Valley	8.2	8.8	8.7	-1%	8.7	-1%	0%	8.8	101%	99%	99%
R63	Highway 27 to Pine Valley	8.2	8.8	8.7	-1%	8.7	-1%	0%	8.8	100%	99%	99%
R64	Highway 27 to Pine Valley	8.2	8.7	8.7	-1%	8.7	-1%	0%	8.8	99%	98%	99%
R65	Highway 27 to Pine Valley	8.2	8.7	8.7	-1%	8.7	-1%	0%	8.8	99%	98%	98%

Note:

Concentrations are based on the 3 year (2012, 2013 and 2014) average of the average annual concentrations.

Table B-5 24-hour Maximum PM10 Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor		Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m ³)	% of the AAQC		
ID	Name	Concentration (µg/m ³)	24-hr Max Concentration (µg/m ³)	24-hr Max Concentration (µg/m ³)	% change from Existing Conditions	24-hr Max Concentration (µg/m ³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	28	29.7	29.5	-1%	29.8	0%	1%	50	59%	59%	60%
R2	West of Hurontario to Highway 410	28	29.8	29.6	-1%	29.8	0%	1%	50	60%	59%	60%
R3	West of Hurontario to Highway 410	28	29.9	29.7	-1%	29.9	0%	1%	50	60%	59%	60%
R4	West of Hurontario to Highway 410	28	30.0	29.8	-1%	29.9	0%	1%	50	60%	60%	60%
R5	West of Hurontario to Highway 410	28	30.2	29.9	-1%	30.1	0%	1%	50	60%	60%	60%
R6	West of Hurontario to Highway 410	28	30.3	30.0	-1%	30.2	0%	1%	50	61%	60%	60%
R7	West of Hurontario to Highway 410	28	30.5	30.2	-1%	30.4	0%	1%	50	61%	60%	61%
R8	West of Hurontario to Highway 410	28	30.7	30.4	-1%	30.5	0%	1%	50	61%	61%	61%
R9	West of Hurontario to Highway 410	28	31.0	30.6	-1%	30.8	-1%	1%	50	62%	61%	62%
R10	West of Hurontario to Highway 410	28	31.2	30.8	-1%	31.0	-1%	1%	50	62%	62%	62%
R11	West of Hurontario to Highway 410	28	31.4	31.0	-1%	31.2	-1%	1%	50	63%	62%	62%
R12	West of Hurontario to Highway 410	28	31.7	31.2	-2%	31.4	-1%	1%	50	63%	62%	63%
R13	West of Hurontario to Highway 410	28	32.1	31.6	-2%	31.8	-1%	1%	50	64%	63%	64%
R14	West of Hurontario to Highway 410	28	32.3	31.7	-2%	31.9	-1%	1%	50	65%	63%	64%
R15	West of Hurontario to Highway 410	28	32.3	31.7	-2%	31.9	-1%	1%	50	65%	63%	64%
R16	West of Hurontario to Highway 410	28	32.3	31.7	-2%	31.9	-1%	1%	50	65%	63%	64%
R17	West of Hurontario to Highway 410	28	32.1	31.5	-2%	31.7	-1%	1%	50	64%	63%	63%
R18	West of Hurontario to Highway 410	28	31.3	30.7	-2%	31.0	-1%	1%	50	63%	61%	62%
R19	West of Hurontario to Highway 410	28	31.2	30.9	-1%	31.1	0%	1%	50	62%	62%	62%
R20	West of Hurontario to Highway 410	28	31.1	30.9	-1%	31.1	0%	1%	50	62%	62%	62%
R21	West of Hurontario to Highway 410	28	31.5	31.3	-1%	31.5	0%	1%	50	63%	63%	63%
R22	West of Hurontario to Highway 410	28	31.7	31.4	-1%	31.7	0%	1%	50	63%	63%	63%
R23	West of Hurontario to Highway 410	28	31.8	31.5	-1%	31.8	0%	1%	50	64%	63%	64%
R24	West of Hurontario to Highway 410	28	32.0	31.7	-1%	32.0	0%	1%	50	64%	63%	64%
R25	West of Hurontario to Highway 410	28	32.1	31.8	-1%	32.1	0%	1%	50	64%	64%	64%
R26	West of Hurontario to Highway 410	28	32.1	31.8	-1%	32.2	0%	1%	50	64%	64%	64%
R27	West of Hurontario to Highway 410	28	32.1	31.8	-1%	32.2	0%	1%	50	64%	64%	64%
R28	West of Hurontario to Highway 410	28	32.1	31.8	-1%	32.1	0%	1%	50	64%	64%	64%
R29	West of Hurontario to Highway 410	28	32.1	31.8	-1%	32.1	0%	1%	50	64%	64%	64%
R30	West of Hurontario to Highway 410	28	32.1	31.8	-1%	32.1	0%	1%	50	64%	64%	64%
R31	West of Hurontario to Highway 410	28	32.3	32.0	-1%	32.3	0%	1%	50	65%	64%	65%
R32	West of Hurontario to Highway 410	28	30.0	29.8	0%	30.6	2%	3%	50	60%	60%	61%
R33	Goreway to Highway 427	28	36.0	35.3	-2%	35.7	-1%	1%	50	72%	71%	71%
R34	Goreway to Highway 427	28	34.3	33.7	-2%	34.1	-1%	1%	50	69%	67%	68%
R35	Goreway to Highway 427	28	33.5	33.0	-2%	33.3	0%	1%	50	67%	66%	67%
R36	Goreway to Highway 427	28	34.8	34.1	-2%	34.4	-1%	1%	50	70%	68%	69%
R37	Highway 27 to Pine Valley	28	31.6	31.3	-1%	31.6	0%	1%	50	63%	63%	63%
R38	Highway 27 to Pine Valley	28	30.5	30.2	-1%	30.5	0%	1%	50	61%	60%	61%
R39	Highway 27 to Pine Valley	28	30.4	30.2	-1%	30.4	0%	1%	50	61%	60%	61%
R40	Highway 27 to Pine Valley	28	30.4	30.2	-1%	30.4	0%	1%	50	61%	60%	61%
R41	Highway 27 to Pine Valley	28	30.4	30.2	-1%	30.4	0%	1%	50	61%	60%	61%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	28	30.4	30.2	-1%	30.4	0%	1%	50	61%	60%	61%
R43	Highway 27 to Pine Valley	28	30.4	30.2	-1%	30.4	0%	1%	50	61%	60%	61%
R44	Highway 27 to Pine Valley	28	30.4	30.2	-1%	30.4	0%	1%	50	61%	60%	61%
R45	Highway 27 to Pine Valley	28	30.4	30.1	-1%	30.4	0%	1%	50	61%	60%	61%
R46	Highway 27 to Pine Valley	28	30.3	30.1	-1%	30.3	0%	1%	50	61%	60%	61%
R47	Highway 27 to Pine Valley	28	30.3	30.1	-1%	30.3	0%	1%	50	61%	60%	61%
R48	Highway 27 to Pine Valley	28	30.3	30.1	-1%	30.3	0%	1%	50	61%	60%	61%
R49	Highway 27 to Pine Valley	28	30.7	30.4	-1%	30.7	0%	1%	50	61%	61%	61%
R50	Highway 27 to Pine Valley	28	30.7	30.4	-1%	30.7	0%	1%	50	61%	61%	61%
R51	Highway 27 to Pine Valley	28	30.7	30.4	-1%	30.7	0%	1%	50	61%	61%	61%
R52	Highway 27 to Pine Valley	28	30.7	30.4	-1%	30.7	0%	1%	50	61%	61%	61%
R53	Highway 27 to Pine Valley	28	30.7	30.4	-1%	30.7	0%	1%	50	61%	61%	61%
R54	Highway 27 to Pine Valley	28	30.7	30.4	-1%	30.7	0%	1%	50	61%	61%	61%
R55	Highway 27 to Pine Valley	28	36.9	36.1	-2%	36.7	-1%	2%	50	74%	72%	73%
R56	Highway 27 to Pine Valley	28	35.5	34.8	-2%	35.4	0%	2%	50	71%	70%	71%
R57	Highway 27 to Pine Valley	28	36.3	35.6	-2%	36.2	0%	2%	50	73%	71%	72%
R58	Highway 27 to Pine Valley	28	38.2	37.5	-2%	38.1	0%	1%	50	76%	75%	76%
R59	Highway 27 to Pine Valley	28	38.5	37.8	-2%	38.3	-1%	1%	50	77%	76%	77%
R60	Highway 27 to Pine Valley	28	38.5	37.9	-2%	38.3	-1%	1%	50	77%	76%	77%
R61	Highway 27 to Pine Valley	28	37.2	36.7	-1%	37.0	0%	1%	50	74%	73%	74%
R62	Highway 27 to Pine Valley	28	36.7	36.3	-1%	36.6	0%	1%	50	73%	73%	73%
R63	Highway 27 to Pine Valley	28	35.7	35.4	-1%	35.7	0%	1%	50	71%	71%	71%
R64	Highway 27 to Pine Valley	28	35.2	35.0	0%	35.3	0%	1%	50	70%	70%	71%
R65	Highway 27 to Pine Valley	28	34.6	34.6	0%	34.9	1%	1%	50	69%	69%	70%

Table B-6 Three Year Average 98th Percentile 1-hour NO2 Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS (µg/m³)	% of the CAAQS		
ID	Name	Concentration	98th Percentile 1-hr Concentration	98th Percentile 1-hr Concentration	% change from Existing Conditions	98th Percentile 1-hr Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		(µg/m³)	(µg/m³)	(µg/m³)		µg/m³						
R1	West of Hurontario to Highway 410	57.6	63.6	58.8	-8%	58.8	-8%	0%	79	81%	74%	74%
R2	West of Hurontario to Highway 410	57.6	63.9	58.8	-8%	58.9	-8%	0%	79	81%	74%	75%
R3	West of Hurontario to Highway 410	57.6	64.2	58.9	-8%	58.9	-8%	0%	79	81%	75%	75%
R4	West of Hurontario to Highway 410	57.6	64.5	59.0	-9%	59.0	-9%	0%	79	82%	75%	75%
R5	West of Hurontario to Highway 410	57.6	64.9	59.0	-9%	59.1	-9%	0%	79	82%	75%	75%
R6	West of Hurontario to Highway 410	57.6	65.2	59.1	-9%	59.1	-9%	0%	79	83%	75%	75%
R7	West of Hurontario to Highway 410	57.6	65.6	59.2	-10%	59.2	-10%	0%	79	83%	75%	75%
R8	West of Hurontario to Highway 410	57.6	66.1	59.3	-10%	59.3	-10%	0%	79	84%	75%	75%
R9	West of Hurontario to Highway 410	57.6	67.1	59.4	-11%	59.5	-11%	0%	79	85%	75%	75%
R10	West of Hurontario to Highway 410	57.6	67.9	59.6	-12%	59.6	-12%	0%	79	86%	75%	75%
R11	West of Hurontario to Highway 410	57.6	68.7	59.7	-13%	59.8	-13%	0%	79	87%	76%	76%
R12	West of Hurontario to Highway 410	57.6	69.3	59.8	-14%	59.9	-14%	0%	79	88%	76%	76%
R13	West of Hurontario to Highway 410	57.6	70.7	60.1	-15%	60.1	-15%	0%	79	89%	76%	76%
R14	West of Hurontario to Highway 410	57.6	71.4	60.2	-16%	60.2	-16%	0%	79	90%	76%	76%
R15	West of Hurontario to Highway 410	57.6	71.9	60.2	-16%	60.2	-16%	0%	79	91%	76%	76%
R16	West of Hurontario to Highway 410	57.6	72.1	60.2	-17%	60.2	-16%	0%	79	91%	76%	76%
R17	West of Hurontario to Highway 410	57.6	71.5	60.0	-16%	60.1	-16%	0%	79	90%	76%	76%
R18	West of Hurontario to Highway 410	57.6	69.4	59.9	-14%	59.9	-14%	0%	79	88%	76%	76%
R19	West of Hurontario to Highway 410	57.6	70.7	60.2	-15%	60.2	-15%	0%	79	89%	76%	76%
R20	West of Hurontario to Highway 410	57.6	72.1	60.5	-16%	60.6	-16%	0%	79	91%	77%	77%
R21	West of Hurontario to Highway 410	57.6	74.7	61.0	-18%	61.1	-18%	0%	79	95%	77%	77%
R22	West of Hurontario to Highway 410	57.6	75.9	61.3	-19%	61.4	-19%	0%	79	96%	78%	78%
R23	West of Hurontario to Highway 410	57.6	76.5	61.4	-20%	61.5	-20%	0%	79	97%	78%	78%
R24	West of Hurontario to Highway 410	57.6	77.9	61.7	-21%	61.7	-21%	0%	79	99%	78%	78%
R25	West of Hurontario to Highway 410	57.6	78.6	61.8	-21%	61.9	-21%	0%	79	100%	78%	78%
R26	West of Hurontario to Highway 410	57.6	79.2	62.0	-22%	62.0	-22%	0%	79	100%	78%	79%
R27	West of Hurontario to Highway 410	57.6	79.2	62.0	-22%	62.0	-22%	0%	79	100%	78%	79%
R28	West of Hurontario to Highway 410	57.6	79.2	62.0	-22%	62.0	-22%	0%	79	100%	78%	79%
R29	West of Hurontario to Highway 410	57.6	79.4	62.0	-22%	62.1	-22%	0%	79	101%	78%	79%
R30	West of Hurontario to Highway 410	57.6	79.8	62.1	-22%	62.2	-22%	0%	79	101%	79%	79%
R31	West of Hurontario to Highway 410	57.6	80.6	62.3	-23%	62.3	-23%	0%	79	102%	79%	79%
R32	West of Hurontario to Highway 410	57.6	64.9	59.0	-9%	59.2	-9%	0%	79	82%	75%	75%
R33	Goreway to Highway 427	57.6	101.4	66.5	-34%	66.6	-34%	0%	79	128%	84%	84%
R34	Goreway to Highway 427	57.6	91.0	64.4	-29%	64.5	-29%	0%	79	115%	81%	82%
R35	Goreway to Highway 427	57.6	86.4	63.4	-27%	63.5	-27%	0%	79	109%	80%	80%
R36	Goreway to Highway 427	57.6	87.8	63.9	-27%	64.0	-27%	0%	79	111%	81%	81%
R37	Highway 27 to Pine Valley	57.6	73.2	60.8	-17%	60.8	-17%	0%	79	93%	77%	77%
R38	Highway 27 to Pine Valley	57.6	68.6	59.8	-13%	59.9	-13%	0%	79	87%	76%	76%
R39	Highway 27 to Pine Valley	57.6	68.5	59.8	-13%	59.9	-13%	0%	79	87%	76%	76%
R40	Highway 27 to Pine Valley	57.6	68.5	59.8	-13%	59.8	-13%	0%	79	87%	76%	76%
R41	Highway 27 to Pine Valley	57.6	68.5	59.8	-13%	59.8	-13%	0%	79	87%	76%	76%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS ($\mu\text{g}/\text{m}^3$)	% of the CAAQS		
ID	Name	Concentration ($\mu\text{g}/\text{m}^3$)	98th Percentile 1-hr Concentration ($\mu\text{g}/\text{m}^3$)	98th Percentile 1-hr Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	98th Percentile 1-hr Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	57.6	68.5	59.8	-13%	59.8	-13%	0%	79	87%	76%	76%
R43	Highway 27 to Pine Valley	57.6	68.4	59.8	-13%	59.8	-13%	0%	79	87%	76%	76%
R44	Highway 27 to Pine Valley	57.6	68.4	59.8	-13%	59.8	-13%	0%	79	87%	76%	76%
R45	Highway 27 to Pine Valley	57.6	68.3	59.8	-13%	59.8	-12%	0%	79	86%	76%	76%
R46	Highway 27 to Pine Valley	57.6	68.3	59.8	-13%	59.8	-12%	0%	79	86%	76%	76%
R47	Highway 27 to Pine Valley	57.6	68.2	59.8	-12%	59.8	-12%	0%	79	86%	76%	76%
R48	Highway 27 to Pine Valley	57.6	68.2	59.7	-12%	59.8	-12%	0%	79	86%	76%	76%
R49	Highway 27 to Pine Valley	57.6	70.2	60.1	-14%	60.2	-14%	0%	79	89%	76%	76%
R50	Highway 27 to Pine Valley	57.6	70.2	60.1	-14%	60.2	-14%	0%	79	89%	76%	76%
R51	Highway 27 to Pine Valley	57.6	70.4	60.2	-14%	60.2	-14%	0%	79	89%	76%	76%
R52	Highway 27 to Pine Valley	57.6	70.4	60.2	-15%	60.2	-14%	0%	79	89%	76%	76%
R53	Highway 27 to Pine Valley	57.6	70.4	60.2	-15%	60.2	-14%	0%	79	89%	76%	76%
R54	Highway 27 to Pine Valley	57.6	70.4	60.2	-15%	60.2	-14%	0%	79	89%	76%	76%
R55	Highway 27 to Pine Valley	57.6	102.1	66.5	-35%	66.6	-35%	0%	79	129%	84%	84%
R56	Highway 27 to Pine Valley	57.6	94.5	65.0	-31%	65.1	-31%	0%	79	120%	82%	82%
R57	Highway 27 to Pine Valley	57.6	95.8	65.3	-32%	65.4	-32%	0%	79	121%	83%	83%
R58	Highway 27 to Pine Valley	57.6	104.0	66.9	-36%	67.0	-36%	0%	79	132%	85%	85%
R59	Highway 27 to Pine Valley	57.6	104.7	67.1	-36%	67.1	-36%	0%	79	132%	85%	85%
R60	Highway 27 to Pine Valley	57.6	103.3	66.8	-35%	66.9	-35%	0%	79	131%	85%	85%
R61	Highway 27 to Pine Valley	57.6	96.6	65.4	-32%	65.5	-32%	0%	79	122%	83%	83%
R62	Highway 27 to Pine Valley	57.6	93.1	64.8	-30%	64.8	-30%	0%	79	118%	82%	82%
R63	Highway 27 to Pine Valley	57.6	87.9	63.8	-27%	63.8	-27%	0%	79	111%	81%	81%
R64	Highway 27 to Pine Valley	57.6	85.3	63.3	-26%	63.3	-26%	0%	79	108%	80%	80%
R65	Highway 27 to Pine Valley	57.6	82.5	62.7	-24%	62.8	-24%	0%	79	104%	79%	79%

Note:

Concentrations are based on the 98th percentile of 1-hour average concentrations, averaged over 3 consecutive years (2012, 2013 and 2014).

For comparison purposes, the 2025 CAAQS (79 $\mu\text{g}/\text{m}^3$) applicable to future conditions (2031) has also been applied to existing conditions (2017). Exceedances of the CAAQS for existing conditions, therefore, is not reflective of the current conditions where the AAQC of 400 $\mu\text{g}/\text{m}^3$ is applicable.

Table B-7 24-hour Maximum NO2 Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor		Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	46.2	51.7	47.3	-8%	47.3	-8%	0%	200	26%	24%	24%
R2	West of Hurontario to Highway 410	46.2	52.0	47.3	-9%	47.4	-9%	0%	200	26%	24%	24%
R3	West of Hurontario to Highway 410	46.2	52.6	47.5	-10%	47.5	-10%	0%	200	26%	24%	24%
R4	West of Hurontario to Highway 410	46.2	52.8	47.5	-10%	47.5	-10%	0%	200	26%	24%	24%
R5	West of Hurontario to Highway 410	46.2	53.3	47.6	-11%	47.6	-11%	0%	200	27%	24%	24%
R6	West of Hurontario to Highway 410	46.2	53.9	47.7	-11%	47.7	-11%	0%	200	27%	24%	24%
R7	West of Hurontario to Highway 410	46.2	54.5	47.8	-12%	47.9	-12%	0%	200	27%	24%	24%
R8	West of Hurontario to Highway 410	46.2	55.2	48.0	-13%	48.0	-13%	0%	200	28%	24%	24%
R9	West of Hurontario to Highway 410	46.2	56.2	48.2	-14%	48.2	-14%	0%	200	28%	24%	24%
R10	West of Hurontario to Highway 410	46.2	57.1	48.3	-15%	48.4	-15%	0%	200	29%	24%	24%
R11	West of Hurontario to Highway 410	46.2	57.6	48.4	-16%	48.5	-16%	0%	200	29%	24%	24%
R12	West of Hurontario to Highway 410	46.2	58.6	48.5	-17%	48.6	-17%	0%	200	29%	24%	24%
R13	West of Hurontario to Highway 410	46.2	60.1	48.8	-19%	48.9	-19%	0%	200	30%	24%	24%
R14	West of Hurontario to Highway 410	46.2	60.5	48.8	-19%	48.9	-19%	0%	200	30%	24%	24%
R15	West of Hurontario to Highway 410	46.2	60.7	48.8	-20%	48.9	-19%	0%	200	30%	24%	24%
R16	West of Hurontario to Highway 410	46.2	60.5	48.8	-19%	48.8	-19%	0%	200	30%	24%	24%
R17	West of Hurontario to Highway 410	46.2	59.8	48.6	-19%	48.7	-19%	0%	200	30%	24%	24%
R18	West of Hurontario to Highway 410	46.2	56.8	48.1	-15%	48.1	-15%	0%	200	28%	24%	24%
R19	West of Hurontario to Highway 410	46.2	56.6	48.3	-15%	48.3	-15%	0%	200	28%	24%	24%
R20	West of Hurontario to Highway 410	46.2	57.2	48.4	-15%	48.5	-15%	0%	200	29%	24%	24%
R21	West of Hurontario to Highway 410	46.2	58.7	48.8	-17%	48.8	-17%	0%	200	29%	24%	24%
R22	West of Hurontario to Highway 410	46.2	59.3	48.9	-18%	48.9	-18%	0%	200	30%	24%	24%
R23	West of Hurontario to Highway 410	46.2	59.7	49.0	-18%	49.0	-18%	0%	200	30%	24%	25%
R24	West of Hurontario to Highway 410	46.2	60.5	49.1	-19%	49.2	-19%	0%	200	30%	25%	25%
R25	West of Hurontario to Highway 410	46.2	60.9	49.2	-19%	49.3	-19%	0%	200	30%	25%	25%
R26	West of Hurontario to Highway 410	46.2	61.2	49.3	-20%	49.4	-19%	0%	200	31%	25%	25%
R27	West of Hurontario to Highway 410	46.2	61.3	49.3	-20%	49.4	-19%	0%	200	31%	25%	25%
R28	West of Hurontario to Highway 410	46.2	61.3	49.3	-20%	49.4	-19%	0%	200	31%	25%	25%
R29	West of Hurontario to Highway 410	46.2	61.3	49.3	-20%	49.4	-20%	0%	200	31%	25%	25%
R30	West of Hurontario to Highway 410	46.2	61.6	49.4	-20%	49.4	-20%	0%	200	31%	25%	25%
R31	West of Hurontario to Highway 410	46.2	62.3	49.5	-21%	49.6	-20%	0%	200	31%	25%	25%
R32	West of Hurontario to Highway 410	46.2	53.2	47.6	-10%	47.8	-10%	0%	200	27%	24%	24%
R33	Goreway to Highway 427	46.2	77.2	52.5	-32%	52.6	-32%	0%	200	39%	26%	26%
R34	Goreway to Highway 427	46.2	70.4	51.1	-27%	51.2	-27%	0%	200	35%	26%	26%
R35	Goreway to Highway 427	46.2	67.4	50.5	-25%	50.6	-25%	0%	200	34%	25%	25%
R36	Goreway to Highway 427	46.2	68.9	51.0	-26%	51.1	-26%	0%	200	34%	26%	26%
R37	Highway 27 to Pine Valley	46.2	59.8	48.9	-18%	49.0	-18%	0%	200	30%	24%	25%
R38	Highway 27 to Pine Valley	46.2	55.6	48.1	-13%	48.1	-13%	0%	200	28%	24%	24%
R39	Highway 27 to Pine Valley	46.2	55.5	48.1	-13%	48.1	-13%	0%	200	28%	24%	24%
R40	Highway 27 to Pine Valley	46.2	55.5	48.1	-13%	48.1	-13%	0%	200	28%	24%	24%
R41	Highway 27 to Pine Valley	46.2	55.4	48.1	-13%	48.1	-13%	0%	200	28%	24%	24%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration	24-hr Max Concentration	24-hr Max Concentration	% change from Existing Conditions	24-hr Max Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)		($\mu\text{g}/\text{m}^3$)						
R42	Highway 27 to Pine Valley	46.2	55.4	48.1	-13%	48.1	-13%	0%	200	28%	24%	24%
R43	Highway 27 to Pine Valley	46.2	55.4	48.1	-13%	48.1	-13%	0%	200	28%	24%	24%
R44	Highway 27 to Pine Valley	46.2	55.3	48.0	-13%	48.1	-13%	0%	200	28%	24%	24%
R45	Highway 27 to Pine Valley	46.2	55.3	48.0	-13%	48.1	-13%	0%	200	28%	24%	24%
R46	Highway 27 to Pine Valley	46.2	55.2	48.0	-13%	48.1	-13%	0%	200	28%	24%	24%
R47	Highway 27 to Pine Valley	46.2	55.2	48.0	-13%	48.0	-13%	0%	200	28%	24%	24%
R48	Highway 27 to Pine Valley	46.2	55.1	48.0	-13%	48.0	-13%	0%	200	28%	24%	24%
R49	Highway 27 to Pine Valley	46.2	56.6	48.3	-15%	48.3	-15%	0%	200	28%	24%	24%
R50	Highway 27 to Pine Valley	46.2	56.6	48.3	-15%	48.3	-15%	0%	200	28%	24%	24%
R51	Highway 27 to Pine Valley	46.2	56.6	48.3	-15%	48.3	-15%	0%	200	28%	24%	24%
R52	Highway 27 to Pine Valley	46.2	56.7	48.3	-15%	48.3	-15%	0%	200	28%	24%	24%
R53	Highway 27 to Pine Valley	46.2	56.6	48.3	-15%	48.3	-15%	0%	200	28%	24%	24%
R54	Highway 27 to Pine Valley	46.2	56.6	48.3	-15%	48.3	-15%	0%	200	28%	24%	24%
R55	Highway 27 to Pine Valley	46.2	80.3	53.1	-34%	53.2	-34%	0%	200	40%	27%	27%
R56	Highway 27 to Pine Valley	46.2	74.8	52.0	-31%	52.1	-30%	0%	200	37%	26%	26%
R57	Highway 27 to Pine Valley	46.2	75.9	52.2	-31%	52.3	-31%	0%	200	38%	26%	26%
R58	Highway 27 to Pine Valley	46.2	82.1	53.5	-35%	53.6	-35%	0%	200	41%	27%	27%
R59	Highway 27 to Pine Valley	46.2	82.7	53.6	-35%	53.7	-35%	0%	200	41%	27%	27%
R60	Highway 27 to Pine Valley	46.2	81.7	53.4	-35%	53.5	-35%	0%	200	41%	27%	27%
R61	Highway 27 to Pine Valley	46.2	77.0	52.5	-32%	52.5	-32%	0%	200	38%	26%	26%
R62	Highway 27 to Pine Valley	46.2	74.5	52.0	-30%	52.0	-30%	0%	200	37%	26%	26%
R63	Highway 27 to Pine Valley	46.2	70.7	51.3	-28%	51.3	-27%	0%	200	35%	26%	26%
R64	Highway 27 to Pine Valley	46.2	68.9	50.9	-26%	51.0	-26%	0%	200	34%	25%	25%
R65	Highway 27 to Pine Valley	46.2	66.8	50.5	-24%	50.5	-24%	0%	200	33%	25%	25%

Table B-8 Annual Average NO2 Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS (µg/m³)	% of the CAAQS		
ID	Name	Concentration (µg/m³)	Annual Average Concentration (µg/m³)	Annual Average Concentration (µg/m³)	% change from Existing Conditions	Annual Average Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	30.8	31.3	30.9	-1%	30.9	-1%	0%	23	136%	134%	134%
R2	West of Hurontario to Highway 410	30.8	31.3	30.9	-1%	30.9	-1%	0%	23	136%	134%	134%
R3	West of Hurontario to Highway 410	30.8	31.4	30.9	-1%	30.9	-1%	0%	23	136%	134%	134%
R4	West of Hurontario to Highway 410	30.8	31.4	30.9	-2%	30.9	-2%	0%	23	137%	134%	134%
R5	West of Hurontario to Highway 410	30.8	31.5	30.9	-2%	30.9	-2%	0%	23	137%	134%	135%
R6	West of Hurontario to Highway 410	30.8	31.5	30.9	-2%	31.0	-2%	0%	23	137%	134%	135%
R7	West of Hurontario to Highway 410	30.8	31.6	30.9	-2%	31.0	-2%	0%	23	137%	135%	135%
R8	West of Hurontario to Highway 410	30.8	31.7	31.0	-2%	31.0	-2%	0%	23	138%	135%	135%
R9	West of Hurontario to Highway 410	30.8	31.8	31.0	-3%	31.0	-3%	0%	23	138%	135%	135%
R10	West of Hurontario to Highway 410	30.8	31.9	31.0	-3%	31.0	-3%	0%	23	139%	135%	135%
R11	West of Hurontario to Highway 410	30.8	32.1	31.0	-3%	31.0	-3%	0%	23	139%	135%	135%
R12	West of Hurontario to Highway 410	30.8	32.2	31.0	-4%	31.1	-4%	0%	23	140%	135%	135%
R13	West of Hurontario to Highway 410	30.8	32.5	31.1	-4%	31.1	-4%	0%	23	141%	135%	135%
R14	West of Hurontario to Highway 410	30.8	32.7	31.1	-5%	31.1	-5%	0%	23	142%	135%	135%
R15	West of Hurontario to Highway 410	30.8	32.9	31.1	-5%	31.2	-5%	0%	23	143%	135%	135%
R16	West of Hurontario to Highway 410	30.8	33.0	31.2	-6%	31.2	-6%	0%	23	143%	135%	136%
R17	West of Hurontario to Highway 410	30.8	32.9	31.1	-5%	31.2	-5%	0%	23	143%	135%	135%
R18	West of Hurontario to Highway 410	30.8	33.5	31.3	-7%	31.3	-7%	0%	23	146%	136%	136%
R19	West of Hurontario to Highway 410	30.8	33.4	31.3	-6%	31.3	-6%	0%	23	145%	136%	136%
R20	West of Hurontario to Highway 410	30.8	33.3	31.3	-6%	31.3	-6%	0%	23	145%	136%	136%
R21	West of Hurontario to Highway 410	30.8	33.8	31.4	-7%	31.4	-7%	0%	23	147%	136%	136%
R22	West of Hurontario to Highway 410	30.8	33.9	31.4	-7%	31.4	-7%	0%	23	147%	137%	137%
R23	West of Hurontario to Highway 410	30.8	33.9	31.4	-7%	31.4	-7%	0%	23	148%	137%	137%
R24	West of Hurontario to Highway 410	30.8	34.1	31.5	-8%	31.5	-8%	0%	23	148%	137%	137%
R25	West of Hurontario to Highway 410	30.8	34.2	31.5	-8%	31.5	-8%	0%	23	149%	137%	137%
R26	West of Hurontario to Highway 410	30.8	34.3	31.5	-8%	31.5	-8%	0%	23	149%	137%	137%
R27	West of Hurontario to Highway 410	30.8	34.3	31.5	-8%	31.5	-8%	0%	23	149%	137%	137%
R28	West of Hurontario to Highway 410	30.8	34.3	31.5	-8%	31.5	-8%	0%	23	149%	137%	137%
R29	West of Hurontario to Highway 410	30.8	34.3	31.5	-8%	31.5	-8%	0%	23	149%	137%	137%
R30	West of Hurontario to Highway 410	30.8	34.3	31.5	-8%	31.5	-8%	0%	23	149%	137%	137%
R31	West of Hurontario to Highway 410	30.8	34.5	31.5	-8%	31.6	-8%	0%	23	150%	137%	137%
R32	West of Hurontario to Highway 410	30.8	31.9	31.0	-3%	31.1	-3%	0%	23	139%	135%	135%
R33	Goreway to Highway 427	30.8	38.1	32.3	-15%	32.3	-15%	0%	23	166%	140%	140%
R34	Goreway to Highway 427	30.8	36.3	31.9	-12%	31.9	-12%	0%	23	158%	139%	139%
R35	Goreway to Highway 427	30.8	35.6	31.8	-11%	31.8	-11%	0%	23	155%	138%	138%
R36	Goreway to Highway 427	30.8	35.9	31.9	-11%	31.9	-11%	0%	23	156%	139%	139%
R37	Highway 27 to Pine Valley	30.8	33.9	31.4	-7%	31.4	-7%	0%	23	147%	137%	137%
R38	Highway 27 to Pine Valley	30.8	32.9	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%
R39	Highway 27 to Pine Valley	30.8	32.9	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%
R40	Highway 27 to Pine Valley	30.8	32.9	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%
R41	Highway 27 to Pine Valley	30.8	32.9	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS (µg/m ³)	% of the CAAQS		
ID	Name	Concentration (µg/m ³)	Annual Average Concentration (µg/m ³)	Annual Average Concentration (µg/m ³)	% change from Existing Conditions	Annual Average Concentration (µg/m ³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	30.8	32.9	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%
R43	Highway 27 to Pine Valley	30.8	32.9	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%
R44	Highway 27 to Pine Valley	30.8	32.9	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%
R45	Highway 27 to Pine Valley	30.8	32.9	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%
R46	Highway 27 to Pine Valley	30.8	32.9	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%
R47	Highway 27 to Pine Valley	30.8	32.9	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%
R48	Highway 27 to Pine Valley	30.8	32.8	31.2	-5%	31.2	-5%	0%	23	143%	136%	136%
R49	Highway 27 to Pine Valley	30.8	33.2	31.3	-6%	31.3	-6%	0%	23	144%	136%	136%
R50	Highway 27 to Pine Valley	30.8	33.2	31.3	-6%	31.3	-6%	0%	23	144%	136%	136%
R51	Highway 27 to Pine Valley	30.8	33.2	31.3	-6%	31.3	-6%	0%	23	144%	136%	136%
R52	Highway 27 to Pine Valley	30.8	33.2	31.3	-6%	31.3	-6%	0%	23	144%	136%	136%
R53	Highway 27 to Pine Valley	30.8	33.2	31.3	-6%	31.3	-6%	0%	23	144%	136%	136%
R54	Highway 27 to Pine Valley	30.8	33.2	31.3	-6%	31.3	-6%	0%	23	144%	136%	136%
R55	Highway 27 to Pine Valley	30.8	38.6	32.4	-16%	32.4	-16%	0%	23	168%	141%	141%
R56	Highway 27 to Pine Valley	30.8	37.3	32.1	-14%	32.1	-14%	0%	23	162%	140%	140%
R57	Highway 27 to Pine Valley	30.8	37.7	32.2	-15%	32.2	-14%	0%	23	164%	140%	140%
R58	Highway 27 to Pine Valley	30.8	39.2	32.5	-17%	32.5	-17%	0%	23	170%	141%	141%
R59	Highway 27 to Pine Valley	30.8	39.4	32.5	-17%	32.6	-17%	0%	23	171%	141%	142%
R60	Highway 27 to Pine Valley	30.8	39.2	32.5	-17%	32.5	-17%	0%	23	170%	141%	141%
R61	Highway 27 to Pine Valley	30.8	38.0	32.3	-15%	32.3	-15%	0%	23	165%	140%	140%
R62	Highway 27 to Pine Valley	30.8	37.5	32.2	-14%	32.2	-14%	0%	23	163%	140%	140%
R63	Highway 27 to Pine Valley	30.8	36.6	32.0	-13%	32.0	-13%	0%	23	159%	139%	139%
R64	Highway 27 to Pine Valley	30.8	36.2	31.9	-12%	31.9	-12%	0%	23	157%	139%	139%
R65	Highway 27 to Pine Valley	30.8	35.8	31.9	-11%	31.9	-11%	0%	23	156%	138%	139%

Note:

For comparison purposes, the 2025 CAAQS (23 µg/m³) applicable to future conditions (2031) has also been applied to existing conditions (2017). Exceedances of the NO₂ CAAQS for existing conditions, therefore, is not reflective of the current conditions where there is no AAQC for the annual averaging period.

Table B-9 Three-year average 1-hour 99th Percentile SO2 Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS (µg/m ³)	% of the CAAQS		
ID	Name	Concentration	1-hr 99th Percentile Concentration	1-hr 99th Percentile Concentration	% change from Existing Conditions	1-hr 99th Percentile Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		(µg/m ³)	(µg/m ³)	(µg/m ³)		(µg/m ³)						
R1	West of Hurontario to Highway 410	3.8	3.91	3.83	-2%	3.83	-2%	0%	170	2%	2%	2%
R2	West of Hurontario to Highway 410	3.8	3.92	3.83	-2%	3.83	-2%	0%	170	2%	2%	2%
R3	West of Hurontario to Highway 410	3.8	3.92	3.83	-2%	3.83	-2%	0%	170	2%	2%	2%
R4	West of Hurontario to Highway 410	3.8	3.93	3.84	-2%	3.84	-2%	0%	170	2%	2%	2%
R5	West of Hurontario to Highway 410	3.8	3.94	3.84	-3%	3.84	-2%	0%	170	2%	2%	2%
R6	West of Hurontario to Highway 410	3.8	3.94	3.84	-3%	3.84	-3%	0%	170	2%	2%	2%
R7	West of Hurontario to Highway 410	3.8	3.95	3.84	-3%	3.84	-3%	0%	170	2%	2%	2%
R8	West of Hurontario to Highway 410	3.8	3.96	3.84	-3%	3.84	-3%	0%	170	2%	2%	2%
R9	West of Hurontario to Highway 410	3.8	3.97	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R10	West of Hurontario to Highway 410	3.8	3.98	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R11	West of Hurontario to Highway 410	3.8	3.99	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R12	West of Hurontario to Highway 410	3.8	4.00	3.85	-4%	3.85	-4%	0%	170	2%	2%	2%
R13	West of Hurontario to Highway 410	3.8	4.03	3.86	-4%	3.86	-4%	0%	170	2%	2%	2%
R14	West of Hurontario to Highway 410	3.8	4.03	3.86	-4%	3.86	-4%	0%	170	2%	2%	2%
R15	West of Hurontario to Highway 410	3.8	4.04	3.86	-4%	3.86	-4%	0%	170	2%	2%	2%
R16	West of Hurontario to Highway 410	3.8	4.04	3.86	-4%	3.86	-4%	0%	170	2%	2%	2%
R17	West of Hurontario to Highway 410	3.8	4.03	3.86	-4%	3.86	-4%	0%	170	2%	2%	2%
R18	West of Hurontario to Highway 410	3.8	3.98	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R19	West of Hurontario to Highway 410	3.8	4.00	3.85	-4%	3.85	-4%	0%	170	2%	2%	2%
R20	West of Hurontario to Highway 410	3.8	4.02	3.86	-4%	3.86	-4%	0%	170	2%	2%	2%
R21	West of Hurontario to Highway 410	3.8	4.05	3.87	-5%	3.87	-5%	0%	170	2%	2%	2%
R22	West of Hurontario to Highway 410	3.8	4.07	3.87	-5%	3.88	-5%	0%	170	2%	2%	2%
R23	West of Hurontario to Highway 410	3.8	4.08	3.88	-5%	3.88	-5%	0%	170	2%	2%	2%
R24	West of Hurontario to Highway 410	3.8	4.10	3.88	-5%	3.88	-5%	0%	170	2%	2%	2%
R25	West of Hurontario to Highway 410	3.8	4.11	3.88	-5%	3.89	-5%	0%	170	2%	2%	2%
R26	West of Hurontario to Highway 410	3.8	4.12	3.89	-6%	3.89	-6%	0%	170	2%	2%	2%
R27	West of Hurontario to Highway 410	3.8	4.12	3.89	-6%	3.89	-6%	0%	170	2%	2%	2%
R28	West of Hurontario to Highway 410	3.8	4.12	3.89	-6%	3.89	-6%	0%	170	2%	2%	2%
R29	West of Hurontario to Highway 410	3.8	4.12	3.89	-6%	3.89	-6%	0%	170	2%	2%	2%
R30	West of Hurontario to Highway 410	3.8	4.12	3.89	-6%	3.89	-6%	0%	170	2%	2%	2%
R31	West of Hurontario to Highway 410	3.8	4.14	3.89	-6%	3.89	-6%	0%	170	2%	2%	2%
R32	West of Hurontario to Highway 410	3.8	3.92	3.83	-2%	3.83	-2%	0%	170	2%	2%	2%
R33	Goreway to Highway 427	3.8	4.43	3.98	-10%	3.98	-10%	0%	170	3%	2%	2%
R34	Goreway to Highway 427	3.8	4.28	3.93	-8%	3.93	-8%	0%	170	3%	2%	2%
R35	Goreway to Highway 427	3.8	4.21	3.92	-7%	3.92	-7%	0%	170	2%	2%	2%
R36	Goreway to Highway 427	3.8	4.23	3.93	-7%	3.93	-7%	0%	170	2%	2%	2%
R37	Highway 27 to Pine Valley	3.8	4.04	3.87	-4%	3.87	-4%	0%	170	2%	2%	2%
R38	Highway 27 to Pine Valley	3.8	3.97	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R39	Highway 27 to Pine Valley	3.8	3.97	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R40	Highway 27 to Pine Valley	3.8	3.97	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS ($\mu\text{g}/\text{m}^3$)	% of the CAAQS		
ID	Name	Concentration ($\mu\text{g}/\text{m}^3$)	1-hr 99th Percentile Concentration ($\mu\text{g}/\text{m}^3$)	1-hr 99th Percentile Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	1-hr 99th Percentile Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R41	Highway 27 to Pine Valley	3.8	3.97	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R42	Highway 27 to Pine Valley	3.8	3.97	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R43	Highway 27 to Pine Valley	3.8	3.97	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R44	Highway 27 to Pine Valley	3.8	3.97	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R45	Highway 27 to Pine Valley	3.8	3.97	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R46	Highway 27 to Pine Valley	3.8	3.97	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R47	Highway 27 to Pine Valley	3.8	3.96	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R48	Highway 27 to Pine Valley	3.8	3.96	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R49	Highway 27 to Pine Valley	3.8	3.99	3.85	-4%	3.85	-4%	0%	170	2%	2%	2%
R50	Highway 27 to Pine Valley	3.8	3.99	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R51	Highway 27 to Pine Valley	3.8	3.99	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R52	Highway 27 to Pine Valley	3.8	3.99	3.85	-4%	3.85	-3%	0%	170	2%	2%	2%
R53	Highway 27 to Pine Valley	3.8	3.99	3.85	-4%	3.85	-3%	0%	170	2%	2%	2%
R54	Highway 27 to Pine Valley	3.8	3.99	3.85	-3%	3.85	-3%	0%	170	2%	2%	2%
R55	Highway 27 to Pine Valley	3.8	4.46	3.98	-11%	3.98	-11%	0%	170	3%	2%	2%
R56	Highway 27 to Pine Valley	3.8	4.35	3.95	-9%	3.95	-9%	0%	170	3%	2%	2%
R57	Highway 27 to Pine Valley	3.8	4.37	3.96	-9%	3.96	-9%	0%	170	3%	2%	2%
R58	Highway 27 to Pine Valley	3.8	4.49	3.99	-11%	3.99	-11%	0%	170	3%	2%	2%
R59	Highway 27 to Pine Valley	3.8	4.50	3.99	-11%	3.99	-11%	0%	170	3%	2%	2%
R60	Highway 27 to Pine Valley	3.8	4.48	3.99	-11%	3.99	-11%	0%	170	3%	2%	2%
R61	Highway 27 to Pine Valley	3.8	4.38	3.96	-10%	3.96	-10%	0%	170	3%	2%	2%
R62	Highway 27 to Pine Valley	3.8	4.33	3.95	-9%	3.95	-9%	0%	170	3%	2%	2%
R63	Highway 27 to Pine Valley	3.8	4.25	3.93	-8%	3.93	-8%	0%	170	3%	2%	2%
R64	Highway 27 to Pine Valley	3.8	4.21	3.92	-7%	3.92	-7%	0%	170	2%	2%	2%
R65	Highway 27 to Pine Valley	3.8	4.18	3.91	-6%	3.91	-6%	0%	170	2%	2%	2%

Note:

Concentrations are based on the 3 year (2012, 2013, and 2014) average of the 99th percentile of the SO2 daily maximum 1-hour average concentrations.

Table B-10 24-hour Maximum SO2 Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m ³)	% of the AAQC		
ID	Name	Concentration (µg/m ³)	24-hr Max Concentration (µg/m ³)	24-hr Max Concentration (µg/m ³)	% change from Existing Conditions	24-hr Max Concentration (µg/m ³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	3.8	3.9	3.8	-1%	3.8	-1%	0%	275	1%	1%	1%
R2	West of Hurontario to Highway 410	3.8	3.9	3.8	-1%	3.8	-1%	0%	275	1%	1%	1%
R3	West of Hurontario to Highway 410	3.8	3.9	3.8	-1%	3.8	-1%	0%	275	1%	1%	1%
R4	West of Hurontario to Highway 410	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R5	West of Hurontario to Highway 410	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R6	West of Hurontario to Highway 410	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R7	West of Hurontario to Highway 410	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R8	West of Hurontario to Highway 410	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R9	West of Hurontario to Highway 410	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R10	West of Hurontario to Highway 410	3.8	3.9	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R11	West of Hurontario to Highway 410	3.8	3.9	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R12	West of Hurontario to Highway 410	3.8	4.0	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R13	West of Hurontario to Highway 410	3.8	4.0	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R14	West of Hurontario to Highway 410	3.8	4.0	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R15	West of Hurontario to Highway 410	3.8	4.0	3.8	-4%	3.8	-4%	0%	275	1%	1%	1%
R16	West of Hurontario to Highway 410	3.8	4.0	3.8	-4%	3.8	-4%	0%	275	1%	1%	1%
R17	West of Hurontario to Highway 410	3.8	4.0	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R18	West of Hurontario to Highway 410	3.8	3.9	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R19	West of Hurontario to Highway 410	3.8	3.9	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R20	West of Hurontario to Highway 410	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R21	West of Hurontario to Highway 410	3.8	3.9	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R22	West of Hurontario to Highway 410	3.8	4.0	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R23	West of Hurontario to Highway 410	3.8	4.0	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R24	West of Hurontario to Highway 410	3.8	4.0	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R25	West of Hurontario to Highway 410	3.8	4.0	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R26	West of Hurontario to Highway 410	3.8	4.0	3.9	-3%	3.9	-3%	0%	275	1%	1%	1%
R27	West of Hurontario to Highway 410	3.8	4.0	3.9	-3%	3.9	-3%	0%	275	1%	1%	1%
R28	West of Hurontario to Highway 410	3.8	4.0	3.9	-3%	3.9	-3%	0%	275	1%	1%	1%
R29	West of Hurontario to Highway 410	3.8	4.0	3.9	-3%	3.9	-3%	0%	275	1%	1%	1%
R30	West of Hurontario to Highway 410	3.8	4.0	3.9	-3%	3.9	-3%	0%	275	1%	1%	1%
R31	West of Hurontario to Highway 410	3.8	4.0	3.9	-3%	3.9	-3%	0%	275	1%	1%	1%
R32	West of Hurontario to Highway 410	3.8	3.9	3.8	-2%	3.8	-1%	0%	275	1%	1%	1%
R33	Goreway to Highway 427	3.8	4.2	3.9	-6%	3.9	-6%	0%	275	2%	1%	1%
R34	Goreway to Highway 427	3.8	4.1	3.9	-5%	3.9	-5%	0%	275	1%	1%	1%
R35	Goreway to Highway 427	3.8	4.0	3.9	-4%	3.9	-4%	0%	275	1%	1%	1%
R36	Goreway to Highway 427	3.8	4.1	3.9	-5%	3.9	-5%	0%	275	1%	1%	1%
R37	Highway 27 to Pine Valley	3.8	4.0	3.8	-3%	3.8	-3%	0%	275	1%	1%	1%
R38	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R39	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R40	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R41	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	24-hr Max Concentration µg/m³	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R43	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R44	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R45	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R46	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R47	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R48	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R49	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R50	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R51	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R52	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R53	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R54	Highway 27 to Pine Valley	3.8	3.9	3.8	-2%	3.8	-2%	0%	275	1%	1%	1%
R55	Highway 27 to Pine Valley	3.8	4.2	3.9	-7%	3.9	-7%	0%	275	2%	1%	1%
R56	Highway 27 to Pine Valley	3.8	4.1	3.9	-6%	3.9	-6%	0%	275	2%	1%	1%
R57	Highway 27 to Pine Valley	3.8	4.2	3.9	-6%	3.9	-6%	0%	275	2%	1%	1%
R58	Highway 27 to Pine Valley	3.8	4.2	3.9	-7%	3.9	-7%	0%	275	2%	1%	1%
R59	Highway 27 to Pine Valley	3.8	4.2	3.9	-7%	3.9	-7%	0%	275	2%	1%	1%
R60	Highway 27 to Pine Valley	3.8	4.2	3.9	-7%	3.9	-7%	0%	275	2%	1%	1%
R61	Highway 27 to Pine Valley	3.8	4.2	3.9	-6%	3.9	-6%	0%	275	2%	1%	1%
R62	Highway 27 to Pine Valley	3.8	4.1	3.9	-6%	3.9	-6%	0%	275	2%	1%	1%
R63	Highway 27 to Pine Valley	3.8	4.1	3.9	-5%	3.9	-5%	0%	275	1%	1%	1%
R64	Highway 27 to Pine Valley	3.8	4.1	3.9	-5%	3.9	-5%	0%	275	1%	1%	1%
R65	Highway 27 to Pine Valley	3.8	4.1	3.9	-5%	3.9	-5%	0%	275	1%	1%	1%

Table B-11 Average Annual SO2 Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor		Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS (µg/m³)	% of the CAAQS		
ID	Name	Concentration (µg/m³)	Annual Average Concentration (µg/m³)	Annual Average Concentration (µg/m³)	% change from Existing Conditions	Annual Average Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	2.00	2.01	2.00	0%	2.00	0%	0%	10	20%	20%	20%
R2	West of Hurontario to Highway 410	2.00	2.01	2.00	0%	2.00	0%	0%	10	20%	20%	20%
R3	West of Hurontario to Highway 410	2.00	2.01	2.00	0%	2.00	0%	0%	10	20%	20%	20%
R4	West of Hurontario to Highway 410	2.00	2.01	2.00	0%	2.00	0%	0%	10	20%	20%	20%
R5	West of Hurontario to Highway 410	2.00	2.01	2.00	0%	2.00	0%	0%	10	20%	20%	20%
R6	West of Hurontario to Highway 410	2.00	2.01	2.00	0%	2.00	0%	0%	10	20%	20%	20%
R7	West of Hurontario to Highway 410	2.00	2.01	2.00	0%	2.00	0%	0%	10	20%	20%	20%
R8	West of Hurontario to Highway 410	2.00	2.01	2.00	0%	2.00	0%	0%	10	20%	20%	20%
R9	West of Hurontario to Highway 410	2.00	2.01	2.00	-1%	2.00	-1%	0%	10	20%	20%	20%
R10	West of Hurontario to Highway 410	2.00	2.02	2.00	-1%	2.00	-1%	0%	10	20%	20%	20%
R11	West of Hurontario to Highway 410	2.00	2.02	2.00	-1%	2.00	-1%	0%	10	20%	20%	20%
R12	West of Hurontario to Highway 410	2.00	2.02	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R13	West of Hurontario to Highway 410	2.00	2.02	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R14	West of Hurontario to Highway 410	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R15	West of Hurontario to Highway 410	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R16	West of Hurontario to Highway 410	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R17	West of Hurontario to Highway 410	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R18	West of Hurontario to Highway 410	2.00	2.04	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R19	West of Hurontario to Highway 410	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R20	West of Hurontario to Highway 410	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R21	West of Hurontario to Highway 410	2.00	2.04	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R22	West of Hurontario to Highway 410	2.00	2.04	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R23	West of Hurontario to Highway 410	2.00	2.04	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R24	West of Hurontario to Highway 410	2.00	2.04	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R25	West of Hurontario to Highway 410	2.00	2.04	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R26	West of Hurontario to Highway 410	2.00	2.04	2.01	-2%	2.01	-2%	0%	10	20%	20%	20%
R27	West of Hurontario to Highway 410	2.00	2.04	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R28	West of Hurontario to Highway 410	2.00	2.04	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R29	West of Hurontario to Highway 410	2.00	2.04	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R30	West of Hurontario to Highway 410	2.00	2.04	2.01	-2%	2.01	-1%	0%	10	20%	20%	20%
R31	West of Hurontario to Highway 410	2.00	2.04	2.01	-2%	2.01	-2%	0%	10	20%	20%	20%
R32	West of Hurontario to Highway 410	2.00	2.01	2.00	0%	2.00	0%	0%	10	20%	20%	20%
R33	Goreway to Highway 427	2.00	2.08	2.02	-3%	2.02	-3%	0%	10	21%	20%	20%
R34	Goreway to Highway 427	2.00	2.06	2.02	-2%	2.02	-2%	0%	10	21%	20%	20%
R35	Goreway to Highway 427	2.00	2.06	2.02	-2%	2.02	-2%	0%	10	21%	20%	20%
R36	Goreway to Highway 427	2.00	2.06	2.02	-2%	2.02	-2%	0%	10	21%	20%	20%
R37	Highway 27 to Pine Valley	2.00	2.04	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R38	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R39	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R40	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R41	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			CAAQS (µg/m ³)	% of the CAAQS		
ID	Name	Concentration (µg/m ³)	Annual Average Concentration (µg/m ³)	Annual Average Concentration (µg/m ³)	% change from Existing Conditions	Annual Average Concentration (µg/m ³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R43	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R44	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R45	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R46	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R47	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R48	Highway 27 to Pine Valley	2.00	2.02	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R49	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R50	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R51	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R52	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R53	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R54	Highway 27 to Pine Valley	2.00	2.03	2.01	-1%	2.01	-1%	0%	10	20%	20%	20%
R55	Highway 27 to Pine Valley	2.00	2.09	2.03	-3%	2.03	-3%	0%	10	21%	20%	20%
R56	Highway 27 to Pine Valley	2.00	2.08	2.02	-3%	2.02	-3%	0%	10	21%	20%	20%
R57	Highway 27 to Pine Valley	2.00	2.08	2.02	-3%	2.02	-3%	0%	10	21%	20%	20%
R58	Highway 27 to Pine Valley	2.00	2.10	2.03	-3%	2.03	-3%	0%	10	21%	20%	20%
R59	Highway 27 to Pine Valley	2.00	2.10	2.03	-4%	2.03	-4%	0%	10	21%	20%	20%
R60	Highway 27 to Pine Valley	2.00	2.10	2.03	-3%	2.03	-3%	0%	10	21%	20%	20%
R61	Highway 27 to Pine Valley	2.00	2.09	2.03	-3%	2.03	-3%	0%	10	21%	20%	20%
R62	Highway 27 to Pine Valley	2.00	2.08	2.02	-3%	2.02	-3%	0%	10	21%	20%	20%
R63	Highway 27 to Pine Valley	2.00	2.07	2.02	-2%	2.02	-2%	0%	10	21%	20%	20%
R64	Highway 27 to Pine Valley	2.00	2.07	2.02	-2%	2.02	-2%	0%	10	21%	20%	20%
R65	Highway 27 to Pine Valley	2.00	2.06	2.02	-2%	2.02	-2%	0%	10	21%	20%	20%

Table B-12 1-hr Maximum CO Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m ³)	% of the AAQC		
ID	Name	Concentration (µg/m ³)	1-hr Max Concentration (µg/m ³)	1-hr Max Concentration (µg/m ³)	% change from Existing Conditions	1-hr Max Concentration (µg/m ³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	419	675	530	-22%	530	-22%	0%	36,200	2%	1%	1%
R2	West of Hurontario to Highway 410	419	683	533	-22%	533	-22%	0%	36,200	2%	1%	1%
R3	West of Hurontario to Highway 410	419	677	530	-22%	530	-22%	0%	36,200	2%	1%	1%
R4	West of Hurontario to Highway 410	419	700	540	-23%	540	-23%	0%	36,200	2%	1%	1%
R5	West of Hurontario to Highway 410	419	714	546	-23%	546	-23%	0%	36,200	2%	2%	2%
R6	West of Hurontario to Highway 410	419	721	549	-24%	549	-24%	0%	36,200	2%	2%	2%
R7	West of Hurontario to Highway 410	419	729	553	-24%	553	-24%	0%	36,200	2%	2%	2%
R8	West of Hurontario to Highway 410	419	742	558	-25%	558	-25%	0%	36,200	2%	2%	2%
R9	West of Hurontario to Highway 410	419	754	563	-25%	563	-25%	0%	36,200	2%	2%	2%
R10	West of Hurontario to Highway 410	419	776	572	-26%	572	-26%	0%	36,200	2%	2%	2%
R11	West of Hurontario to Highway 410	419	788	577	-27%	577	-27%	0%	36,200	2%	2%	2%
R12	West of Hurontario to Highway 410	419	781	573	-27%	574	-27%	0%	36,200	2%	2%	2%
R13	West of Hurontario to Highway 410	419	771	569	-26%	569	-26%	0%	36,200	2%	2%	2%
R14	West of Hurontario to Highway 410	419	746	558	-25%	558	-25%	0%	36,200	2%	2%	2%
R15	West of Hurontario to Highway 410	419	725	548	-24%	549	-24%	0%	36,200	2%	2%	2%
R16	West of Hurontario to Highway 410	419	696	535	-23%	536	-23%	0%	36,200	2%	1%	1%
R17	West of Hurontario to Highway 410	419	678	527	-22%	528	-22%	0%	36,200	2%	1%	1%
R18	West of Hurontario to Highway 410	419	634	513	-19%	513	-19%	0%	36,200	2%	1%	1%
R19	West of Hurontario to Highway 410	419	650	520	-20%	520	-20%	0%	36,200	2%	1%	1%
R20	West of Hurontario to Highway 410	419	667	527	-21%	527	-21%	0%	36,200	2%	1%	1%
R21	West of Hurontario to Highway 410	419	705	544	-23%	544	-23%	0%	36,200	2%	2%	2%
R22	West of Hurontario to Highway 410	419	722	551	-24%	551	-24%	0%	36,200	2%	2%	2%
R23	West of Hurontario to Highway 410	419	732	555	-24%	555	-24%	0%	36,200	2%	2%	2%
R24	West of Hurontario to Highway 410	419	751	564	-25%	564	-25%	0%	36,200	2%	2%	2%
R25	West of Hurontario to Highway 410	419	761	568	-25%	568	-25%	0%	36,200	2%	2%	2%
R26	West of Hurontario to Highway 410	419	770	572	-26%	572	-26%	0%	36,200	2%	2%	2%
R27	West of Hurontario to Highway 410	419	771	573	-26%	573	-26%	0%	36,200	2%	2%	2%
R28	West of Hurontario to Highway 410	419	772	573	-26%	573	-26%	0%	36,200	2%	2%	2%
R29	West of Hurontario to Highway 410	419	775	574	-26%	574	-26%	0%	36,200	2%	2%	2%
R30	West of Hurontario to Highway 410	419	782	577	-26%	577	-26%	0%	36,200	2%	2%	2%
R31	West of Hurontario to Highway 410	419	790	581	-26%	581	-26%	0%	36,200	2%	2%	2%
R32	West of Hurontario to Highway 410	419	585	492	-16%	492	-16%	0%	36,200	2%	1%	1%
R33	Goreway to Highway 427	419	1204	762	-37%	762	-37%	0%	36,200	3%	2%	2%
R34	Goreway to Highway 427	419	1069	703	-34%	703	-34%	0%	36,200	3%	2%	2%
R35	Goreway to Highway 427	419	1002	674	-33%	674	-33%	0%	36,200	3%	2%	2%
R36	Goreway to Highway 427	419	1089	714	-34%	714	-34%	0%	36,200	3%	2%	2%
R37	Highway 27 to Pine Valley	419	721	551	-24%	551	-24%	0%	36,200	2%	2%	2%
R38	Highway 27 to Pine Valley	419	604	500	-17%	500	-17%	0%	36,200	2%	1%	1%
R39	Highway 27 to Pine Valley	419	604	500	-17%	500	-17%	0%	36,200	2%	1%	1%
R40	Highway 27 to Pine Valley	419	604	500	-17%	500	-17%	0%	36,200	2%	1%	1%
R41	Highway 27 to Pine Valley	419	604	500	-17%	500	-17%	0%	36,200	2%	1%	1%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration	1-hr Max Concentration	1-hr Max Concentration	% change from Existing Conditions	1-hr Max Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)		($\mu\text{g}/\text{m}^3$)						
R42	Highway 27 to Pine Valley	419	605	501	-17%	501	-17%	0%	36,200	2%	1%	1%
R43	Highway 27 to Pine Valley	419	605	501	-17%	501	-17%	0%	36,200	2%	1%	1%
R44	Highway 27 to Pine Valley	419	606	501	-17%	501	-17%	0%	36,200	2%	1%	1%
R45	Highway 27 to Pine Valley	419	606	501	-17%	501	-17%	0%	36,200	2%	1%	1%
R46	Highway 27 to Pine Valley	419	605	501	-17%	501	-17%	0%	36,200	2%	1%	1%
R47	Highway 27 to Pine Valley	419	606	501	-17%	501	-17%	0%	36,200	2%	1%	1%
R48	Highway 27 to Pine Valley	419	608	502	-17%	502	-17%	0%	36,200	2%	1%	1%
R49	Highway 27 to Pine Valley	419	660	525	-20%	525	-20%	0%	36,200	2%	1%	1%
R50	Highway 27 to Pine Valley	419	673	531	-21%	531	-21%	0%	36,200	2%	1%	1%
R51	Highway 27 to Pine Valley	419	682	534	-22%	534	-22%	0%	36,200	2%	1%	1%
R52	Highway 27 to Pine Valley	419	688	537	-22%	537	-22%	0%	36,200	2%	1%	1%
R53	Highway 27 to Pine Valley	419	693	539	-22%	539	-22%	0%	36,200	2%	1%	1%
R54	Highway 27 to Pine Valley	419	696	540	-22%	541	-22%	0%	36,200	2%	1%	1%
R55	Highway 27 to Pine Valley	419	1131	730	-35%	730	-35%	0%	36,200	3%	2%	2%
R56	Highway 27 to Pine Valley	419	1030	686	-33%	686	-33%	0%	36,200	3%	2%	2%
R57	Highway 27 to Pine Valley	419	1066	702	-34%	702	-34%	0%	36,200	3%	2%	2%
R58	Highway 27 to Pine Valley	419	1183	753	-36%	753	-36%	0%	36,200	3%	2%	2%
R59	Highway 27 to Pine Valley	419	1198	760	-37%	759	-37%	0%	36,200	3%	2%	2%
R60	Highway 27 to Pine Valley	419	1186	755	-36%	755	-36%	0%	36,200	3%	2%	2%
R61	Highway 27 to Pine Valley	419	1094	715	-35%	715	-35%	0%	36,200	3%	2%	2%
R62	Highway 27 to Pine Valley	419	1044	694	-34%	694	-34%	0%	36,200	3%	2%	2%
R63	Highway 27 to Pine Valley	419	968	662	-32%	662	-32%	0%	36,200	3%	2%	2%
R64	Highway 27 to Pine Valley	419	917	640	-30%	640	-30%	0%	36,200	3%	2%	2%
R65	Highway 27 to Pine Valley	419	844	607	-28%	607	-28%	0%	36,200	2%	2%	2%

Table B-13 8-hr Maximum CO Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration ($\mu\text{g}/\text{m}^3$)	8-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	8-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	8-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	403	457	426	-7%	426	-7%	0%	15,700	3%	3%	3%
R2	West of Hurontario to Highway 410	403	459	427	-7%	427	-7%	0%	15,700	3%	3%	3%
R3	West of Hurontario to Highway 410	403	462	428	-7%	428	-7%	0%	15,700	3%	3%	3%
R4	West of Hurontario to Highway 410	403	465	430	-8%	430	-8%	0%	15,700	3%	3%	3%
R5	West of Hurontario to Highway 410	403	469	431	-8%	432	-8%	0%	15,700	3%	3%	3%
R6	West of Hurontario to Highway 410	403	473	433	-8%	433	-8%	0%	15,700	3%	3%	3%
R7	West of Hurontario to Highway 410	403	477	435	-9%	435	-9%	0%	15,700	3%	3%	3%
R8	West of Hurontario to Highway 410	403	481	437	-9%	437	-9%	0%	15,700	3%	3%	3%
R9	West of Hurontario to Highway 410	403	489	440	-10%	440	-10%	0%	15,700	3%	3%	3%
R10	West of Hurontario to Highway 410	403	495	442	-11%	442	-11%	0%	15,700	3%	3%	3%
R11	West of Hurontario to Highway 410	403	496	443	-11%	443	-11%	0%	15,700	3%	3%	3%
R12	West of Hurontario to Highway 410	403	494	441	-11%	442	-11%	0%	15,700	3%	3%	3%
R13	West of Hurontario to Highway 410	403	504	444	-12%	444	-12%	0%	15,700	3%	3%	3%
R14	West of Hurontario to Highway 410	403	507	444	-12%	445	-12%	0%	15,700	3%	3%	3%
R15	West of Hurontario to Highway 410	403	506	444	-12%	444	-12%	0%	15,700	3%	3%	3%
R16	West of Hurontario to Highway 410	403	505	443	-12%	443	-12%	0%	15,700	3%	3%	3%
R17	West of Hurontario to Highway 410	403	500	441	-12%	441	-12%	0%	15,700	3%	3%	3%
R18	West of Hurontario to Highway 410	403	487	438	-10%	438	-10%	0%	15,700	3%	3%	3%
R19	West of Hurontario to Highway 410	403	491	441	-10%	441	-10%	0%	15,700	3%	3%	3%
R20	West of Hurontario to Highway 410	403	495	443	-11%	443	-11%	0%	15,700	3%	3%	3%
R21	West of Hurontario to Highway 410	403	509	449	-12%	449	-12%	0%	15,700	3%	3%	3%
R22	West of Hurontario to Highway 410	403	513	451	-12%	451	-12%	0%	15,700	3%	3%	3%
R23	West of Hurontario to Highway 410	403	515	452	-12%	452	-12%	0%	15,700	3%	3%	3%
R24	West of Hurontario to Highway 410	403	522	455	-13%	455	-13%	0%	15,700	3%	3%	3%
R25	West of Hurontario to Highway 410	403	525	456	-13%	456	-13%	0%	15,700	3%	3%	3%
R26	West of Hurontario to Highway 410	403	527	457	-13%	457	-13%	0%	15,700	3%	3%	3%
R27	West of Hurontario to Highway 410	403	527	457	-13%	457	-13%	0%	15,700	3%	3%	3%
R28	West of Hurontario to Highway 410	403	526	457	-13%	457	-13%	0%	15,700	3%	3%	3%
R29	West of Hurontario to Highway 410	403	527	457	-13%	457	-13%	0%	15,700	3%	3%	3%
R30	West of Hurontario to Highway 410	403	529	458	-13%	458	-13%	0%	15,700	3%	3%	3%
R31	West of Hurontario to Highway 410	403	532	460	-14%	460	-14%	0%	15,700	3%	3%	3%
R32	West of Hurontario to Highway 410	403	456	426	-7%	426	-7%	0%	15,700	3%	3%	3%
R33	Goreway to Highway 427	403	653	512	-22%	512	-22%	0%	15,700	4%	3%	3%
R34	Goreway to Highway 427	403	601	490	-19%	490	-19%	0%	15,700	4%	3%	3%
R35	Goreway to Highway 427	403	577	479	-17%	479	-17%	0%	15,700	4%	3%	3%
R36	Goreway to Highway 427	403	583	484	-17%	484	-17%	0%	15,700	4%	3%	3%
R37	Highway 27 to Pine Valley	403	525	457	-13%	457	-13%	0%	15,700	3%	3%	3%
R38	Highway 27 to Pine Valley	403	487	440	-10%	440	-10%	0%	15,700	3%	3%	3%
R39	Highway 27 to Pine Valley	403	487	440	-10%	440	-10%	0%	15,700	3%	3%	3%
R40	Highway 27 to Pine Valley	403	487	440	-10%	440	-10%	0%	15,700	3%	3%	3%
R41	Highway 27 to Pine Valley	403	486	440	-10%	440	-10%	0%	15,700	3%	3%	3%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration	8-hr Max Concentration	8-hr Max Concentration	% change from Existing Conditions	8-hr Max Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)		($\mu\text{g}/\text{m}^3$)						
R42	Highway 27 to Pine Valley	403	486	440	-10%	440	-10%	0%	15,700	3%	3%	3%
R43	Highway 27 to Pine Valley	403	486	439	-10%	439	-10%	0%	15,700	3%	3%	3%
R44	Highway 27 to Pine Valley	403	485	439	-10%	439	-10%	0%	15,700	3%	3%	3%
R45	Highway 27 to Pine Valley	403	485	439	-9%	439	-9%	0%	15,700	3%	3%	3%
R46	Highway 27 to Pine Valley	403	485	439	-9%	439	-9%	0%	15,700	3%	3%	3%
R47	Highway 27 to Pine Valley	403	484	439	-9%	439	-9%	0%	15,700	3%	3%	3%
R48	Highway 27 to Pine Valley	403	484	438	-9%	438	-9%	0%	15,700	3%	3%	3%
R49	Highway 27 to Pine Valley	403	498	445	-11%	445	-11%	0%	15,700	3%	3%	3%
R50	Highway 27 to Pine Valley	403	498	444	-11%	444	-11%	0%	15,700	3%	3%	3%
R51	Highway 27 to Pine Valley	403	498	445	-11%	445	-11%	0%	15,700	3%	3%	3%
R52	Highway 27 to Pine Valley	403	498	445	-11%	445	-11%	0%	15,700	3%	3%	3%
R53	Highway 27 to Pine Valley	403	498	444	-11%	444	-11%	0%	15,700	3%	3%	3%
R54	Highway 27 to Pine Valley	403	497	444	-11%	444	-11%	0%	15,700	3%	3%	3%
R55	Highway 27 to Pine Valley	403	630	502	-20%	502	-20%	0%	15,700	4%	3%	3%
R56	Highway 27 to Pine Valley	403	593	487	-18%	487	-18%	0%	15,700	4%	3%	3%
R57	Highway 27 to Pine Valley	403	604	492	-19%	492	-19%	0%	15,700	4%	3%	3%
R58	Highway 27 to Pine Valley	403	647	511	-21%	511	-21%	0%	15,700	4%	3%	3%
R59	Highway 27 to Pine Valley	403	651	513	-21%	513	-21%	0%	15,700	4%	3%	3%
R60	Highway 27 to Pine Valley	403	647	511	-21%	511	-21%	0%	15,700	4%	3%	3%
R61	Highway 27 to Pine Valley	403	615	498	-19%	498	-19%	0%	15,700	4%	3%	3%
R62	Highway 27 to Pine Valley	403	600	491	-18%	491	-18%	0%	15,700	4%	3%	3%
R63	Highway 27 to Pine Valley	403	576	481	-16%	481	-16%	0%	15,700	4%	3%	3%
R64	Highway 27 to Pine Valley	403	565	477	-16%	477	-16%	0%	15,700	4%	3%	3%
R65	Highway 27 to Pine Valley	403	550	470	-15%	471	-14%	0%	15,700	4%	3%	3%

Table B-14 24-hr Maximum Acetaldehyde Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	1.76	1.77	1.76	0%	1.76	0%	0%	500	0%	0%	0%
R2	West of Hurontario to Highway 410	1.76	1.77	1.76	0%	1.76	0%	0%	500	0%	0%	0%
R3	West of Hurontario to Highway 410	1.76	1.77	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R4	West of Hurontario to Highway 410	1.76	1.77	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R5	West of Hurontario to Highway 410	1.76	1.77	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R6	West of Hurontario to Highway 410	1.76	1.77	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R7	West of Hurontario to Highway 410	1.76	1.77	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R8	West of Hurontario to Highway 410	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R9	West of Hurontario to Highway 410	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R10	West of Hurontario to Highway 410	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R11	West of Hurontario to Highway 410	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R12	West of Hurontario to Highway 410	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R13	West of Hurontario to Highway 410	1.76	1.78	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R14	West of Hurontario to Highway 410	1.76	1.79	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R15	West of Hurontario to Highway 410	1.76	1.79	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R16	West of Hurontario to Highway 410	1.76	1.79	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R17	West of Hurontario to Highway 410	1.76	1.78	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R18	West of Hurontario to Highway 410	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R19	West of Hurontario to Highway 410	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R20	West of Hurontario to Highway 410	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R21	West of Hurontario to Highway 410	1.76	1.78	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R22	West of Hurontario to Highway 410	1.76	1.78	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R23	West of Hurontario to Highway 410	1.76	1.78	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R24	West of Hurontario to Highway 410	1.76	1.78	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R25	West of Hurontario to Highway 410	1.76	1.79	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R26	West of Hurontario to Highway 410	1.76	1.79	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R27	West of Hurontario to Highway 410	1.76	1.79	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R28	West of Hurontario to Highway 410	1.76	1.79	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R29	West of Hurontario to Highway 410	1.76	1.79	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R30	West of Hurontario to Highway 410	1.76	1.79	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R31	West of Hurontario to Highway 410	1.76	1.79	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R32	West of Hurontario to Highway 410	1.76	1.77	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R33	Goreway to Highway 427	1.76	1.81	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R34	Goreway to Highway 427	1.76	1.80	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R35	Goreway to Highway 427	1.76	1.80	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R36	Goreway to Highway 427	1.76	1.80	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R37	Highway 27 to Pine Valley	1.76	1.78	1.77	-1%	1.77	-1%	0%	500	0%	0%	0%
R38	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R39	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R40	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R41	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration	24-hr Max Concentration	24-hr Max Concentration	% change from Existing Conditions	24-hr Max Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		(µg/m³)	(µg/m³)	(µg/m³)		(µg/m³)						
R42	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R43	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R44	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R45	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R46	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R47	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R48	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R49	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R50	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R51	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R52	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R53	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R54	Highway 27 to Pine Valley	1.76	1.78	1.76	-1%	1.76	-1%	0%	500	0%	0%	0%
R55	Highway 27 to Pine Valley	1.76	1.82	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R56	Highway 27 to Pine Valley	1.76	1.81	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R57	Highway 27 to Pine Valley	1.76	1.81	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R58	Highway 27 to Pine Valley	1.76	1.82	1.77	-3%	1.77	-3%	0%	500	0%	0%	0%
R59	Highway 27 to Pine Valley	1.76	1.82	1.77	-3%	1.77	-3%	0%	500	0%	0%	0%
R60	Highway 27 to Pine Valley	1.76	1.82	1.77	-3%	1.77	-3%	0%	500	0%	0%	0%
R61	Highway 27 to Pine Valley	1.76	1.81	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R62	Highway 27 to Pine Valley	1.76	1.81	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R63	Highway 27 to Pine Valley	1.76	1.80	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R64	Highway 27 to Pine Valley	1.76	1.80	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%
R65	Highway 27 to Pine Valley	1.76	1.80	1.77	-2%	1.77	-2%	0%	500	0%	0%	0%

Table B-15 1-hr Maximum Acrolein Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background ⁽¹⁾	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m ³)	% of the AAQC		
ID	Name	Concentration (µg/m ³)	1-hr Max Concentration (µg/m ³)	1-hr Max Concentration (µg/m ³)	% change from Existing Conditions	1-hr Max Concentration (µg/m ³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	0.07	0.081	0.073	-10%	0.073	-10%	0%	4.5	2%	2%	2%
R2	West of Hurontario to Highway 410	0.07	0.081	0.073	-11%	0.073	-10%	0%	4.5	2%	2%	2%
R3	West of Hurontario to Highway 410	0.07	0.081	0.073	-10%	0.073	-10%	0%	4.5	2%	2%	2%
R4	West of Hurontario to Highway 410	0.07	0.082	0.073	-11%	0.073	-11%	0%	4.5	2%	2%	2%
R5	West of Hurontario to Highway 410	0.07	0.083	0.073	-12%	0.073	-12%	0%	4.5	2%	2%	2%
R6	West of Hurontario to Highway 410	0.07	0.083	0.073	-12%	0.073	-12%	0%	4.5	2%	2%	2%
R7	West of Hurontario to Highway 410	0.07	0.083	0.073	-12%	0.073	-12%	0%	4.5	2%	2%	2%
R8	West of Hurontario to Highway 410	0.07	0.084	0.073	-12%	0.073	-12%	0%	4.5	2%	2%	2%
R9	West of Hurontario to Highway 410	0.07	0.084	0.073	-13%	0.073	-13%	0%	4.5	2%	2%	2%
R10	West of Hurontario to Highway 410	0.07	0.085	0.074	-13%	0.074	-13%	0%	4.5	2%	2%	2%
R11	West of Hurontario to Highway 410	0.07	0.085	0.074	-14%	0.074	-14%	0%	4.5	2%	2%	2%
R12	West of Hurontario to Highway 410	0.07	0.085	0.074	-14%	0.074	-13%	0%	4.5	2%	2%	2%
R13	West of Hurontario to Highway 410	0.07	0.085	0.074	-13%	0.074	-13%	0%	4.5	2%	2%	2%
R14	West of Hurontario to Highway 410	0.07	0.084	0.073	-13%	0.073	-12%	0%	4.5	2%	2%	2%
R15	West of Hurontario to Highway 410	0.07	0.083	0.073	-12%	0.073	-12%	0%	4.5	2%	2%	2%
R16	West of Hurontario to Highway 410	0.07	0.082	0.073	-11%	0.073	-11%	0%	4.5	2%	2%	2%
R17	West of Hurontario to Highway 410	0.07	0.081	0.073	-10%	0.073	-10%	0%	4.5	2%	2%	2%
R18	West of Hurontario to Highway 410	0.07	0.079	0.072	-9%	0.072	-9%	0%	4.5	2%	2%	2%
R19	West of Hurontario to Highway 410	0.07	0.080	0.072	-9%	0.072	-9%	0%	4.5	2%	2%	2%
R20	West of Hurontario to Highway 410	0.07	0.081	0.073	-10%	0.073	-10%	0%	4.5	2%	2%	2%
R21	West of Hurontario to Highway 410	0.07	0.082	0.073	-11%	0.073	-11%	0%	4.5	2%	2%	2%
R22	West of Hurontario to Highway 410	0.07	0.083	0.073	-12%	0.073	-12%	0%	4.5	2%	2%	2%
R23	West of Hurontario to Highway 410	0.07	0.083	0.073	-12%	0.073	-12%	0%	4.5	2%	2%	2%
R24	West of Hurontario to Highway 410	0.07	0.084	0.073	-13%	0.073	-13%	0%	4.5	2%	2%	2%
R25	West of Hurontario to Highway 410	0.07	0.084	0.074	-13%	0.074	-13%	0%	4.5	2%	2%	2%
R26	West of Hurontario to Highway 410	0.07	0.085	0.074	-13%	0.074	-13%	0%	4.5	2%	2%	2%
R27	West of Hurontario to Highway 410	0.07	0.085	0.074	-13%	0.074	-13%	0%	4.5	2%	2%	2%
R28	West of Hurontario to Highway 410	0.07	0.085	0.074	-13%	0.074	-13%	0%	4.5	2%	2%	2%
R29	West of Hurontario to Highway 410	0.07	0.085	0.074	-13%	0.074	-13%	0%	4.5	2%	2%	2%
R30	West of Hurontario to Highway 410	0.07	0.085	0.074	-14%	0.074	-14%	0%	4.5	2%	2%	2%
R31	West of Hurontario to Highway 410	0.07	0.086	0.074	-14%	0.074	-14%	0%	4.5	2%	2%	2%
R32	West of Hurontario to Highway 410	0.07	0.077	0.072	-7%	0.072	-7%	0%	4.5	2%	2%	2%
R33	Goreway to Highway 427	0.07	0.103	0.078	-24%	0.078	-24%	0%	4.5	2%	2%	2%
R34	Goreway to Highway 427	0.07	0.097	0.077	-21%	0.077	-21%	0%	4.5	2%	2%	2%
R35	Goreway to Highway 427	0.07	0.094	0.076	-19%	0.076	-19%	0%	4.5	2%	2%	2%
R36	Goreway to Highway 427	0.07	0.098	0.077	-22%	0.077	-22%	0%	4.5	2%	2%	2%
R37	Highway 27 to Pine Valley	0.07	0.082	0.073	-11%	0.073	-11%	0%	4.5	2%	2%	2%
R38	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-8%	0%	4.5	2%	2%	2%
R39	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-8%	0%	4.5	2%	2%	2%
R40	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-8%	0%	4.5	2%	2%	2%
R41	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-8%	0%	4.5	2%	2%	2%

Receptor	Receptor	Background ⁽¹⁾	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m ³)	% of the AAQC		
ID	Name	Concentration (µg/m ³)	1-hr Max Concentration (µg/m ³)	1-hr Max Concentration (µg/m ³)	% change from Existing Conditions	1-hr Max Concentration µg/m ³	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-8%	0%	4.5	2%	2%	2%
R43	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-8%	0%	4.5	2%	2%	2%
R44	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-7%	0%	4.5	2%	2%	2%
R45	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-7%	0%	4.5	2%	2%	2%
R46	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-8%	0%	4.5	2%	2%	2%
R47	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-8%	0%	4.5	2%	2%	2%
R48	Highway 27 to Pine Valley	0.07	0.078	0.072	-8%	0.072	-8%	0%	4.5	2%	2%	2%
R49	Highway 27 to Pine Valley	0.07	0.080	0.073	-10%	0.073	-9%	0%	4.5	2%	2%	2%
R50	Highway 27 to Pine Valley	0.07	0.081	0.073	-10%	0.073	-10%	0%	4.5	2%	2%	2%
R51	Highway 27 to Pine Valley	0.07	0.081	0.073	-10%	0.073	-10%	0%	4.5	2%	2%	2%
R52	Highway 27 to Pine Valley	0.07	0.081	0.073	-10%	0.073	-10%	0%	4.5	2%	2%	2%
R53	Highway 27 to Pine Valley	0.07	0.081	0.073	-11%	0.073	-10%	0%	4.5	2%	2%	2%
R54	Highway 27 to Pine Valley	0.07	0.081	0.073	-11%	0.073	-11%	0%	4.5	2%	2%	2%
R55	Highway 27 to Pine Valley	0.07	0.099	0.077	-22%	0.077	-22%	0%	4.5	2%	2%	2%
R56	Highway 27 to Pine Valley	0.07	0.095	0.076	-20%	0.076	-20%	0%	4.5	2%	2%	2%
R57	Highway 27 to Pine Valley	0.07	0.096	0.076	-20%	0.076	-20%	0%	4.5	2%	2%	2%
R58	Highway 27 to Pine Valley	0.07	0.101	0.078	-23%	0.078	-23%	0%	4.5	2%	2%	2%
R59	Highway 27 to Pine Valley	0.07	0.101	0.078	-23%	0.078	-23%	0%	4.5	2%	2%	2%
R60	Highway 27 to Pine Valley	0.07	0.101	0.078	-23%	0.078	-23%	0%	4.5	2%	2%	2%
R61	Highway 27 to Pine Valley	0.07	0.097	0.077	-21%	0.077	-21%	0%	4.5	2%	2%	2%
R62	Highway 27 to Pine Valley	0.07	0.095	0.076	-20%	0.076	-20%	0%	4.5	2%	2%	2%
R63	Highway 27 to Pine Valley	0.07	0.093	0.076	-18%	0.076	-18%	0%	4.5	2%	2%	2%
R64	Highway 27 to Pine Valley	0.07	0.091	0.075	-17%	0.075	-17%	0%	4.5	2%	2%	2%
R65	Highway 27 to Pine Valley	0.07	0.087	0.074	-15%	0.074	-15%	0%	4.5	2%	2%	2%

Note:

(1) The 24-hr background concentration for acrolein is used as a surrogate for the 1-hr averaging period since 1-hour concentrations are unavailable.

Table B-16 24-hr Maximum Acrolein Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor		Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	0.07	0.0712	0.0703	-1%	0.0703	-1%	0%	0.4	18%	18%	18%
R2	West of Hurontario to Highway 410	0.07	0.0712	0.0703	-1%	0.0703	-1%	0%	0.4	18%	18%	18%
R3	West of Hurontario to Highway 410	0.07	0.0713	0.0703	-1%	0.0703	-1%	0%	0.4	18%	18%	18%
R4	West of Hurontario to Highway 410	0.07	0.0714	0.0703	-1%	0.0703	-1%	0%	0.4	18%	18%	18%
R5	West of Hurontario to Highway 410	0.07	0.0715	0.0704	-2%	0.0704	-2%	0%	0.4	18%	18%	18%
R6	West of Hurontario to Highway 410	0.07	0.0716	0.0704	-2%	0.0704	-2%	0%	0.4	18%	18%	18%
R7	West of Hurontario to Highway 410	0.07	0.0717	0.0704	-2%	0.0704	-2%	0%	0.4	18%	18%	18%
R8	West of Hurontario to Highway 410	0.07	0.0719	0.0704	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R9	West of Hurontario to Highway 410	0.07	0.0721	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R10	West of Hurontario to Highway 410	0.07	0.0723	0.0705	-2%	0.0706	-2%	0%	0.4	18%	18%	18%
R11	West of Hurontario to Highway 410	0.07	0.0724	0.0706	-2%	0.0706	-2%	0%	0.4	18%	18%	18%
R12	West of Hurontario to Highway 410	0.07	0.0726	0.0706	-3%	0.0706	-3%	0%	0.4	18%	18%	18%
R13	West of Hurontario to Highway 410	0.07	0.0729	0.0707	-3%	0.0707	-3%	0%	0.4	18%	18%	18%
R14	West of Hurontario to Highway 410	0.07	0.0729	0.0707	-3%	0.0707	-3%	0%	0.4	18%	18%	18%
R15	West of Hurontario to Highway 410	0.07	0.0730	0.0707	-3%	0.0707	-3%	0%	0.4	18%	18%	18%
R16	West of Hurontario to Highway 410	0.07	0.0729	0.0707	-3%	0.0707	-3%	0%	0.4	18%	18%	18%
R17	West of Hurontario to Highway 410	0.07	0.0728	0.0706	-3%	0.0707	-3%	0%	0.4	18%	18%	18%
R18	West of Hurontario to Highway 410	0.07	0.0722	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R19	West of Hurontario to Highway 410	0.07	0.0722	0.0705	-2%	0.0706	-2%	0%	0.4	18%	18%	18%
R20	West of Hurontario to Highway 410	0.07	0.0723	0.0706	-2%	0.0706	-2%	0%	0.4	18%	18%	18%
R21	West of Hurontario to Highway 410	0.07	0.0726	0.0707	-3%	0.0707	-3%	0%	0.4	18%	18%	18%
R22	West of Hurontario to Highway 410	0.07	0.0727	0.0707	-3%	0.0707	-3%	0%	0.4	18%	18%	18%
R23	West of Hurontario to Highway 410	0.07	0.0728	0.0707	-3%	0.0707	-3%	0%	0.4	18%	18%	18%
R24	West of Hurontario to Highway 410	0.07	0.0730	0.0707	-3%	0.0708	-3%	0%	0.4	18%	18%	18%
R25	West of Hurontario to Highway 410	0.07	0.0731	0.0708	-3%	0.0708	-3%	0%	0.4	18%	18%	18%
R26	West of Hurontario to Highway 410	0.07	0.0731	0.0708	-3%	0.0708	-3%	0%	0.4	18%	18%	18%
R27	West of Hurontario to Highway 410	0.07	0.0731	0.0708	-3%	0.0708	-3%	0%	0.4	18%	18%	18%
R28	West of Hurontario to Highway 410	0.07	0.0731	0.0708	-3%	0.0708	-3%	0%	0.4	18%	18%	18%
R29	West of Hurontario to Highway 410	0.07	0.0731	0.0708	-3%	0.0708	-3%	0%	0.4	18%	18%	18%
R30	West of Hurontario to Highway 410	0.07	0.0732	0.0708	-3%	0.0708	-3%	0%	0.4	18%	18%	18%
R31	West of Hurontario to Highway 410	0.07	0.0733	0.0708	-3%	0.0708	-3%	0%	0.4	18%	18%	18%
R32	West of Hurontario to Highway 410	0.07	0.0715	0.0704	-2%	0.0704	-2%	0%	0.4	18%	18%	18%
R33	Goreway to Highway 427	0.07	0.0762	0.0715	-6%	0.0715	-6%	0%	0.4	19%	18%	18%
R34	Goreway to Highway 427	0.07	0.0749	0.0712	-5%	0.0712	-5%	0%	0.4	19%	18%	18%
R35	Goreway to Highway 427	0.07	0.0743	0.0711	-4%	0.0711	-4%	0%	0.4	19%	18%	18%
R36	Goreway to Highway 427	0.07	0.0750	0.0713	-5%	0.0713	-5%	0%	0.4	19%	18%	18%
R37	Highway 27 to Pine Valley	0.07	0.0728	0.0707	-3%	0.0707	-3%	0%	0.4	18%	18%	18%
R38	Highway 27 to Pine Valley	0.07	0.0719	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R39	Highway 27 to Pine Valley	0.07	0.0719	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R40	Highway 27 to Pine Valley	0.07	0.0719	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R41	Highway 27 to Pine Valley	0.07	0.0719	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m ³)	% of the AAQC		
ID	Name	Concentration (µg/m ³)	24-hr Max Concentration (µg/m ³)	24-hr Max Concentration (µg/m ³)	% change from Existing Conditions	24-hr Max Concentration µg/m ³	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	0.07	0.0719	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R43	Highway 27 to Pine Valley	0.07	0.0719	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R44	Highway 27 to Pine Valley	0.07	0.0718	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R45	Highway 27 to Pine Valley	0.07	0.0718	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R46	Highway 27 to Pine Valley	0.07	0.0718	0.0704	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R47	Highway 27 to Pine Valley	0.07	0.0718	0.0704	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R48	Highway 27 to Pine Valley	0.07	0.0718	0.0704	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R49	Highway 27 to Pine Valley	0.07	0.0721	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R50	Highway 27 to Pine Valley	0.07	0.0721	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R51	Highway 27 to Pine Valley	0.07	0.0721	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R52	Highway 27 to Pine Valley	0.07	0.0721	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R53	Highway 27 to Pine Valley	0.07	0.0721	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R54	Highway 27 to Pine Valley	0.07	0.0721	0.0705	-2%	0.0705	-2%	0%	0.4	18%	18%	18%
R55	Highway 27 to Pine Valley	0.07	0.0768	0.0717	-7%	0.0717	-7%	0%	0.4	19%	18%	18%
R56	Highway 27 to Pine Valley	0.07	0.0757	0.0714	-6%	0.0714	-6%	0%	0.4	19%	18%	18%
R57	Highway 27 to Pine Valley	0.07	0.0760	0.0715	-6%	0.0715	-6%	0%	0.4	19%	18%	18%
R58	Highway 27 to Pine Valley	0.07	0.0773	0.0718	-7%	0.0718	-7%	0%	0.4	19%	18%	18%
R59	Highway 27 to Pine Valley	0.07	0.0774	0.0718	-7%	0.0719	-7%	0%	0.4	19%	18%	18%
R60	Highway 27 to Pine Valley	0.07	0.0772	0.0718	-7%	0.0718	-7%	0%	0.4	19%	18%	18%
R61	Highway 27 to Pine Valley	0.07	0.0763	0.0716	-6%	0.0716	-6%	0%	0.4	19%	18%	18%
R62	Highway 27 to Pine Valley	0.07	0.0758	0.0715	-6%	0.0715	-6%	0%	0.4	19%	18%	18%
R63	Highway 27 to Pine Valley	0.07	0.0750	0.0713	-5%	0.0713	-5%	0%	0.4	19%	18%	18%
R64	Highway 27 to Pine Valley	0.07	0.0747	0.0712	-5%	0.0712	-5%	0%	0.4	19%	18%	18%
R65	Highway 27 to Pine Valley	0.07	0.0743	0.0711	-4%	0.0712	-4%	0%	0.4	19%	18%	18%

Table B-17 24-hr Maximum Benzene Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	0.88	0.90	0.88	-2%	0.88	-2%	0%	2.3	39%	38%	38%
R2	West of Hurontario to Highway 410	0.88	0.90	0.88	-2%	0.88	-2%	0%	2.3	39%	38%	38%
R3	West of Hurontario to Highway 410	0.88	0.90	0.89	-2%	0.89	-2%	0%	2.3	39%	38%	38%
R4	West of Hurontario to Highway 410	0.88	0.90	0.89	-2%	0.89	-2%	0%	2.3	39%	38%	38%
R5	West of Hurontario to Highway 410	0.88	0.90	0.89	-2%	0.89	-2%	0%	2.3	39%	38%	38%
R6	West of Hurontario to Highway 410	0.88	0.91	0.89	-2%	0.89	-2%	0%	2.3	39%	39%	39%
R7	West of Hurontario to Highway 410	0.88	0.91	0.89	-2%	0.89	-2%	0%	2.3	39%	39%	39%
R8	West of Hurontario to Highway 410	0.88	0.91	0.89	-2%	0.89	-2%	0%	2.3	40%	39%	39%
R9	West of Hurontario to Highway 410	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R10	West of Hurontario to Highway 410	0.88	0.92	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R11	West of Hurontario to Highway 410	0.88	0.92	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R12	West of Hurontario to Highway 410	0.88	0.92	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R13	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R14	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R15	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R16	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R17	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R18	West of Hurontario to Highway 410	0.88	0.92	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R19	West of Hurontario to Highway 410	0.88	0.92	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R20	West of Hurontario to Highway 410	0.88	0.92	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R21	West of Hurontario to Highway 410	0.88	0.92	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R22	West of Hurontario to Highway 410	0.88	0.92	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R23	West of Hurontario to Highway 410	0.88	0.92	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R24	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R25	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R26	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R27	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R28	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R29	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R30	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R31	West of Hurontario to Highway 410	0.88	0.93	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R32	West of Hurontario to Highway 410	0.88	0.90	0.89	-2%	0.89	-2%	0%	2.3	39%	38%	38%
R33	Goreway to Highway 427	0.88	0.98	0.90	-7%	0.90	-7%	0%	2.3	42%	39%	39%
R34	Goreway to Highway 427	0.88	0.96	0.90	-6%	0.90	-6%	0%	2.3	42%	39%	39%
R35	Goreway to Highway 427	0.88	0.95	0.90	-5%	0.90	-5%	0%	2.3	41%	39%	39%
R36	Goreway to Highway 427	0.88	0.95	0.90	-6%	0.90	-6%	0%	2.3	41%	39%	39%
R37	Highway 27 to Pine Valley	0.88	0.92	0.89	-4%	0.89	-4%	0%	2.3	40%	39%	39%
R38	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R39	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R40	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R41	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m ³)	% of the AAQC		
ID	Name	Concentration (µg/m ³)	24-hr Max Concentration (µg/m ³)	24-hr Max Concentration (µg/m ³)	% change from Existing Conditions	24-hr Max Concentration (µg/m ³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R43	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R44	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R45	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R46	Highway 27 to Pine Valley	0.88	0.91	0.89	-2%	0.89	-2%	0%	2.3	40%	39%	39%
R47	Highway 27 to Pine Valley	0.88	0.91	0.89	-2%	0.89	-2%	0%	2.3	40%	39%	39%
R48	Highway 27 to Pine Valley	0.88	0.91	0.89	-2%	0.89	-2%	0%	2.3	40%	39%	39%
R49	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R50	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R51	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R52	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R53	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R54	Highway 27 to Pine Valley	0.88	0.91	0.89	-3%	0.89	-3%	0%	2.3	40%	39%	39%
R55	Highway 27 to Pine Valley	0.88	0.99	0.91	-8%	0.91	-8%	0%	2.3	43%	39%	39%
R56	Highway 27 to Pine Valley	0.88	0.97	0.90	-7%	0.90	-7%	0%	2.3	42%	39%	39%
R57	Highway 27 to Pine Valley	0.88	0.98	0.90	-7%	0.90	-7%	0%	2.3	42%	39%	39%
R58	Highway 27 to Pine Valley	0.88	1.00	0.91	-9%	0.91	-9%	0%	2.3	43%	40%	40%
R59	Highway 27 to Pine Valley	0.88	1.00	0.91	-9%	0.91	-9%	0%	2.3	43%	40%	40%
R60	Highway 27 to Pine Valley	0.88	1.00	0.91	-9%	0.91	-9%	0%	2.3	43%	40%	40%
R61	Highway 27 to Pine Valley	0.88	0.98	0.91	-8%	0.91	-8%	0%	2.3	43%	39%	39%
R62	Highway 27 to Pine Valley	0.88	0.97	0.90	-7%	0.90	-7%	0%	2.3	42%	39%	39%
R63	Highway 27 to Pine Valley	0.88	0.96	0.90	-6%	0.90	-6%	0%	2.3	42%	39%	39%
R64	Highway 27 to Pine Valley	0.88	0.96	0.90	-6%	0.90	-6%	0%	2.3	42%	39%	39%
R65	Highway 27 to Pine Valley	0.88	0.95	0.90	-6%	0.90	-6%	0%	2.3	41%	39%	39%

Table B-18 Annual Average Benzene Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor		Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration (µg/m³)	Annual Average Concentration (µg/m³)	Annual Average Concentration (µg/m³)	% change from Existing Conditions	Annual Max Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	0.55	0.55	0.55	0%	0.55	0%	0%	0.45	123%	122%	122%
R2	West of Hurontario to Highway 410	0.55	0.55	0.55	0%	0.55	0%	0%	0.45	123%	122%	122%
R3	West of Hurontario to Highway 410	0.55	0.55	0.55	0%	0.55	0%	0%	0.45	123%	122%	122%
R4	West of Hurontario to Highway 410	0.55	0.55	0.55	0%	0.55	0%	0%	0.45	123%	122%	122%
R5	West of Hurontario to Highway 410	0.55	0.55	0.55	0%	0.55	0%	0%	0.45	123%	122%	122%
R6	West of Hurontario to Highway 410	0.55	0.55	0.55	0%	0.55	0%	0%	0.45	123%	122%	122%
R7	West of Hurontario to Highway 410	0.55	0.55	0.55	0%	0.55	0%	0%	0.45	123%	122%	122%
R8	West of Hurontario to Highway 410	0.55	0.55	0.55	0%	0.55	0%	0%	0.45	123%	122%	122%
R9	West of Hurontario to Highway 410	0.55	0.55	0.55	-1%	0.55	-1%	0%	0.45	123%	122%	122%
R10	West of Hurontario to Highway 410	0.55	0.55	0.55	-1%	0.55	-1%	0%	0.45	123%	122%	122%
R11	West of Hurontario to Highway 410	0.55	0.55	0.55	-1%	0.55	-1%	0%	0.45	123%	122%	122%
R12	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	123%	122%	122%
R13	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	122%	122%
R14	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	122%	122%
R15	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	122%	122%
R16	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	122%	123%
R17	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	122%	122%
R18	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R19	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R20	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R21	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R22	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R23	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R24	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	125%	123%	123%
R25	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	125%	123%	123%
R26	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	125%	123%	123%
R27	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	125%	123%	123%
R28	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	125%	123%	123%
R29	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	125%	123%	123%
R30	West of Hurontario to Highway 410	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	125%	123%	123%
R31	West of Hurontario to Highway 410	0.55	0.56	0.55	-2%	0.55	-2%	0%	0.45	125%	123%	123%
R32	West of Hurontario to Highway 410	0.55	0.55	0.55	-1%	0.55	-1%	0%	0.45	123%	122%	122%
R33	Goreway to Highway 427	0.55	0.57	0.56	-3%	0.56	-3%	0%	0.45	127%	124%	124%
R34	Goreway to Highway 427	0.55	0.57	0.55	-2%	0.55	-2%	0%	0.45	126%	123%	123%
R35	Goreway to Highway 427	0.55	0.57	0.55	-2%	0.55	-2%	0%	0.45	126%	123%	123%
R36	Goreway to Highway 427	0.55	0.57	0.55	-2%	0.55	-2%	0%	0.45	126%	123%	123%
R37	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R38	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R39	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R40	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R41	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m ³)	% of the AAQC		
ID	Name	Concentration	Annual Average Concentration	Annual Average Concentration	% change from Existing Conditions	Annual Max Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		(µg/m ³)	(µg/m ³)	(µg/m ³)		µg/m ³						
R42	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R43	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R44	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R45	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R46	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R47	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R48	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R49	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R50	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R51	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R52	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R53	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R54	Highway 27 to Pine Valley	0.55	0.56	0.55	-1%	0.55	-1%	0%	0.45	124%	123%	123%
R55	Highway 27 to Pine Valley	0.55	0.58	0.56	-3%	0.56	-3%	0%	0.45	128%	124%	124%
R56	Highway 27 to Pine Valley	0.55	0.57	0.56	-3%	0.56	-3%	0%	0.45	127%	123%	123%
R57	Highway 27 to Pine Valley	0.55	0.57	0.56	-3%	0.56	-3%	0%	0.45	127%	124%	124%
R58	Highway 27 to Pine Valley	0.55	0.58	0.56	-4%	0.56	-4%	0%	0.45	128%	124%	124%
R59	Highway 27 to Pine Valley	0.55	0.58	0.56	-4%	0.56	-4%	0%	0.45	128%	124%	124%
R60	Highway 27 to Pine Valley	0.55	0.58	0.56	-4%	0.56	-4%	0%	0.45	128%	124%	124%
R61	Highway 27 to Pine Valley	0.55	0.57	0.56	-3%	0.56	-3%	0%	0.45	128%	124%	124%
R62	Highway 27 to Pine Valley	0.55	0.57	0.56	-3%	0.56	-3%	0%	0.45	127%	123%	124%
R63	Highway 27 to Pine Valley	0.55	0.57	0.56	-2%	0.56	-2%	0%	0.45	126%	123%	123%
R64	Highway 27 to Pine Valley	0.55	0.57	0.56	-2%	0.56	-2%	0%	0.45	126%	123%	123%
R65	Highway 27 to Pine Valley	0.55	0.57	0.55	-2%	0.55	-2%	0%	0.45	126%	123%	123%

Table B-19 24-hr Maximum 1,3 Butadiene Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration ($\mu\text{g}/\text{m}^3$)	24-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	24-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	24-hr Max Concentration ($\mu\text{g}/\text{m}^3$)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R1	West of Hurontario to Highway 410	0.09	0.092	0.090	-2%	0.090	-2%	0%	10	1%	1%	1%
R2	West of Hurontario to Highway 410	0.09	0.092	0.090	-2%	0.090	-2%	0%	10	1%	1%	1%
R3	West of Hurontario to Highway 410	0.09	0.092	0.090	-2%	0.090	-2%	0%	10	1%	1%	1%
R4	West of Hurontario to Highway 410	0.09	0.092	0.090	-2%	0.090	-2%	0%	10	1%	1%	1%
R5	West of Hurontario to Highway 410	0.09	0.092	0.090	-2%	0.090	-2%	0%	10	1%	1%	1%
R6	West of Hurontario to Highway 410	0.09	0.092	0.090	-2%	0.090	-2%	0%	10	1%	1%	1%
R7	West of Hurontario to Highway 410	0.09	0.092	0.090	-2%	0.090	-2%	0%	10	1%	1%	1%
R8	West of Hurontario to Highway 410	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R9	West of Hurontario to Highway 410	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R10	West of Hurontario to Highway 410	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R11	West of Hurontario to Highway 410	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R12	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R13	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R14	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R15	West of Hurontario to Highway 410	0.09	0.095	0.090	-5%	0.090	-5%	0%	10	1%	1%	1%
R16	West of Hurontario to Highway 410	0.09	0.095	0.090	-5%	0.090	-5%	0%	10	1%	1%	1%
R17	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R18	West of Hurontario to Highway 410	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R19	West of Hurontario to Highway 410	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R20	West of Hurontario to Highway 410	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R21	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R22	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R23	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R24	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R25	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R26	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R27	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R28	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R29	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R30	West of Hurontario to Highway 410	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R31	West of Hurontario to Highway 410	0.09	0.095	0.090	-5%	0.090	-5%	0%	10	1%	1%	1%
R32	West of Hurontario to Highway 410	0.09	0.092	0.090	-2%	0.090	-2%	0%	10	1%	1%	1%
R33	Goreway to Highway 427	0.09	0.099	0.090	-9%	0.090	-9%	0%	10	1%	1%	1%
R34	Goreway to Highway 427	0.09	0.097	0.090	-7%	0.090	-7%	0%	10	1%	1%	1%
R35	Goreway to Highway 427	0.09	0.096	0.090	-6%	0.090	-6%	0%	10	1%	1%	1%
R36	Goreway to Highway 427	0.09	0.097	0.090	-7%	0.090	-7%	0%	10	1%	1%	1%
R37	Highway 27 to Pine Valley	0.09	0.094	0.090	-4%	0.090	-4%	0%	10	1%	1%	1%
R38	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R39	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R40	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R41	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m ³)	% of the AAQC		
ID	Name	Concentration (µg/m ³)	24-hr Max Concentration (µg/m ³)	24-hr Max Concentration (µg/m ³)	% change from Existing Conditions	24-hr Max Concentration (µg/m ³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R43	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R44	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R45	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R46	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R47	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R48	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R49	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R50	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R51	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R52	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R53	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R54	Highway 27 to Pine Valley	0.09	0.093	0.090	-3%	0.090	-3%	0%	10	1%	1%	1%
R55	Highway 27 to Pine Valley	0.09	0.100	0.090	-10%	0.090	-10%	0%	10	1%	1%	1%
R56	Highway 27 to Pine Valley	0.09	0.098	0.090	-8%	0.090	-8%	0%	10	1%	1%	1%
R57	Highway 27 to Pine Valley	0.09	0.099	0.090	-9%	0.090	-9%	0%	10	1%	1%	1%
R58	Highway 27 to Pine Valley	0.09	0.100	0.090	-10%	0.090	-10%	0%	10	1%	1%	1%
R59	Highway 27 to Pine Valley	0.09	0.101	0.090	-11%	0.090	-11%	0%	10	1%	1%	1%
R60	Highway 27 to Pine Valley	0.09	0.100	0.090	-10%	0.090	-10%	0%	10	1%	1%	1%
R61	Highway 27 to Pine Valley	0.09	0.099	0.090	-9%	0.090	-9%	0%	10	1%	1%	1%
R62	Highway 27 to Pine Valley	0.09	0.098	0.090	-8%	0.090	-8%	0%	10	1%	1%	1%
R63	Highway 27 to Pine Valley	0.09	0.097	0.090	-7%	0.090	-7%	0%	10	1%	1%	1%
R64	Highway 27 to Pine Valley	0.09	0.097	0.090	-7%	0.090	-7%	0%	10	1%	1%	1%
R65	Highway 27 to Pine Valley	0.09	0.096	0.090	-6%	0.090	-6%	0%	10	1%	1%	1%

Table B-20 Annual Average 1,3 Butadiene Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration	Annual Average Concentration	Annual Average Concentration	% change from Existing Conditions	Annual Average Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)		($\mu\text{g}/\text{m}^3$)						
R1	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R2	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R3	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R4	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R5	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R6	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R7	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R8	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R9	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R10	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R11	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R12	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R13	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R14	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R15	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R16	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R17	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R18	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R19	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R20	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R21	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R22	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R23	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R24	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R25	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R26	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R27	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R28	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R29	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R30	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R31	West of Hurontario to Highway 410	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R32	West of Hurontario to Highway 410	0.05	0.050	0.050	0%	0.050	0%	0%	2	3%	3%	3%
R33	Goreway to Highway 427	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R34	Goreway to Highway 427	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R35	Goreway to Highway 427	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R36	Goreway to Highway 427	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R37	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R38	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R39	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R40	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R41	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration (µg/m³)	Annual Average Concentration (µg/m³)	Annual Average Concentration (µg/m³)	% change from Existing Conditions	Annual Average Concentration (µg/m³)	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R43	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R44	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R45	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R46	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R47	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R48	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R49	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R50	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R51	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R52	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R53	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R54	Highway 27 to Pine Valley	0.05	0.051	0.050	-2%	0.050	-2%	0%	2	3%	3%	3%
R55	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R56	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R57	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R58	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R59	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R60	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R61	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R62	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R63	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R64	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%
R65	Highway 27 to Pine Valley	0.05	0.052	0.050	-4%	0.050	-4%	0%	2	3%	3%	3%

Table B-21 24-hr Maximum Formaldehyde Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration	24-hr Max Concentration	24-hr Max Concentration	% change from Existing Conditions	24-hr Max Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)		($\mu\text{g}/\text{m}^3$)						
R1	West of Hurontario to Highway 410	3.3	3.32	3.31	0%	3.31	0%	0%	65	5%	5%	5%
R2	West of Hurontario to Highway 410	3.3	3.32	3.31	0%	3.31	0%	0%	65	5%	5%	5%
R3	West of Hurontario to Highway 410	3.3	3.32	3.31	0%	3.31	0%	0%	65	5%	5%	5%
R4	West of Hurontario to Highway 410	3.3	3.32	3.31	0%	3.31	0%	0%	65	5%	5%	5%
R5	West of Hurontario to Highway 410	3.3	3.32	3.31	0%	3.31	0%	0%	65	5%	5%	5%
R6	West of Hurontario to Highway 410	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R7	West of Hurontario to Highway 410	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R8	West of Hurontario to Highway 410	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R9	West of Hurontario to Highway 410	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R10	West of Hurontario to Highway 410	3.3	3.34	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R11	West of Hurontario to Highway 410	3.3	3.34	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R12	West of Hurontario to Highway 410	3.3	3.34	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R13	West of Hurontario to Highway 410	3.3	3.35	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R14	West of Hurontario to Highway 410	3.3	3.35	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R15	West of Hurontario to Highway 410	3.3	3.35	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R16	West of Hurontario to Highway 410	3.3	3.35	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R17	West of Hurontario to Highway 410	3.3	3.35	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R18	West of Hurontario to Highway 410	3.3	3.34	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R19	West of Hurontario to Highway 410	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R20	West of Hurontario to Highway 410	3.3	3.34	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R21	West of Hurontario to Highway 410	3.3	3.34	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R22	West of Hurontario to Highway 410	3.3	3.34	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R23	West of Hurontario to Highway 410	3.3	3.34	3.31	-1%	3.32	-1%	0%	65	5%	5%	5%
R24	West of Hurontario to Highway 410	3.3	3.35	3.32	-1%	3.32	-1%	0%	65	5%	5%	5%
R25	West of Hurontario to Highway 410	3.3	3.35	3.32	-1%	3.32	-1%	0%	65	5%	5%	5%
R26	West of Hurontario to Highway 410	3.3	3.35	3.32	-1%	3.32	-1%	0%	65	5%	5%	5%
R27	West of Hurontario to Highway 410	3.3	3.35	3.32	-1%	3.32	-1%	0%	65	5%	5%	5%
R28	West of Hurontario to Highway 410	3.3	3.35	3.32	-1%	3.32	-1%	0%	65	5%	5%	5%
R29	West of Hurontario to Highway 410	3.3	3.35	3.32	-1%	3.32	-1%	0%	65	5%	5%	5%
R30	West of Hurontario to Highway 410	3.3	3.35	3.32	-1%	3.32	-1%	0%	65	5%	5%	5%
R31	West of Hurontario to Highway 410	3.3	3.35	3.32	-1%	3.32	-1%	0%	65	5%	5%	5%
R32	West of Hurontario to Highway 410	3.3	3.32	3.31	0%	3.31	0%	0%	65	5%	5%	5%
R33	Goreway to Highway 427	3.3	3.40	3.33	-2%	3.33	-2%	0%	65	5%	5%	5%
R34	Goreway to Highway 427	3.3	3.38	3.33	-2%	3.33	-2%	0%	65	5%	5%	5%
R35	Goreway to Highway 427	3.3	3.37	3.32	-1%	3.32	-1%	0%	65	5%	5%	5%
R36	Goreway to Highway 427	3.3	3.38	3.33	-1%	3.33	-1%	0%	65	5%	5%	5%
R37	Highway 27 to Pine Valley	3.3	3.34	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R38	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R39	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R40	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R41	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	24-hr Max Concentration (µg/m³)	% change from Existing Conditions	24-hr Max Concentration µg/m³	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
R42	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R43	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R44	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R45	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R46	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R47	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R48	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R49	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R50	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R51	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R52	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R53	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R54	Highway 27 to Pine Valley	3.3	3.33	3.31	-1%	3.31	-1%	0%	65	5%	5%	5%
R55	Highway 27 to Pine Valley	3.3	3.41	3.33	-2%	3.34	-2%	0%	65	5%	5%	5%
R56	Highway 27 to Pine Valley	3.3	3.39	3.33	-2%	3.33	-2%	0%	65	5%	5%	5%
R57	Highway 27 to Pine Valley	3.3	3.39	3.33	-2%	3.33	-2%	0%	65	5%	5%	5%
R58	Highway 27 to Pine Valley	3.3	3.41	3.34	-2%	3.34	-2%	0%	65	5%	5%	5%
R59	Highway 27 to Pine Valley	3.3	3.42	3.34	-2%	3.34	-2%	0%	65	5%	5%	5%
R60	Highway 27 to Pine Valley	3.3	3.41	3.34	-2%	3.34	-2%	0%	65	5%	5%	5%
R61	Highway 27 to Pine Valley	3.3	3.40	3.33	-2%	3.33	-2%	0%	65	5%	5%	5%
R62	Highway 27 to Pine Valley	3.3	3.39	3.33	-2%	3.33	-2%	0%	65	5%	5%	5%
R63	Highway 27 to Pine Valley	3.3	3.38	3.33	-2%	3.33	-2%	0%	65	5%	5%	5%
R64	Highway 27 to Pine Valley	3.3	3.38	3.33	-1%	3.33	-1%	0%	65	5%	5%	5%
R65	Highway 27 to Pine Valley	3.3	3.37	3.32	-1%	3.32	-1%	0%	65	5%	5%	5%

Table B-22 24-hr Maximum B[a]P Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria (µg/m³)	% of the AAQC		
ID	Name	Concentration	24-hr Max Concentration	24-hr Max Concentration	% change from Existing Conditions	24-hr Max Concentration	% change from Existing Conditions	% change from No-Build	(µg/m³)	Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		(µg/m³)	(µg/m³)	(µg/m³)		(µg/m³)						
R1	West of Hurontario to Highway 410	1.20E-04	1.48E-03	5.23E-04	-65%	5.23E-04	-65%	0%	5.00E-05	2969%	1045%	1045%
R2	West of Hurontario to Highway 410	1.20E-04	1.56E-03	5.42E-04	-65%	5.42E-04	-65%	0%	5.00E-05	3122%	1084%	1084%
R3	West of Hurontario to Highway 410	1.20E-04	1.73E-03	5.83E-04	-66%	5.83E-04	-66%	0%	5.00E-05	3452%	1166%	1166%
R4	West of Hurontario to Highway 410	1.20E-04	1.77E-03	5.95E-04	-66%	5.95E-04	-66%	0%	5.00E-05	3544%	1190%	1191%
R5	West of Hurontario to Highway 410	1.20E-04	1.90E-03	6.27E-04	-67%	6.27E-04	-67%	0%	5.00E-05	3794%	1254%	1254%
R6	West of Hurontario to Highway 410	1.20E-04	2.04E-03	6.62E-04	-67%	6.62E-04	-67%	0%	5.00E-05	4072%	1324%	1324%
R7	West of Hurontario to Highway 410	1.20E-04	2.20E-03	7.02E-04	-68%	7.03E-04	-68%	0%	5.00E-05	4392%	1405%	1405%
R8	West of Hurontario to Highway 410	1.20E-04	2.36E-03	7.43E-04	-68%	7.43E-04	-68%	0%	5.00E-05	4711%	1486%	1487%
R9	West of Hurontario to Highway 410	1.20E-04	2.62E-03	8.10E-04	-69%	8.10E-04	-69%	0%	5.00E-05	5235%	1619%	1620%
R10	West of Hurontario to Highway 410	1.20E-04	2.84E-03	8.69E-04	-69%	8.70E-04	-69%	0%	5.00E-05	5683%	1738%	1740%
R11	West of Hurontario to Highway 410	1.20E-04	2.96E-03	9.04E-04	-70%	9.07E-04	-69%	0%	5.00E-05	5927%	1807%	1814%
R12	West of Hurontario to Highway 410	1.20E-04	3.19E-03	9.67E-04	-70%	9.71E-04	-70%	0%	5.00E-05	6390%	1934%	1943%
R13	West of Hurontario to Highway 410	1.20E-04	3.56E-03	1.06E-03	-70%	1.06E-03	-70%	1%	5.00E-05	7127%	2119%	2130%
R14	West of Hurontario to Highway 410	1.20E-04	3.65E-03	1.08E-03	-70%	1.08E-03	-70%	1%	5.00E-05	7307%	2156%	2169%
R15	West of Hurontario to Highway 410	1.20E-04	3.70E-03	1.09E-03	-71%	1.10E-03	-70%	1%	5.00E-05	7391%	2177%	2192%
R16	West of Hurontario to Highway 410	1.20E-04	3.64E-03	1.07E-03	-71%	1.08E-03	-70%	1%	5.00E-05	7281%	2147%	2165%
R17	West of Hurontario to Highway 410	1.20E-04	3.46E-03	1.02E-03	-70%	1.03E-03	-70%	1%	5.00E-05	6929%	2048%	2066%
R18	West of Hurontario to Highway 410	1.20E-04	2.74E-03	8.69E-04	-68%	8.68E-04	-68%	0%	5.00E-05	5479%	1738%	1736%
R19	West of Hurontario to Highway 410	1.20E-04	2.76E-03	9.46E-04	-66%	9.43E-04	-66%	0%	5.00E-05	5511%	1893%	1886%
R20	West of Hurontario to Highway 410	1.20E-04	2.89E-03	9.64E-04	-67%	9.60E-04	-67%	0%	5.00E-05	5780%	1928%	1920%
R21	West of Hurontario to Highway 410	1.20E-04	3.27E-03	1.07E-03	-67%	1.07E-03	-67%	0%	5.00E-05	6543%	2149%	2139%
R22	West of Hurontario to Highway 410	1.20E-04	3.43E-03	1.10E-03	-68%	1.10E-03	-68%	0%	5.00E-05	6850%	2207%	2198%
R23	West of Hurontario to Highway 410	1.20E-04	3.53E-03	1.13E-03	-68%	1.12E-03	-68%	0%	5.00E-05	7050%	2255%	2246%
R24	West of Hurontario to Highway 410	1.20E-04	3.72E-03	1.18E-03	-68%	1.17E-03	-68%	0%	5.00E-05	7442%	2358%	2349%
R25	West of Hurontario to Highway 410	1.20E-04	3.82E-03	1.20E-03	-69%	1.20E-03	-69%	0%	5.00E-05	7637%	2400%	2391%
R26	West of Hurontario to Highway 410	1.20E-04	3.90E-03	1.21E-03	-69%	1.21E-03	-69%	0%	5.00E-05	7799%	2423%	2415%
R27	West of Hurontario to Highway 410	1.20E-04	3.90E-03	1.20E-03	-69%	1.19E-03	-69%	0%	5.00E-05	7798%	2390%	2383%
R28	West of Hurontario to Highway 410	1.20E-04	3.89E-03	1.17E-03	-70%	1.17E-03	-70%	0%	5.00E-05	7779%	2347%	2342%
R29	West of Hurontario to Highway 410	1.20E-04	3.90E-03	1.17E-03	-70%	1.16E-03	-70%	0%	5.00E-05	7808%	2331%	2327%
R30	West of Hurontario to Highway 410	1.20E-04	3.97E-03	1.18E-03	-70%	1.18E-03	-70%	0%	5.00E-05	7946%	2358%	2354%
R31	West of Hurontario to Highway 410	1.20E-04	4.14E-03	1.23E-03	-70%	1.23E-03	-70%	0%	5.00E-05	8283%	2464%	2459%
R32	West of Hurontario to Highway 410	1.20E-04	1.85E-03	6.43E-04	-65%	6.43E-04	-65%	0%	5.00E-05	3708%	1285%	1286%
R33	Goreway to Highway 427	1.20E-04	7.85E-03	2.09E-03	-73%	2.09E-03	-73%	0%	5.00E-05	15697%	4176%	4178%
R34	Goreway to Highway 427	1.20E-04	6.17E-03	1.68E-03	-73%	1.68E-03	-73%	0%	5.00E-05	12341%	3356%	3358%
R35	Goreway to Highway 427	1.20E-04	5.41E-03	1.49E-03	-72%	1.49E-03	-72%	0%	5.00E-05	10822%	2984%	2986%
R36	Goreway to Highway 427	1.20E-04	5.97E-03	2.39E-03	-60%	2.36E-03	-60%	-1%	5.00E-05	11949%	4779%	4724%
R37	Highway 27 to Pine Valley	1.20E-04	3.62E-03	1.13E-03	-69%	1.13E-03	-69%	0%	5.00E-05	7246%	2268%	2262%
R38	Highway 27 to Pine Valley	1.20E-04	2.53E-03	8.03E-04	-68%	8.02E-04	-68%	0%	5.00E-05	5051%	1607%	1603%
R39	Highway 27 to Pine Valley	1.20E-04	2.51E-03	7.94E-04	-68%	7.92E-04	-68%	0%	5.00E-05	5015%	1588%	1585%
R40	Highway 27 to Pine Valley	1.20E-04	2.50E-03	7.89E-04	-68%	7.87E-04	-69%	0%	5.00E-05	5006%	1577%	1574%
R41	Highway 27 to Pine Valley	1.20E-04	2.48E-03	7.80E-04	-69%	7.79E-04	-69%	0%	5.00E-05	4969%	1560%	1558%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration	24-hr Max Concentration	24-hr Max Concentration	% change from Existing Conditions	24-hr Max Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)		($\mu\text{g}/\text{m}^3$)						
R42	Highway 27 to Pine Valley	1.20E-04	2.49E-03	7.77E-04	-69%	7.76E-04	-69%	0%	5.00E-05	4975%	1554%	1552%
R43	Highway 27 to Pine Valley	1.20E-04	2.48E-03	7.70E-04	-69%	7.69E-04	-69%	0%	5.00E-05	4953%	1541%	1539%
R44	Highway 27 to Pine Valley	1.20E-04	2.46E-03	7.64E-04	-69%	7.63E-04	-69%	0%	5.00E-05	4929%	1528%	1526%
R45	Highway 27 to Pine Valley	1.20E-04	2.45E-03	7.57E-04	-69%	7.56E-04	-69%	0%	5.00E-05	4901%	1514%	1512%
R46	Highway 27 to Pine Valley	1.20E-04	2.44E-03	7.50E-04	-69%	7.49E-04	-69%	0%	5.00E-05	4870%	1500%	1499%
R47	Highway 27 to Pine Valley	1.20E-04	2.42E-03	7.43E-04	-69%	7.43E-04	-69%	0%	5.00E-05	4838%	1487%	1485%
R48	Highway 27 to Pine Valley	1.20E-04	2.40E-03	7.37E-04	-69%	7.36E-04	-69%	0%	5.00E-05	4809%	1474%	1473%
R49	Highway 27 to Pine Valley	1.20E-04	2.79E-03	8.25E-04	-70%	8.25E-04	-70%	0%	5.00E-05	5584%	1649%	1649%
R50	Highway 27 to Pine Valley	1.20E-04	2.78E-03	8.14E-04	-71%	8.14E-04	-71%	0%	5.00E-05	5550%	1628%	1628%
R51	Highway 27 to Pine Valley	1.20E-04	2.79E-03	8.15E-04	-71%	8.15E-04	-71%	0%	5.00E-05	5579%	1630%	1630%
R52	Highway 27 to Pine Valley	1.20E-04	2.79E-03	8.14E-04	-71%	8.14E-04	-71%	0%	5.00E-05	5585%	1628%	1628%
R53	Highway 27 to Pine Valley	1.20E-04	2.79E-03	8.11E-04	-71%	8.11E-04	-71%	0%	5.00E-05	5571%	1621%	1622%
R54	Highway 27 to Pine Valley	1.20E-04	2.77E-03	8.07E-04	-71%	8.07E-04	-71%	0%	5.00E-05	5544%	1613%	1614%
R55	Highway 27 to Pine Valley	1.20E-04	8.85E-03	2.41E-03	-73%	2.41E-03	-73%	0%	5.00E-05	17695%	4829%	4829%
R56	Highway 27 to Pine Valley	1.20E-04	7.44E-03	2.09E-03	-72%	2.09E-03	-72%	0%	5.00E-05	14882%	4173%	4171%
R57	Highway 27 to Pine Valley	1.20E-04	7.76E-03	2.34E-03	-70%	2.34E-03	-70%	0%	5.00E-05	15528%	4683%	4671%
R58	Highway 27 to Pine Valley	1.20E-04	9.37E-03	2.83E-03	-70%	2.82E-03	-70%	0%	5.00E-05	18741%	5651%	5632%
R59	Highway 27 to Pine Valley	1.20E-04	9.52E-03	2.89E-03	-70%	2.88E-03	-70%	0%	5.00E-05	19039%	5786%	5764%
R60	Highway 27 to Pine Valley	1.20E-04	9.29E-03	2.87E-03	-69%	2.86E-03	-69%	0%	5.00E-05	18574%	5740%	5715%
R61	Highway 27 to Pine Valley	1.20E-04	8.06E-03	2.55E-03	-68%	2.54E-03	-68%	0%	5.00E-05	16117%	5108%	5085%
R62	Highway 27 to Pine Valley	1.20E-04	7.42E-03	2.43E-03	-67%	2.42E-03	-67%	0%	5.00E-05	14831%	4856%	4832%
R63	Highway 27 to Pine Valley	1.20E-04	6.45E-03	2.20E-03	-66%	2.19E-03	-66%	-1%	5.00E-05	12901%	4403%	4380%
R64	Highway 27 to Pine Valley	1.20E-04	5.98E-03	2.12E-03	-65%	2.11E-03	-65%	-1%	5.00E-05	11959%	4236%	4213%
R65	Highway 27 to Pine Valley	1.20E-04	5.43E-03	1.95E-03	-64%	1.94E-03	-64%	0%	5.00E-05	10854%	3891%	3875%

Table B-23 Annual Average B[a]P Concentrations for Existing Conditions, Future No-Build and Future Build Scenarios

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality	% of the AAQC		
ID	Name	Concentration	Annual Average Concentration	Annual Average Concentration	% change from Existing Conditions	Annual Average Concentration	% change from Existing Conditions	% change from No-Build	Criteria (µg/m³)	Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		(µg/m³)	(µg/m³)	(µg/m³)		µg/m³						
R1	West of Hurontario to Highway 410	7.80E-05	2.06E-04	1.22E-04	-41%	1.23E-04	-40%	0%	1.00E-05	2058%	1224%	1227%
R2	West of Hurontario to Highway 410	7.80E-05	2.15E-04	1.26E-04	-42%	1.26E-04	-41%	0%	1.00E-05	2149%	1257%	1260%
R3	West of Hurontario to Highway 410	7.80E-05	2.25E-04	1.29E-04	-43%	1.29E-04	-43%	0%	1.00E-05	2249%	1287%	1290%
R4	West of Hurontario to Highway 410	7.80E-05	2.40E-04	1.35E-04	-44%	1.35E-04	-44%	0%	1.00E-05	2397%	1346%	1349%
R5	West of Hurontario to Highway 410	7.80E-05	2.56E-04	1.40E-04	-45%	1.40E-04	-45%	0%	1.00E-05	2555%	1398%	1402%
R6	West of Hurontario to Highway 410	7.80E-05	2.69E-04	1.44E-04	-47%	1.44E-04	-47%	0%	1.00E-05	2690%	1435%	1439%
R7	West of Hurontario to Highway 410	7.80E-05	2.85E-04	1.48E-04	-48%	1.48E-04	-48%	0%	1.00E-05	2849%	1477%	1482%
R8	West of Hurontario to Highway 410	7.80E-05	3.03E-04	1.53E-04	-50%	1.53E-04	-50%	0%	1.00E-05	3034%	1526%	1532%
R9	West of Hurontario to Highway 410	7.80E-05	3.32E-04	1.59E-04	-52%	1.60E-04	-52%	1%	1.00E-05	3317%	1594%	1602%
R10	West of Hurontario to Highway 410	7.80E-05	3.61E-04	1.66E-04	-54%	1.66E-04	-54%	1%	1.00E-05	3613%	1655%	1664%
R11	West of Hurontario to Highway 410	7.80E-05	3.92E-04	1.72E-04	-56%	1.73E-04	-56%	1%	1.00E-05	3922%	1722%	1733%
R12	West of Hurontario to Highway 410	7.80E-05	4.28E-04	1.80E-04	-58%	1.81E-04	-58%	1%	1.00E-05	4277%	1798%	1811%
R13	West of Hurontario to Highway 410	7.80E-05	4.96E-04	1.96E-04	-61%	1.97E-04	-60%	1%	1.00E-05	4964%	1956%	1973%
R14	West of Hurontario to Highway 410	7.80E-05	5.41E-04	2.05E-04	-62%	2.07E-04	-62%	1%	1.00E-05	5410%	2046%	2067%
R15	West of Hurontario to Highway 410	7.80E-05	5.90E-04	2.14E-04	-64%	2.16E-04	-63%	1%	1.00E-05	5895%	2139%	2164%
R16	West of Hurontario to Highway 410	7.80E-05	6.15E-04	2.18E-04	-65%	2.21E-04	-64%	1%	1.00E-05	6146%	2178%	2207%
R17	West of Hurontario to Highway 410	7.80E-05	5.82E-04	2.10E-04	-64%	2.12E-04	-63%	1%	1.00E-05	5818%	2098%	2124%
R18	West of Hurontario to Highway 410	7.80E-05	7.42E-04	2.62E-04	-65%	2.65E-04	-64%	1%	1.00E-05	7417%	2624%	2648%
R19	West of Hurontario to Highway 410	7.80E-05	7.14E-04	2.69E-04	-62%	2.70E-04	-62%	0%	1.00E-05	7144%	2690%	2700%
R20	West of Hurontario to Highway 410	7.80E-05	7.18E-04	2.74E-04	-62%	2.74E-04	-62%	0%	1.00E-05	7182%	2740%	2741%
R21	West of Hurontario to Highway 410	7.80E-05	8.26E-04	3.12E-04	-62%	3.12E-04	-62%	0%	1.00E-05	8263%	3120%	3116%
R22	West of Hurontario to Highway 410	7.80E-05	8.51E-04	3.14E-04	-63%	3.14E-04	-63%	0%	1.00E-05	8506%	3143%	3138%
R23	West of Hurontario to Highway 410	7.80E-05	8.68E-04	3.17E-04	-63%	3.16E-04	-64%	0%	1.00E-05	8678%	3168%	3162%
R24	West of Hurontario to Highway 410	7.80E-05	9.14E-04	3.29E-04	-64%	3.28E-04	-64%	0%	1.00E-05	9141%	3287%	3280%
R25	West of Hurontario to Highway 410	7.80E-05	9.34E-04	3.32E-04	-64%	3.31E-04	-65%	0%	1.00E-05	9339%	3316%	3310%
R26	West of Hurontario to Highway 410	7.80E-05	9.51E-04	3.33E-04	-65%	3.32E-04	-65%	0%	1.00E-05	9506%	3331%	3324%
R27	West of Hurontario to Highway 410	7.80E-05	9.48E-04	3.28E-04	-65%	3.28E-04	-65%	0%	1.00E-05	9477%	3283%	3278%
R28	West of Hurontario to Highway 410	7.80E-05	9.45E-04	3.24E-04	-66%	3.24E-04	-66%	0%	1.00E-05	9453%	3240%	3235%
R29	West of Hurontario to Highway 410	7.80E-05	9.48E-04	3.21E-04	-66%	3.21E-04	-66%	0%	1.00E-05	9476%	3213%	3209%
R30	West of Hurontario to Highway 410	7.80E-05	9.62E-04	3.22E-04	-67%	3.21E-04	-67%	0%	1.00E-05	9618%	3215%	3213%
R31	West of Hurontario to Highway 410	7.80E-05	9.91E-04	3.24E-04	-67%	3.24E-04	-67%	0%	1.00E-05	9910%	3243%	3241%
R32	West of Hurontario to Highway 410	7.80E-05	3.45E-04	1.59E-04	-54%	1.62E-04	-53%	2%	1.00E-05	3451%	1591%	1621%
R33	Goreway to Highway 427	7.80E-05	1.89E-03	5.45E-04	-71%	5.45E-04	-71%	0%	1.00E-05	18925%	5445%	5445%
R34	Goreway to Highway 427	7.80E-05	1.46E-03	4.37E-04	-70%	4.37E-04	-70%	0%	1.00E-05	14558%	4369%	4369%
R35	Goreway to Highway 427	7.80E-05	1.26E-03	3.89E-04	-69%	3.89E-04	-69%	0%	1.00E-05	12632%	3890%	3891%
R36	Goreway to Highway 427	7.80E-05	1.40E-03	5.84E-04	-58%	5.78E-04	-59%	-1%	1.00E-05	13993%	5836%	5780%
R37	Highway 27 to Pine Valley	7.80E-05	8.77E-04	3.43E-04	-61%	3.41E-04	-61%	0%	1.00E-05	8768%	3429%	3412%
R38	Highway 27 to Pine Valley	7.80E-05	6.29E-04	2.52E-04	-60%	2.52E-04	-60%	0%	1.00E-05	6288%	2524%	2516%
R39	Highway 27 to Pine Valley	7.80E-05	6.24E-04	2.50E-04	-60%	2.49E-04	-60%	0%	1.00E-05	6242%	2496%	2488%
R40	Highway 27 to Pine Valley	7.80E-05	6.23E-04	2.48E-04	-60%	2.47E-04	-60%	0%	1.00E-05	6229%	2481%	2473%
R41	Highway 27 to Pine Valley	7.80E-05	6.19E-04	2.46E-04	-60%	2.45E-04	-60%	0%	1.00E-05	6186%	2458%	2451%

Receptor	Receptor	Background	Existing Conditions (2017)	Future No-Build (2031)		2031 Future Build (2031)			Ambient Air Quality Criteria ($\mu\text{g}/\text{m}^3$)	% of the AAQC		
ID	Name	Concentration	Annual Average Concentration	Annual Average Concentration	% change from Existing Conditions	Annual Average Concentration	% change from Existing Conditions	% change from No-Build		Existing Conditions (2017)	Future No-Build (2031)	Future Build (2031)
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)		($\mu\text{g}/\text{m}^3$)						
R42	Highway 27 to Pine Valley	7.80E-05	6.19E-04	2.45E-04	-60%	2.44E-04	-61%	0%	1.00E-05	6190%	2448%	2441%
R43	Highway 27 to Pine Valley	7.80E-05	6.17E-04	2.43E-04	-61%	2.43E-04	-61%	0%	1.00E-05	6166%	2431%	2425%
R44	Highway 27 to Pine Valley	7.80E-05	6.14E-04	2.42E-04	-61%	2.41E-04	-61%	0%	1.00E-05	6142%	2415%	2409%
R45	Highway 27 to Pine Valley	7.80E-05	6.12E-04	2.40E-04	-61%	2.39E-04	-61%	0%	1.00E-05	6117%	2399%	2393%
R46	Highway 27 to Pine Valley	7.80E-05	6.09E-04	2.38E-04	-61%	2.38E-04	-61%	0%	1.00E-05	6090%	2383%	2377%
R47	Highway 27 to Pine Valley	7.80E-05	6.06E-04	2.37E-04	-61%	2.36E-04	-61%	0%	1.00E-05	6059%	2367%	2361%
R48	Highway 27 to Pine Valley	7.80E-05	6.03E-04	2.35E-04	-61%	2.35E-04	-61%	0%	1.00E-05	6030%	2351%	2346%
R49	Highway 27 to Pine Valley	7.80E-05	6.93E-04	2.58E-04	-63%	2.57E-04	-63%	0%	1.00E-05	6927%	2575%	2570%
R50	Highway 27 to Pine Valley	7.80E-05	6.91E-04	2.54E-04	-63%	2.54E-04	-63%	0%	1.00E-05	6907%	2544%	2540%
R51	Highway 27 to Pine Valley	7.80E-05	6.94E-04	2.54E-04	-63%	2.54E-04	-63%	0%	1.00E-05	6940%	2541%	2537%
R52	Highway 27 to Pine Valley	7.80E-05	6.95E-04	2.54E-04	-64%	2.53E-04	-64%	0%	1.00E-05	6954%	2535%	2531%
R53	Highway 27 to Pine Valley	7.80E-05	6.95E-04	2.53E-04	-64%	2.52E-04	-64%	0%	1.00E-05	6947%	2525%	2521%
R54	Highway 27 to Pine Valley	7.80E-05	6.92E-04	2.51E-04	-64%	2.51E-04	-64%	0%	1.00E-05	6923%	2510%	2507%
R55	Highway 27 to Pine Valley	7.80E-05	2.08E-03	5.99E-04	-71%	6.00E-04	-71%	0%	1.00E-05	20846%	5993%	5996%
R56	Highway 27 to Pine Valley	7.80E-05	1.74E-03	5.19E-04	-70%	5.20E-04	-70%	0%	1.00E-05	17434%	5193%	5195%
R57	Highway 27 to Pine Valley	7.80E-05	1.85E-03	6.01E-04	-67%	5.99E-04	-68%	0%	1.00E-05	18472%	6006%	5989%
R58	Highway 27 to Pine Valley	7.80E-05	2.24E-03	7.24E-04	-68%	7.21E-04	-68%	0%	1.00E-05	22443%	7236%	7210%
R59	Highway 27 to Pine Valley	7.80E-05	2.29E-03	7.44E-04	-67%	7.41E-04	-68%	0%	1.00E-05	22868%	7441%	7411%
R60	Highway 27 to Pine Valley	7.80E-05	2.24E-03	7.44E-04	-67%	7.41E-04	-67%	0%	1.00E-05	22405%	7442%	7410%
R61	Highway 27 to Pine Valley	7.80E-05	1.94E-03	6.66E-04	-66%	6.63E-04	-66%	0%	1.00E-05	19430%	6658%	6629%
R62	Highway 27 to Pine Valley	7.80E-05	1.80E-03	6.41E-04	-64%	6.38E-04	-65%	0%	1.00E-05	18014%	6405%	6376%
R63	Highway 27 to Pine Valley	7.80E-05	1.57E-03	5.82E-04	-63%	5.80E-04	-63%	0%	1.00E-05	15717%	5823%	5797%
R64	Highway 27 to Pine Valley	7.80E-05	1.47E-03	5.68E-04	-61%	5.65E-04	-62%	0%	1.00E-05	14713%	5678%	5653%
R65	Highway 27 to Pine Valley	7.80E-05	1.37E-03	5.47E-04	-60%	5.45E-04	-60%	0%	1.00E-05	13677%	5470%	5448%

Table B-24 Maximum Concentrations for Existing Condition Scenario

Contaminant	Averaging period	Threshold (AAQC or CAAQS)	Highest concentration (µg/m ³)	Julian Day/Hour	Location by Receptor	Location (UTM km)	2 nd Highest concentration (µg/m ³)	Julian Day/Hour	Location by Receptor	Location (UTM km)	3 rd Highest concentration (µg/m ³)	Julian Day/Hour	Location by Receptor	Location (UTM km)
CO	1-hr	36,200	1218.30	342,09	1416	614.6, 4847.4	1204.47	312,17	33	608.7, 4844.3	1197.80	342,17	59	614.8, 4847.7
CO	8-hr	15,700	785.40	342,22	59	614.8, 4847.7	773.40	342,22	58	614.8, 4847.7	761.40	342,22	55	614.3, 4847.4
NO ₂	1-hr	79	104.67	n/a	59	614.8, 4847.7	103.99	n/a	58	614.8, 4847.7	103.26	n/a	60	614.9, 4847.8
NO ₂	24-hr	200	82.67	342	59	614.8, 4847.7	82.11	342	58	614.8, 4847.7	81.75	342	60	614.9, 4847.8
NO ₂ ⁽⁵⁾	Annual	23	39.36	n/a	59	614.8, 4847.7	39.20	n/a	58	614.8, 4847.7	39.17	n/a	60	614.9, 4847.8
SO ₂ ⁽²⁾	1-hr	170	4.51	n/a	1047	617.5 4849.7	4.50	n/a	59	614.8, 4847.7	4.49	n/a	58	614.9, 4847.8
SO ₂	24-hr	275	4.239	342	59	614.8, 4847.7	4.231	342	58	614.8, 4847.7	4.229	342	60	614.9, 4847.8
SO ₂	Annual	10	2.103	n/a	59	614.8, 4847.7	2.101	n/a	58	614.8, 4847.7	2.095	n/a	1416	614.6, 4847.4
Acetaldehyde	24-hr	500	1.821	342	59	614.8, 4847.7	1.820	342	58	614.8, 4847.7	1.816	342	55	614.3, 4847.4
Benzene	24-hr	2.3	0.999	342	59	614.8, 4847.7	0.997	342	58	614.8, 4847.7	0.991	342	55	614.3, 4847.4
Benzene	Annual	0.45	0.578	n/a	59	614.8, 4847.7	0.576	n/a	55	614.3, 4847.4	0.575	n/a	947	615.5, 4848.1
Acrolein ⁽¹⁾	1-hr	4.5	0.1025	312,17	33	608.7, 4844.3	0.1023	320,18	645	609.3, 4845.2	0.10171	342,09	1416	614.6, 4847.4
Acrolein	24-hr	0.4	0.07742	283	1047	617.5 4849.7	0.07737	342	59	614.8, 4847.7	0.07725	342	58	614.9, 4847.8
1-3 Butadiene	24-hr	10	0.1005	342	59	614.8, 4847.7	0.10032	342	58	614.8, 4847.7	0.10027	342	60	614.9, 4847.8
1-3 Butadiene	Annual	2	0.05247	n/a	59	614.8, 4847.7	0.05243	n/a	58	614.8, 4847.7	0.05242	n/a	60	614.9, 4847.8
Formaldehyde	24-hr	65	3.416	342	59	614.8, 4847.7	3.414	342	58	614.8, 4847.7	3.413	342	60	614.9, 4847.8
Benzo[a]pyrene	24-hr	5.00E-05	9.52E-03	342	59	614.8, 4847.7	9.37E-03	342	58	614.8, 4847.7	9.29E-03	342	60	614.9, 4847.8
Benzo[a]pyrene	Annual	1.00E-05	2.29E-03	n/a	59	614.8, 4847.7	2.24E-03	n/a	58	614.8, 4847.7	2.24E-03	n/a	60	614.9, 4847.8
PM _{2.5} ⁽³⁾	24-hr	27	16.494	n/a	59	614.8, 4847.7	16.493	n/a	60	614.9, 4847.8	16.425	n/a	58	614.9, 4847.8
PM _{2.5} ⁽⁴⁾	Annual	8,8	8,980	n/a	60	614.9, 4847.8	8,973	n/a	1197	618.0, 4847.1	8,968	n/a	1196	618.0, 4847.8
PM ₁₀	24-hr	50	38.53	342	59	614.8, 4847.7	38.48	342	60	614.9, 4847.8	38.23	342	58	614.8, 4847.7
TSP	24-hr	120	72.93	298	59	614.8, 4847.7	72.64	298	60	614.9, 4847.8	72.34	298	58	614.8, 4847.7
TSP	Annual	60	35.13	n/a	60	614.9, 4847.8	35.06	n/a	59	614.8, 4847.7	34.72	n/a	58	614.8, 4847.7

Notes:

- (1) The 24-hr background concentration for acrolein is used as a surrogate for the 1-hr averaging period since 1-hour concentrations are unavailable.
- (2) 1hr SO₂ concentrations are based on a three-year average of the 99th Percentile Concentrations
- (3) 24hr PM_{2.5} concentrations are based on a three-year average of the 98th Percentile Concentrations
- (4) Annual PM_{2.5} concentrations are based on a three-year average annual concentrations
- (5) 1hr NO₂ concentrations are based on a three-year average of the 98th Percentile Concentrations

Table B-25 Maximum Concentrations for Future No-Build Scenario

Contaminant	Averaging period	Threshold (AAQC or CAAQS)	Highest concentration (µg/m ³)	Julian Day/Hour	Location by Receptor	Location (UTM km)	2 nd Highest concentration (µg/m ³)	Julian Day/Hour	Location by Receptor	Location (UTM km)	3 rd Highest concentration (µg/m ³)	Julian Day/Hour	Location by Receptor	Location (UTM km)
CO	1-hr	36,200	767.08	342,09	1416	614.6 , 4847.4	761.81	312,17	33	608.7, 4844.3	759.53	342,17	59	614.8, 4847.7
CO	8-hr	15,700	563.40	342,22	59	614.8, 4847.7	540.80	324,18	59	614.8, 4847.7	529.35	342,22	33	608.7, 4844.3
NO ₂	1-hr	79	67.91	n/a	1047	617.5, 4849.8	67.07	n/a	59	614.8, 4847.7	66.93	n/a	58	614.8, 4847.7
NO ₂	24-hr	200	53.60	342	59	614.8, 4847.7	53.48	342	58	614.8, 4847.7	53.43	342	60	614.9, 4847.8
NO ₂ ⁽⁵⁾	Annual	23	32.60	n/a	1197	618.0, 4847.7	32.59	n/a	1196	618.0, 4847.8	32.55	n/a	1195	618.0, 4847.8
SO ₂ ⁽²⁾	1-hr	170	4.04	n/a	1047	617.5, 4849.8	3.99	n/a	59	614.8, 4847.7	3.99	n/a	203	604.3, 4836.8
SO ₂	24-hr	275	3.922	342	59	614.8, 4847.7	3.919	342	58	614.8, 4847.7	3.911	342	55	614.3, 4847.4
SO ₂	Annual	10	2.030	n/a	1197	618.0, 4847.7	2.029	n/a	59	614.8, 4847.7	2.028	n/a	58	614.8, 4847.7
Acetaldehyde	24-hr	500	1.775	283	1047	617.5, 4849.8	1.773	342	58	614.8, 4847.7	1.772	342	55	614.3, 4847.4
Benzene	24-hr	2.3	0.909	342	58	614.8, 4847.7	0.907	342	55	614.3, 4847.4	0.906	363	1416	614.6 , 4847.4
Benzene	Annual	0.45	0.557	n/a	58	614.8, 4847.7	0.556	n/a	55	614.3, 4847.4	0.555	n/a	791	612.5, 4846.5
Acrolein ⁽¹⁾	1-hr	4.5	0.0782	135,20	1047	617.5, 4849.8	0.0781	320,18	645	609.3, 4845.2	0.07800	312,17	33	608.7, 4844.3
Acrolein	24-hr	0.4	0.07210	283	1047	617.5, 4849.8	0.07190	320	1244	617.8, 4847.51	0.07189	324	1246	617.7, 4847.8
1-3 Butadiene	24-hr	10	0.09025	283	1047	617.5, 4849.8	0.09023	320	1244	617.8, 4847.51	0.09022	283	1048	617.5, 4849.8
1-3 Butadiene	Annual	2	0.05007	n/a	1197	618.0, 4847.7	0.05006	n/a	1245	617.8, 4847.7	0.05005	n/a	1244	617.8, 4847.51
Formaldehyde	24-hr	65	3.343	283	1047	617.5, 4849.8	3.339	320	1244	617.8, 4847.51	3.338	342	59	614.8, 4847.7
Benzo[a]pyrene	24-hr	5.00E-05	3.09E-03	342	723	610.8, 4845.9	2.90E-03	342	722	610.7, 4845.9	2.89E-03	342	59	614.8, 4847.7
Benzo[a]pyrene	Annual	1.00E-05	9.69E-04	n/a	1589	610.6, 4845.5	8.20E-04	n/a	723	610.8, 4845.9	8.16E-04	n/a	1584	610.7, 4845.5
PM _{2.5} ⁽³⁾	24-hr	27	15.985	n/a	60	614.8, 4847.7	15.966	n/a	59	614.8, 4847.7	15.904	n/a	58	617.5, 4849.8
PM _{2.5} ⁽⁴⁾	Annual	8.8	8.815	n/a	60	614.9, 4847.8	8.812	n/a	1197	618.0, 4847.7	8.810	n/a	1196	618.0, 4847.8
PM ₁₀	24-hr	50	37.86	342	60	614.9, 4847.8	37.84	342	59	614.8, 4847.7	37.51	342	58	614.8, 4847.7
TSP	24-hr	120	74.01	298	60	614.9, 4847.8	73.69	283	1047	617.5, 4849.8	73.68	298	59	614.8, 4847.7
TSP	Annual	60	35.43	n/a	60	614.9, 4847.8	35.29	n/a	59	614.8, 4847.7	34.93	n/a	1197	618.0, 4847.7

Notes:

- (1) The 24-hr background concentration for acrolein is used as a surrogate for the 1-hr averaging period since 1-hour concentrations are unavailable.
- (2) 1hr SO2 concentrations are based on a three-year average of the 99th Percentile Concentrations
- (3) 24hr PM2.5 concentrations are based on a three-year average of the 98th Percentile Concentrations
- (4) Annual PM2.5 concentrations are based on a three-year average annual concentrations
- (5) 1hr NO2 concentrations are based on a three-year average of the 98th Percentile Concentrations

Table B-26 Maximum Concentrations for Future Build Scenario

Contaminant	Averaging period	Threshold (AAQC or CAAQS)	Highest concentration (µg/m³)	Julian Day/Hour	Location by Receptor	Location (UTM km)	2 nd Highest concentration (µg/m³)	Julian Day/Hour	Location by Receptor	Location (UTM km)	3 rd Highest concentration (µg/m³)	Julian Day/Hour	Location by Receptor	Location (UTM km)
CO	1-hr	36,200	761.98	312,17	33	608.7, 4844.3	759.46	342,17	59	614.8, 4847.7	754.58	342,17	60	614.9, 4847.8
CO	8-hr	15,700	552.25	342,22	59	614.8, 4847.7	540.80	324,18	59	614.8, 4847.7	529.35	342,22	33	608.7, 4844.3
NO ₂	1-hr	79	67.89	n/a	1048	617.5, 4849.8	67.37	n/a	1202	618.1, 4847.9	67.14	n/a	59	614.8, 4847.7
NO ₂	24-hr	200	53.68	342	59	614.8, 4847.7	53.57	342	58	614.8, 4847.7	53.50	342	60	614.9, 4847.8
NO ₂ ⁽⁵⁾	Annual	23	33.13	n/a	1202	618.1, 4847.9	32.86	n/a	1204	618.1, 4847.7	32.62	n/a	1989	606.4, 4838.9
SO ₂ ⁽²⁾	1-hr	170	4.04	n/a	1048	617.5, 4849.8	3.99	n/a	59	614.8, 4847.7	12.19	n/a	203	604.3, 4836.8
SO ₂	24-hr	275	3.922	342	59	614.8, 4847.7	3.920	342	58	614.8, 4847.7	3.912	342	55	614.3, 4847.4
SO ₂	Annual	10	2.039	n/a	1202	618.1, 4847.9	2.035	n/a	1204	618.1, 4847.7	2.032	n/a	1989	606.4, 4838.9
Acetaldehyde	24-hr	500	1.775	283	1048	617.5, 4849.8	1.774	342	59	614.8, 4847.7	1.773	342	58	614.8, 4847.7
Benzene	24-hr	2.3	0.909	342	58	614.8, 4847.7	0.907	342	55	614.3, 4847.4	0.905	342	61	614.9, 4847.8
Benzene	Annual	0.45	0.557	n/a	58	614.8, 4847.7	0.556	n/a	55	614.3, 4847.4	0.555	n/a	792	612.7, 4846.6
Acrolein ⁽¹⁾	1-hr	4.5	0.0782	320,18	646	609.4, 4845.3	0.0781	312,17	1048	617.5, 4849.8	0.07811	135,20	33	608.7, 4844.3
Acrolein	24-hr	0.4	0.07209	283	1048	617.5, 4849.8	0.07194	321	1202	618.1, 4847.9	0.07190	320	1235	614.8, 4847.7
1-3 Butadiene	24-hr	10	0.09025	283	1048	617.5, 4849.8	0.09023	321	1202	618.1, 4847.9	0.09022	283	1049	617.4, 4849.9
1-3 Butadiene	Annual	2	0.05009	n/a	1202	618.1, 4847.9	0.05008	n/a	1204	618.1, 4847.7	0.05007	n/a	1206	618.2, 4847.4
Formaldehyde	24-hr	65	3.343	283	1048	617.5, 4849.8	3.339	321	1202	618.1, 4847.9	3.338	342	58	614.8, 4847.7
Benzo[a]pyrene	24-hr	5.00E-05	3.05E-03	342	724	610.8, 4846.0	2.88E-03	342	59	614.8, 4847.7	2.86E-03	342	60	614.9, 4847.8
Benzo[a]pyrene	Annual	1.00E-05	8.45E-04	n/a	1989	606.4, 4838.9	8.30E-04	n/a	1532	611.9, 4845.8	8.20E-04	n/a	1202	618.1, 4847.9
PM _{2.5} ⁽³⁾	24-hr	27	16.041	n/a	60	614.9, 4847.8	16.030	n/a	59	614.8, 4847.7	15.980	n/a	58	614.8, 4847.7
PM _{2.5} ⁽⁴⁾	Annual	8.8	9.000	n/a	1202	618.1, 4847.9	8.905	n/a	1204	618.1, 4847.7	8.864	n/a	1989	606.4, 4838.9
PM ₁₀	24-hr	50	38.32	342	59	614.8, 4847.7	38.27	342	60	614.9, 4847.8	38.06	342	58	614.8, 4847.7
TSP	24-hr	120	74.40	283	60	614.9, 4847.8	74.14	298	59	614.8, 4847.7	73.68	283	1047	617.5, 4849.8
TSP	Annual	60	10.57	n/a	1202	618.1, 4847.9	9.21	n/a	1204	618.1, 4847.7	8.72	n/a	1989	606.4, 4838.9

Notes:

- (1) The 24-hr background concentration for acrolein is used as a surrogate for the 1-hr averaging period since 1-hour concentrations are unavailable.
- (2) 1hr SO₂ concentrations are based on a three-year average of the 99th Percentile Concentrations
- (3) 24hr PM_{2.5} concentrations are based on a three-year average of the 98th Percentile Concentrations
- (4) Annual PM_{2.5} concentrations are based on a three-year average annual concentrations
- (5) 1hr NO₂ concentrations are based on a three-year average of the 98th Percentile Concentrations

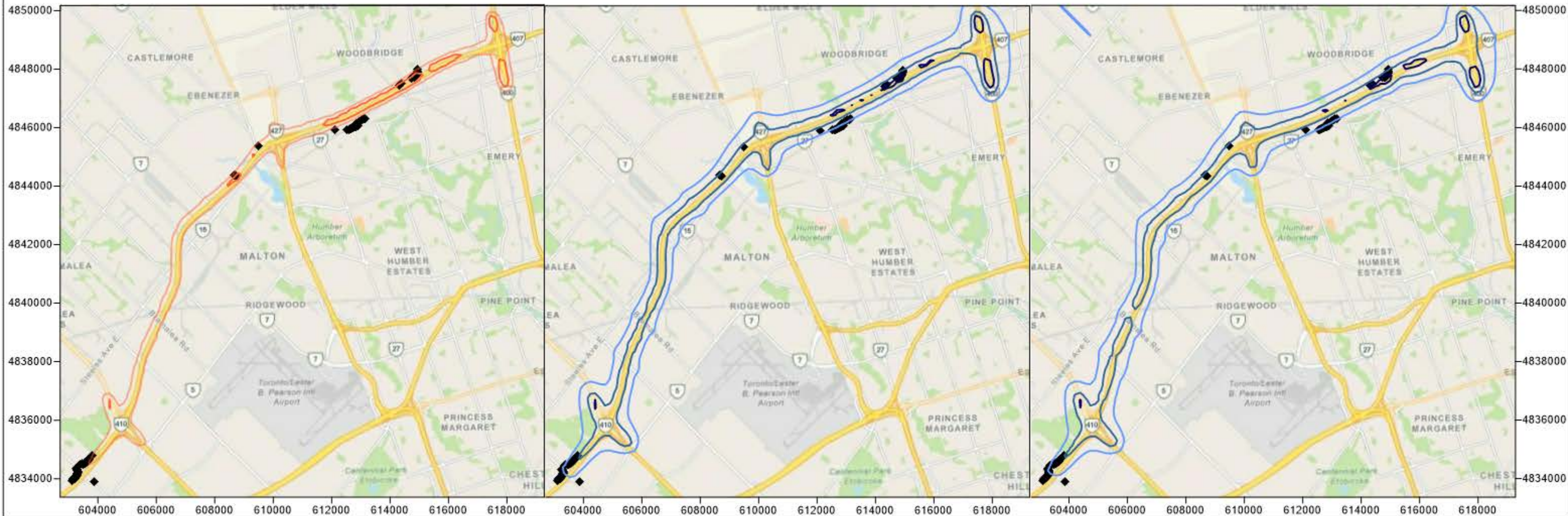
APPENDIX C
CAL3QHCR Model Results Figures



2017 Existing Conditions

2031 Future No-Build

2031 Future Build



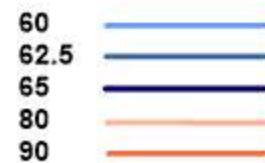
LEGEND

◆ Sensitive Receptor Location

NOTES

Contour lines are based on the 3 year (2012, 2013, 2014) average of the 98th percentile of the maximum 1-hour average concentrations.

Contour Levels ($\mu\text{g}/\text{m}^3$)

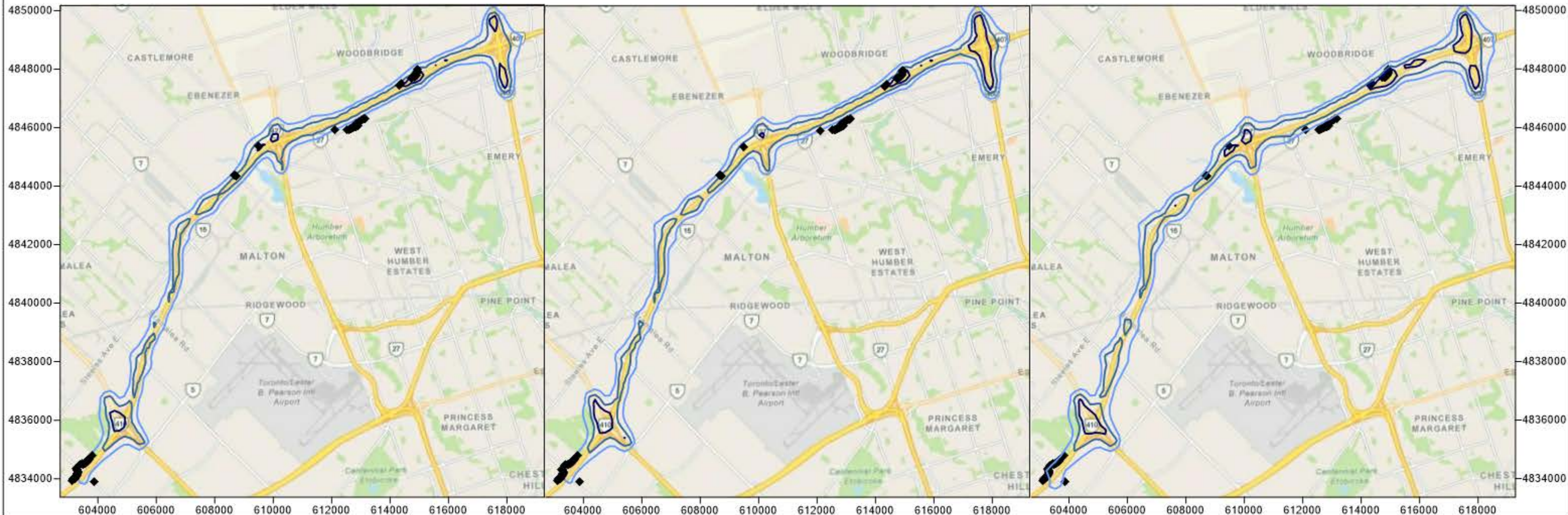


Title:	98th PERCENTILE 1-HOUR NO₂ CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-1

2017 Existing Conditions

2031 Future No-Build

2031 Future Build




LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

55 
 60 
 65 



Title:	MAXIMUM 24-HOUR TSP CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND		
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400		
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO		
			
		Date:	November 2017
		Project No.:	351194
		Figure No.:	Figure C-2

2017 Existing Conditions

2031 Future No-Build

2031 Future Build




LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

29 
 31 
 33 

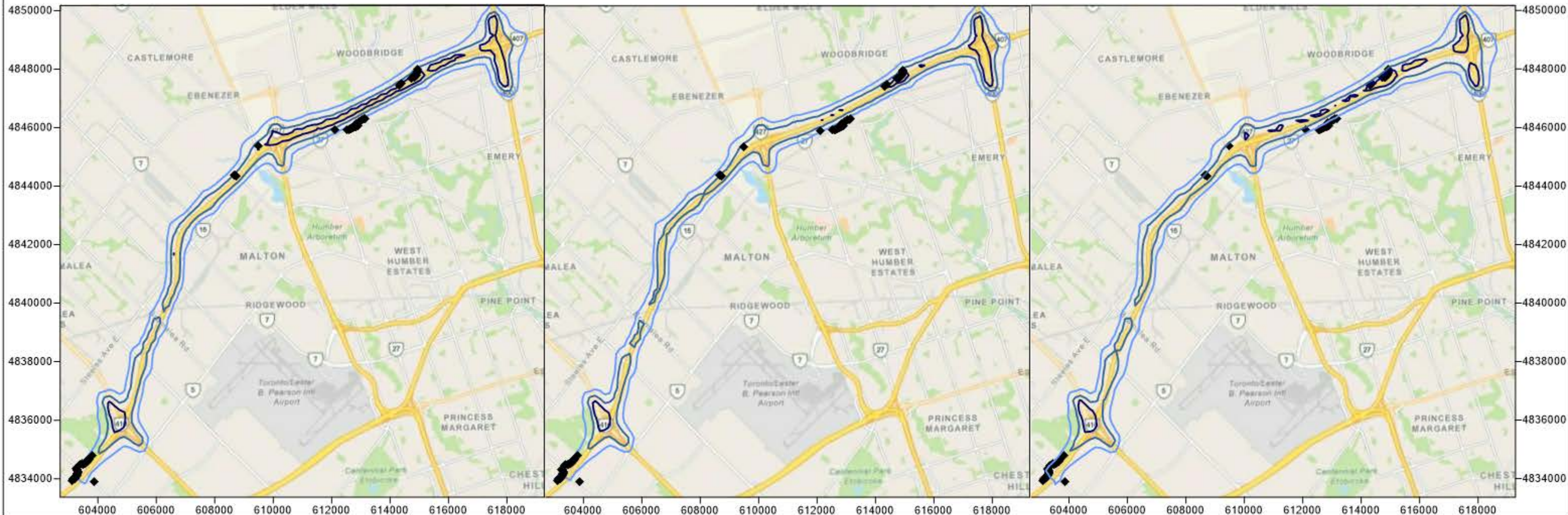


Title:	ANNUAL AVERAGE TSP CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
	Date: November 2017
	Project No.: 351194
	Figure No.: Figure C-3

2017 Existing Conditions

2031 Future No-Build

2031 Future Build




Contour Levels ($\mu\text{g}/\text{m}^3$)



LEGEND

◆ Sensitive Receptor Location

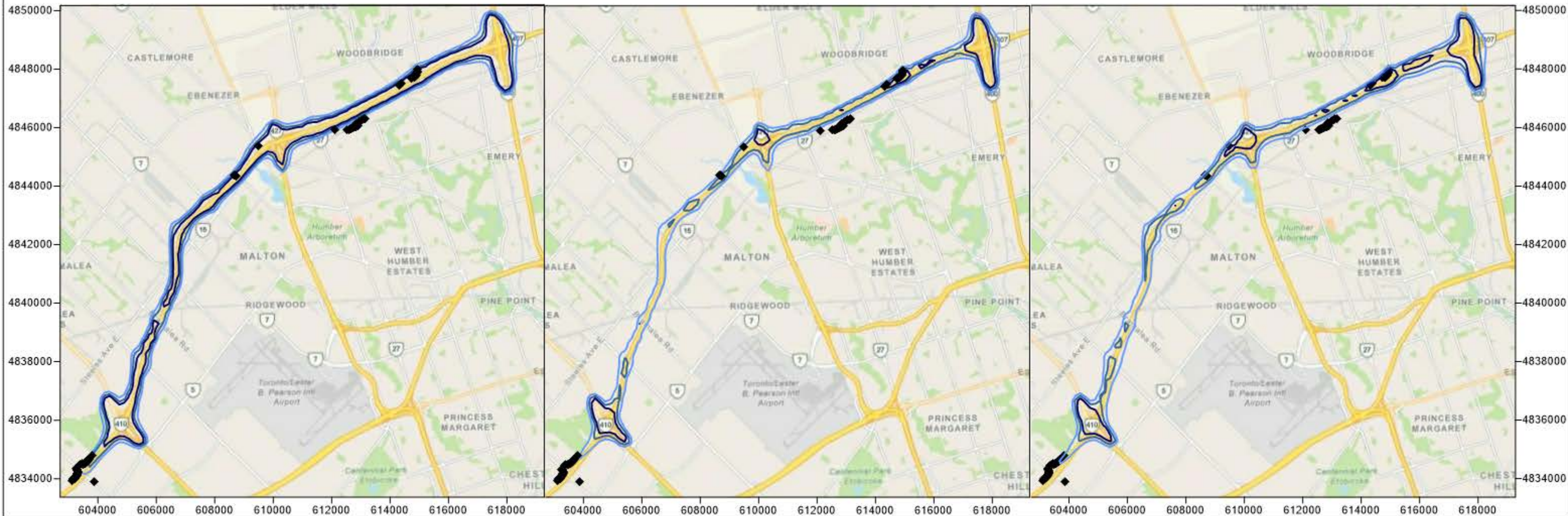


Title:	MAXIMUM 24-HOUR PM10 CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND		
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400		
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO		
			
		Date:	November 2017
		Project No.:	351194
		Figure No.:	Figure C-4

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

NOTES

Contour lines are based on the 3 year (2012, 2013, 2014) average of the 98th percentile of the daily average concentrations.

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 15.0
- 15.2
- 15.4



Title:	98th PERCENTILE 24-HOUR PM2.5 CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-5

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



Contour Levels ($\mu\text{g}/\text{m}^3$)



LEGEND

◆ Sensitive Receptor Location

NOTES

Contour lines are based on the 3 year (2012, 2013 and 2014) average of the average annual concentrations.

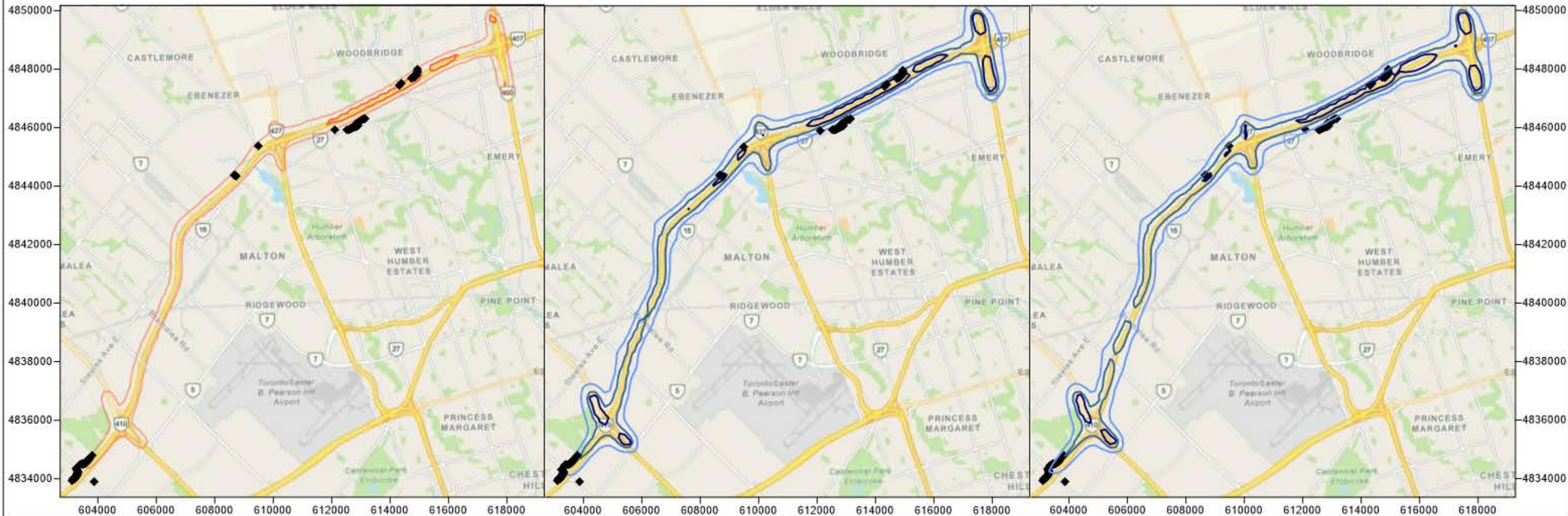


Title:	3-YEAR ANNUAL AVERAGE PM2.5 CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-6

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

NOTES

Contour lines are based on the 3 year (2012, 2013, 2014) average of the 99th percentile of the maximum 1-hour average concentrations.

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 3.86
- 3.90
- 3.93
- 4.10
- 4.30

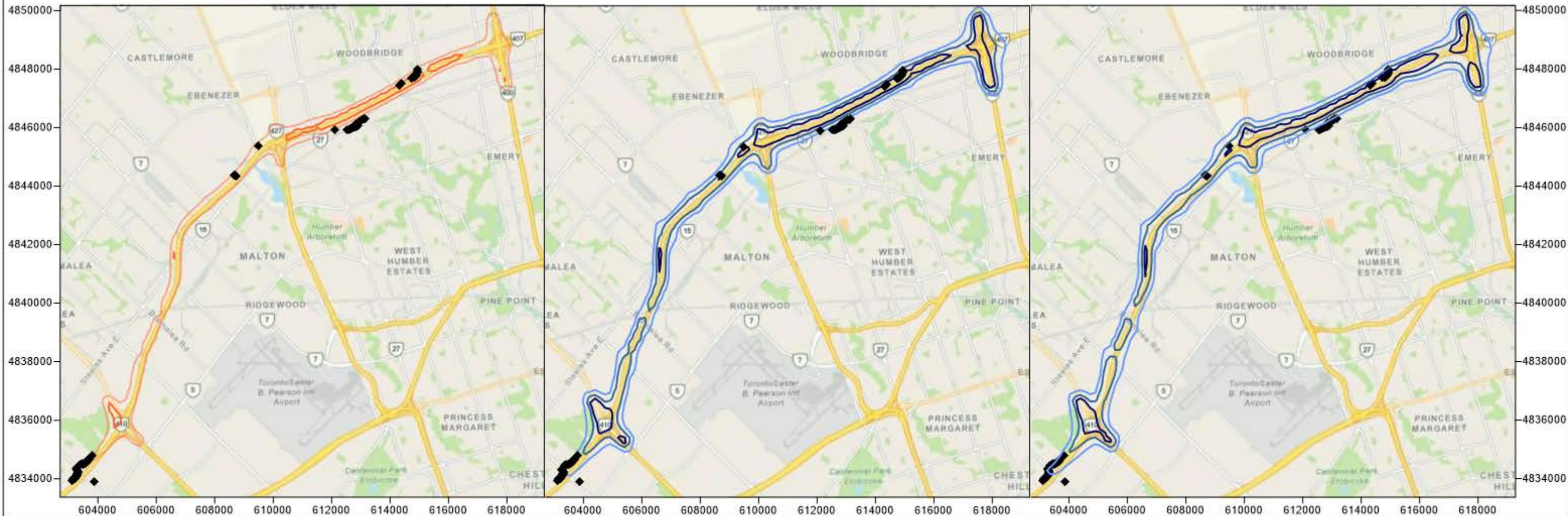


Title:	99th PERCENTILE 1-HOUR SO₂ CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-7

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 3.84
- 3.86
- 3.88
- 4.00
- 4.10

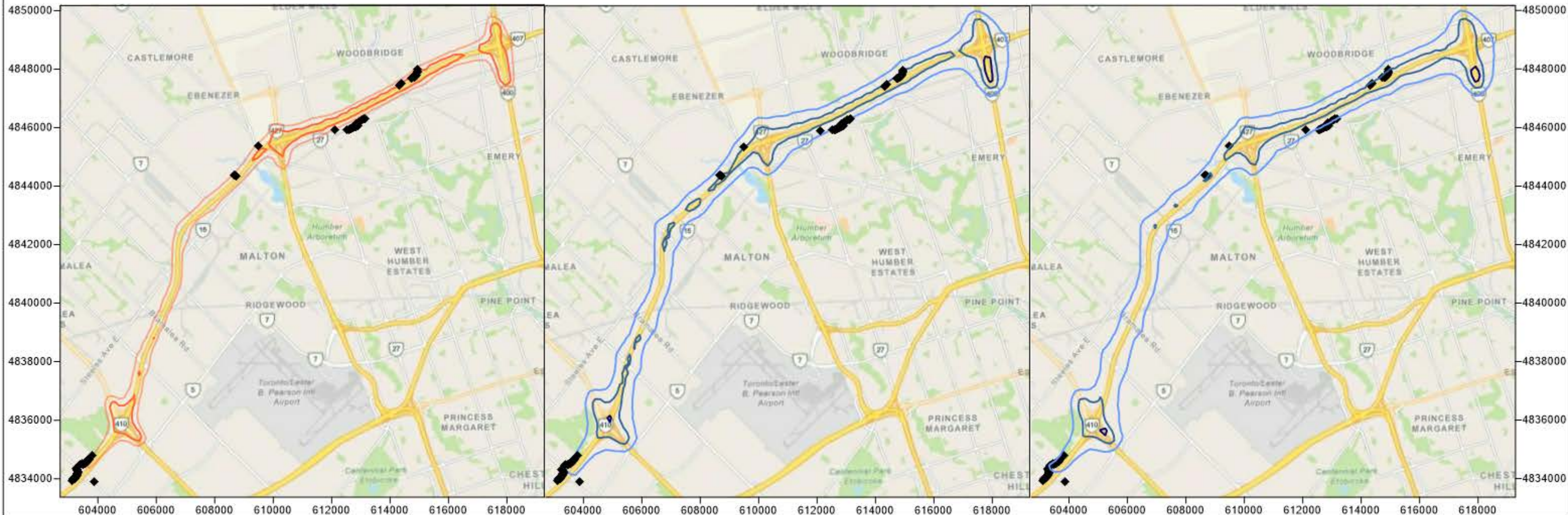


Title:	MAXIMUM 24-HOUR SO₂ CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
	Date: November 2017
	Project No.: 351194
	Figure No.: Figure C-8

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 2.008
- 2.018
- 2.028
- 2.045
- 2.070

Title:	ANNUAL AVERAGE SO₂ CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-9



2017 Existing Conditions

2031 Future No-Build

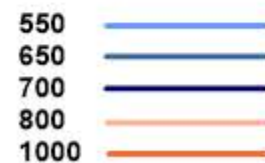
2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)



Title:	MAXIMUM 1-HOUR CO CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND		
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400		
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO		
		Date:	November 2017
		Project No.:	351194
		Figure No.:	Figure C-10

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 440 —
- 460 —
- 480 —
- 540 —
- 600 —

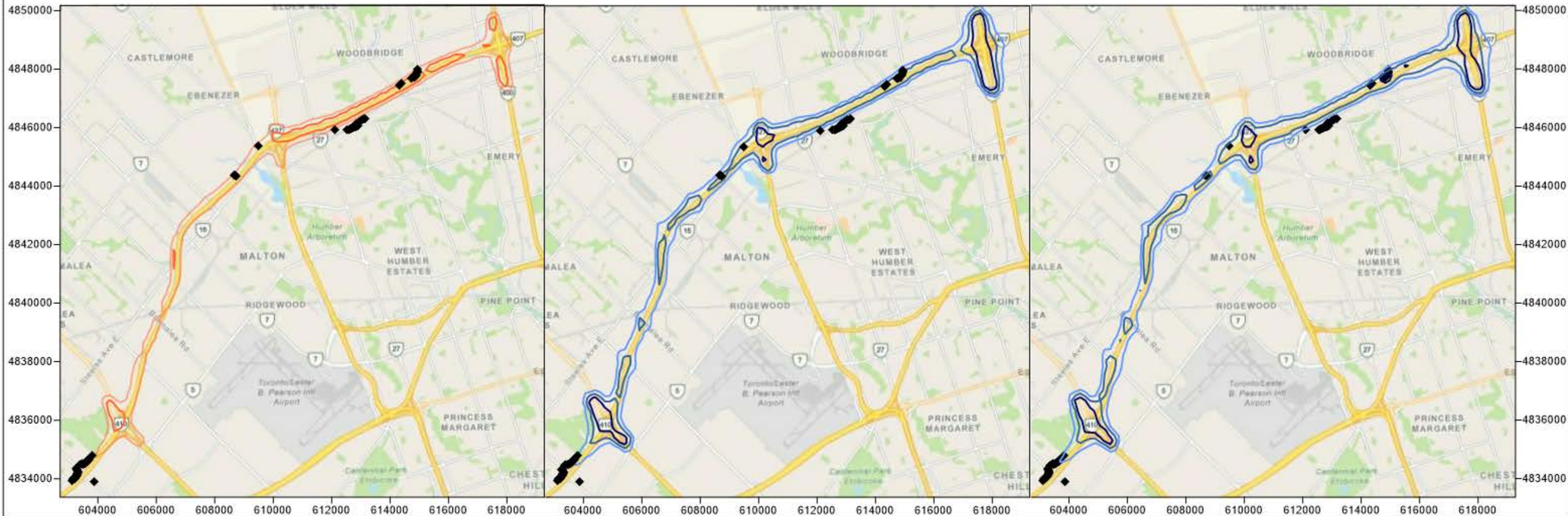


Title:	MAXIMUM 8-HOUR CO CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-11

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 0.09008 —
- 0.09011 —
- 0.09015 —
- 0.09500 —
- 0.09700 —

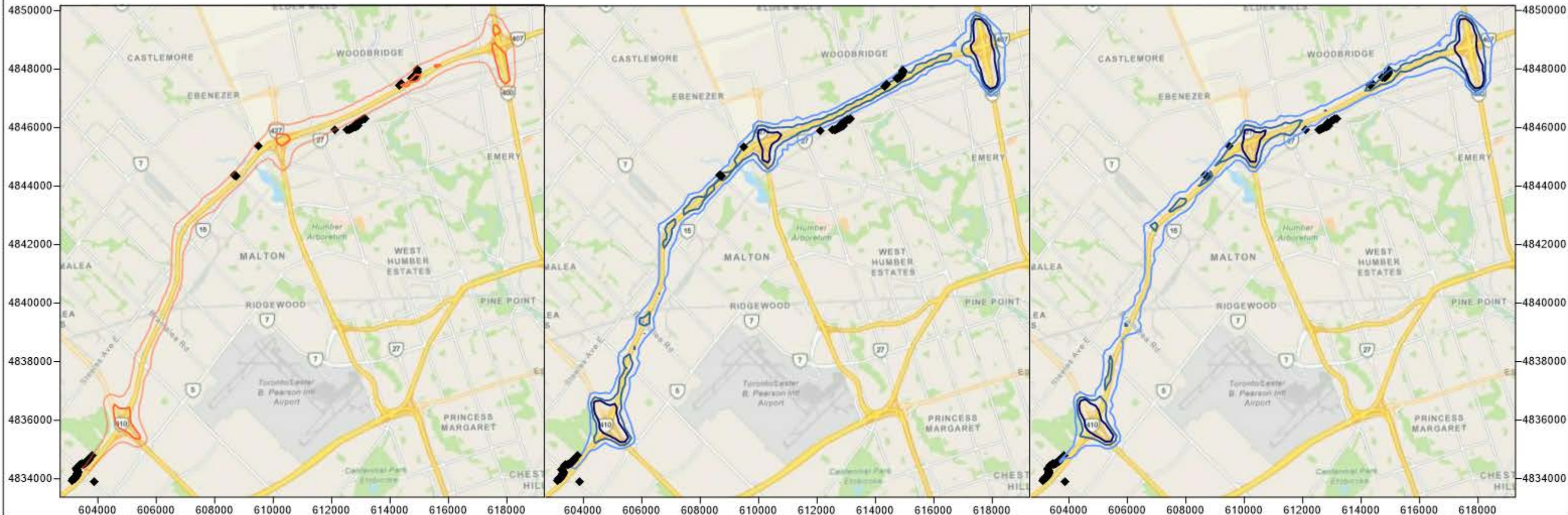


Title:	MAXIMUM 24-HOUR 1,3-BUTADIENE CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-12

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 0.05002
- 0.05003
- 0.05004
- 0.05100
- 0.05200

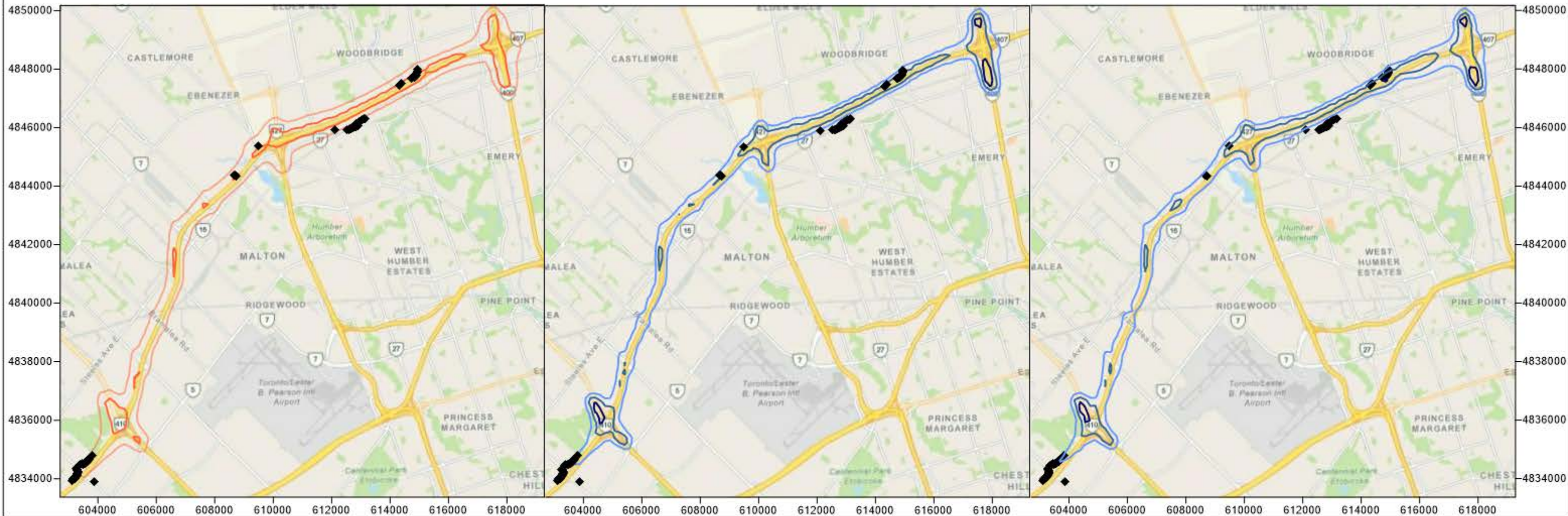


Title:	ANNUAL AVERAGE 1,3-BUTADIENE CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-13

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 1.766
- 1.769
- 1.772
- 1.780
- 1.800



Title:	MAXIMUM 24-HOUR ACETALDEHYDE CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
	Date: November 2017
	Project No.: 351194
	Figure No.: Figure C-14

2017 Existing Conditions

2031 Future No-Build

2031 Future Build




Contour Levels ($\mu\text{g}/\text{m}^3$)



LEGEND

◆ Sensitive Receptor Location



Title:	MAXIMUM 1-HOUR ACROLEIN CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND		
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400		
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO		
			
		Date:	November 2017
		Project No.:	351194
		Figure No.:	Figure C-15

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



Contour Levels ($\mu\text{g}/\text{m}^3$)



LEGEND

◆ Sensitive Receptor Location



Title:	MAXIMUM 24-HOUR ACROLEIN CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND		
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400		
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO		
		Date:	November 2017
		Project No.:	351194
Figure No.:	Figure C-16		

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 0.8900 —
- 0.8950 —
- 0.9000 —
- 0.9300 —
- 0.9600 —

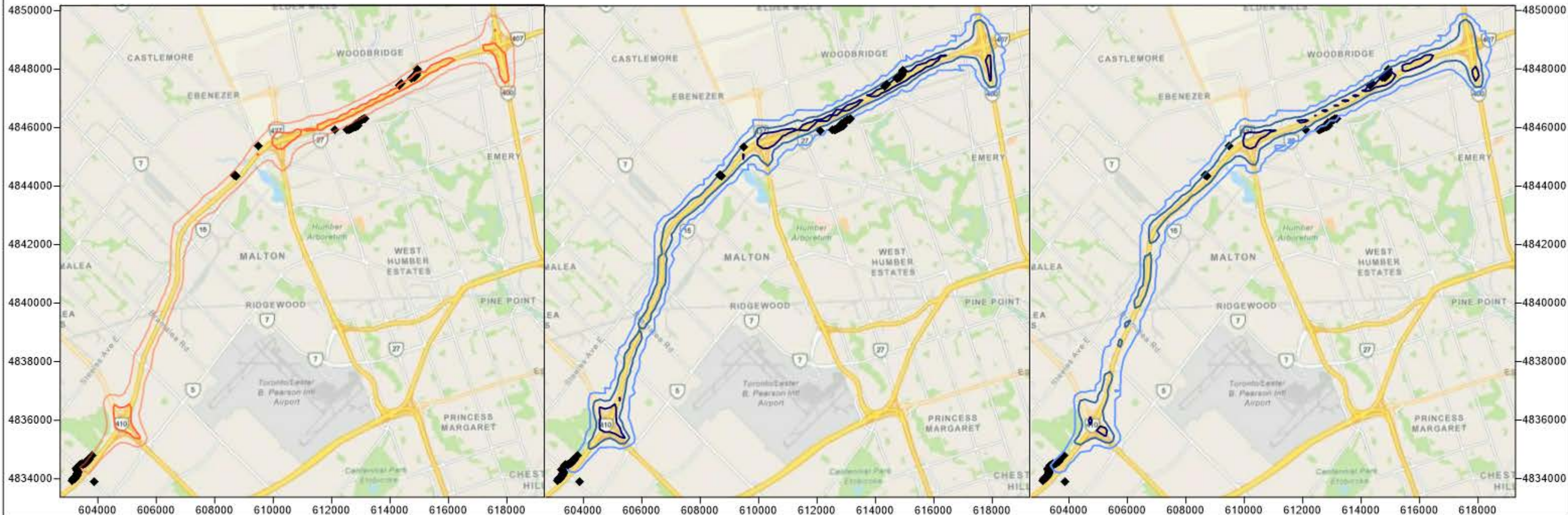


Title:	MAXIMUM 24-HOUR BENZENE CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-17

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 0.5520 —
- 0.5535 —
- 0.5550 —
- 0.5600 —
- 0.5700 —



Title:	ANNUAL AVERAGE BENZENE CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-18

2017 Existing Conditions

2031 Future No-Build

2031 Future Build




LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 3.31 —
- 3.32 —
- 3.33 —
- 3.36 —
- 3.38 —

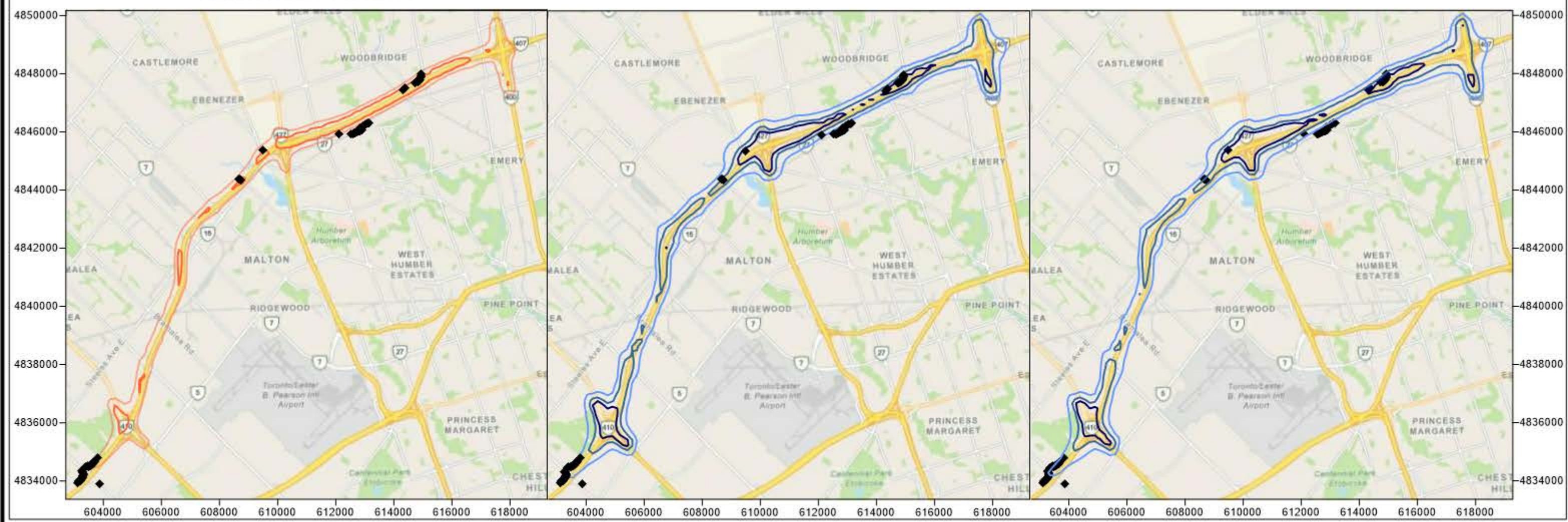


Title:	MAXIMUM 24-HOUR FORMALDEHYDE CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
	
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-19

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 0.0010
- 0.0015
- 0.0020
- 0.0040
- 0.0060



Title:	MAXIMUM 24-HOUR BENZO[A]PYRENE CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-20

2017 Existing Conditions

2031 Future No-Build

2031 Future Build



LEGEND

◆ Sensitive Receptor Location

Contour Levels ($\mu\text{g}/\text{m}^3$)

- 0.0003 —
- 0.0005 —
- 0.0007 —
- 0.0013 —
- 0.0017 —



Title:	ANNUAL AVERAGE BENZO[A]PYRENE CONCENTRATIONS IN $\mu\text{g}/\text{m}^3$ INCLUDING 90th PERCENTILE BACKGROUND
Project:	AIR QUALITY IMPACT ASSESSMENT, HIGHWAY 407 TRANSITWAY: WEST OF HURONTARIO STREET TO EAST OF HIGHWAY 400
Client:	MINISTRY OF TRANSPORTATION OF ONTARIO
Date:	November 2017
Project No.:	351194
Figure No.:	Figure C-21

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